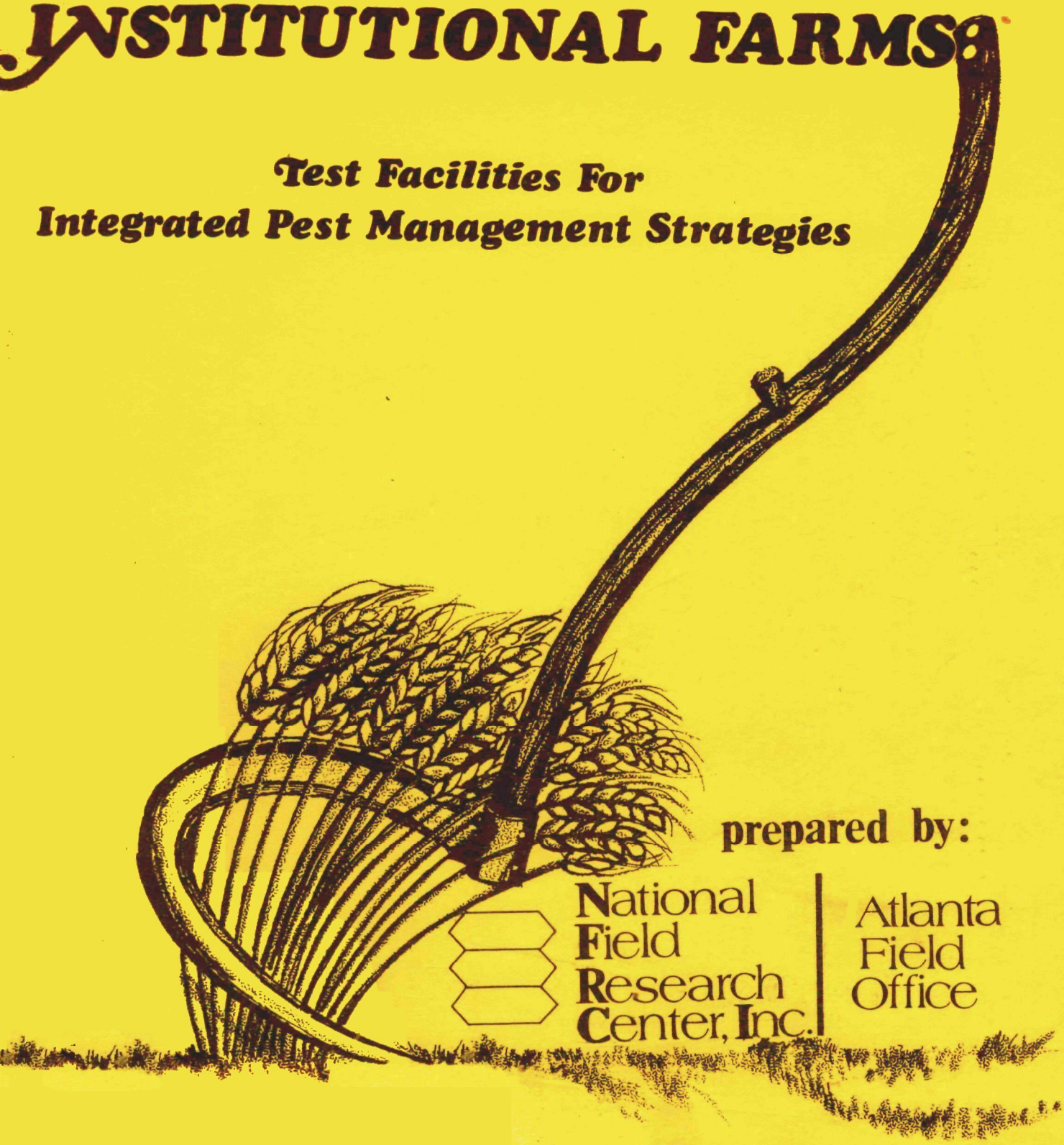
# INSTITUTIONAL FARMS

## Test Facilities For Integrated Pest Management Strategies



prepared by:

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Atlanta Field Office

Special acknowledgement is given to Ms. Margie V. Gardner

for the original drawings contained in this volume.

# INSTITUTIONAL FARMS:

# TEST FACILITIES FOR

# INTEGRATED PEST MANAGEMENT STRATEGIES


Conducted By:

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# FOREWORD

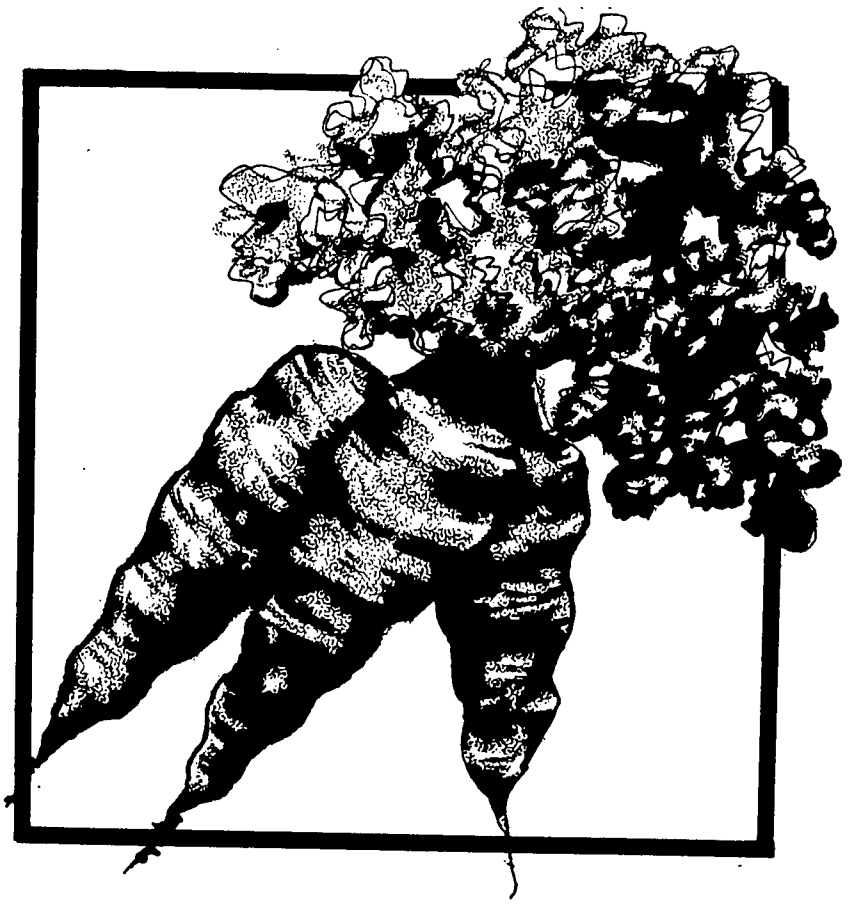
This report presents a recommended framework for the development of a national program to implement integrated pest management/scientific ecological agricultural practices and training programs on institutional farms. Based principally upon the prototype model project implemented in Memphis, Tennessee in 1977 (as described in the Background of this report), it focuses upon correctional institutions and their populations, and upon the programs initiated during the Memphis project - while offering suggestions and recommendations for additional programs and strategies.

Specifically, this report presents:

- an overview and rationale for an institutional program and its various sub-components;
- descriptions of the various governmental agencies (Federal, State and local) with a potential for involvement in such a program, and their relevant programs; and an overview of potential private sector and academic participants;
- a recommended methodology in which these agencies could cooperate to initiate such a program;
- specific techniques and programs which could be initiated at institutional farm project areas;
- a model IPM technician career structure and the skills required;
- recommendations for further research.

In preparing this report, it was assumed that the readers would be quite varied with respect to background on the subject matters involved. An effort was made, therefore, to present the materials uniformly, with enough information in each subject area (e.g., Federal agencies, integrated pest management, etc.) to make the report understandable to lay persons and discipline-specific professionals alike.

The information and recommendations contained in this volume were condensed from on-site interviews with over 40 Federal and other officials, as well as from telephone conversations, correspondence and extensive literature review. As opinions and ideas varied significantly, the fact of a recommendation's inclusion should not be construed to signify the endorsement of each and every particular person interviewed. Efforts were made, however, to incorporate each person's viewpoints, both positive and negative, and to condense the materials/opinions into the most generally acceptable and workable plan.



# ABSTRACT

## BACKGROUND

Memphis Prototype

During the months of March through September, 1977, a model project to implement IPM and eco-agriculture on the Shelby County Penal Farm was carried out under the auspices of the U.S. Environmental Protection Agency. This project grew from a youth/family gardening program sponsored by Youth Service in Memphis, Inc. on land donated by the Penal Farm, to encompass the entire Penal Farm agricultural operations.

EPA provided technical assistance and support in the form of two summer interns, and through securing the services of National Field Research Center. Initial efforts by the project staff for the youth gardening project included developing contacts, publicizing the program, and enlisting the support of individuals and agencies. Through these efforts, donations of equipment, supplies and services abounded. These included the use of three vehicles, water storage units, seeds and tools, a trailer truck for storage, media support, office space, and a homemaking van for instructional purposes. Throughout the project, young persons and their families received instruction in scientific ecological gardening techniques; received assistance in planting and caring for their crops; and were assisted in harvesting their produce.

Activities undertaken to upgrade the Penal Farm's agricultural operations and implement IPM/eco-agricultural techniques included:

- the application of compost to the land;
- the involvement of Memphis State University;
- the completion of a farm plan;
- the development of a lagoon upgrading plan;
- consultations with several eco-agricultural experts;
- the use of non-chemical controls;
- the conduct of a farm dealer demonstration school.

Selected Penal Farm residents were allowed to garden with their families in conjunction with the youth gardening project. Additionally, interested inmates attended films, slide demonstrations and discussions regarding IPM and eco-agriculture, and steps were taken to develop a curriculum in agriculture for these individuals.

Some of the more notable outcomes of this project were:

- numerous youths, families and inmates were provided the opportunity of learning to plant and care for gardens;
- families were able to partially offset spiraling grocery bills by growing their own produce;

- interest grew throughout the network with regard to scientific ecological farming;
- an increased interest was developed in support of an agricultural curriculum for residents of the Penal Farm; and
- the potential for integrated gardening/farming projects based upon IPM and eco-agricultural principles and techniques was demonstrated, providing a basis for future replication and expansion.

Current Project

The apparent successes of the Memphis project prompted EPA to provide for further study concerning the replication/expansion of the project on a national scale, and it again acquired the services of National Field Research Center. With the objective "to facilitate the ultimate acceptance of integrated pest management as a nationally accepted agricultural practice through a strategy analysis for future demonstration models in the institutional farm setting", the firm agreed to:

- develop a national procedural program leading to the utilization of institutional farms as IPM demonstration models;
- identify and define IPM techniques and procedures applicable in the institutional farm setting;
- identify individuals/offices within Federal agencies/ national organizations with activities and objectives paralleling the field of IPM, and to elicit their interest in the model institutional farm concept; and
- identify and categorize individual skill sets required in the successful application of IPM in the institutional farm setting.

The chief strategy has been interviewing Federal officials in agencies/ offices with activities and functions that relate to an institutional IPM/eco-agricultural program. However, the report provides limited background on the potential involvement of the private sector and academic community, and stresses the importance of their eventual role in a national program.

# INTRODUCTION

An institutional farming and gardening project such as was carried out in Memphis consists of a number of separate but interrelated components. In order that the reader have a background on these components, the Introduction to the report presents an overview of the major fields relating to the Memphis project and being recommended for future projects. Below, the major points of each component are capsulized, with the following major divisions: Agricultural Components and Corrections Components.

## Agricultural Components

### Integrated Pest Management

A strong and growing dependence on chemical pesticides in recent years has led to concerns about a number of pesticide-related problems, including: environmental contamination; resistances developed by some pests to commonly used pesticides; adverse health effects on humans and animals; outbreaks of secondary pests as a result of the complete elimination of other pests; and resurgences of original pests from eliminating natural predators.

These concerns have led to an increasing interest in and application of IPM strategies as alternatives to pest control problems. Although the definition of IPM varies, IPM systems incorporate considerations of all the tools and methodologies available; the effects on the food produced; the costs to the farmer and consumer; and the effects on the environment, animals and humans. IPM techniques being researched and implemented by Federal, State and local governments, academic institutions, growers, and private business and industry include: using crop varieties resistant to pests, releasing natural pest enemies, adjusting planting times and crop rotations, implementing cultural practices such as row spacing and flooding, and using pesticides when deemed necessary.

### Scientific Ecological Agriculture

In concept, scientific ecological agriculture is a cross between conventional agriculture and alternative forms with names such as organic, natural and biological agriculture. While these alternative forms have varying characteristics, they generally use little or no synthetic pesticides or fertilizers; emphasize feeding plants indirectly, through the soil; and attempt to restore proper soil conditions, often through adding humates or humus. Proponents of these systems claim that such techniques increase the health of the soil, which in turn provides a natural resistance to pests; and that less rainfall is required to maintain healthy crops.

Scientific ecological agriculture, then, borrows alternative techniques such as composting, and borrows from conventional agriculture when occasion calls, to carry out the most efficient, economical, productive, and scientific agricultural operation possible - while remaining as environmentally sound and energy-efficient as possible.

## Energy and Agriculture

It has been hotly debated whether or not agriculture is the largest energy consumer in the United States. Its direct energy consumption takes place chiefly through the operation of tractors and other farm equipment, and through irrigation, crop drying and other agricultural processes. An indirect energy use by agriculture comes through the use of petroleum-based pesticides and fertilizers.

U.S. scientists are researching and testing alternate energy sources for agricultural production, as well as conservation strategies. Some alternate forms being tested include: solar energy for crop drying, irrigation and the heating of farm structures; wind energy for pumping water and generating electric power; crop residues and manures (biomass) for conversion to usable energy forms; and heat recovery from air exhausted from animal shelters and crop dryers. Recommended energy conservation measures include equipment changes and adjustments, new management practices, reducing over-drying, and combined field operations.

## Gardening

Community gardening is on the uprise in the U.S., as surveys show that a great many Americans want to grow crops but lack the land and know-how required. In addition to providing food for families, community gardens provide such useful functions as a constructive recreational outlet, an aid to heightened awareness of nature and environmental processes, and a facilitator of the "sense of community". Gardening is an educational process, and some assert that it fosters individualism, self-reliance, and creativity. Most community gardening projects are sponsored by local groups; however, State and Federal agencies are also supporting such programs.

A number of universities, correctional institutions, hospitals, nursing homes, and mental institutions are recognizing the therapeutic value of gardening, and are initiating "hortitherapy" programs. Hortitherapy has been defined as the use of horticultural appeal and methods for improvement of physical well-being. Types of individuals served have included the visually, mentally, and physically disabled; substance abusers; the elderly; and adult and juvenile offenders.

# Corrections Components

## The Offender

An estimated 500,000 individuals are currently confined to Federal, State and local institutions and jails. While the offender population is far from a homogeneous group, the typical offender is likely to be a young, under-educated male from a minority background. The economic history of most offenders is one of long periods of unemployment, low wages, low status, and welfare; however, as a whole the offender population is as intelligent as the "outside" population. Although 95 percent of those incarcerated are men, the number of arrests of women is rapidly increasing, and the types of offenses committed by women is expanding.

Studies have shown that society places a stigma upon the offender and ex-offender, often taking the form of refusal for employment, and through restrictive licensing laws. This problem is compounded by the fact that many ex-offenders do not have sufficient job skills.

## The Correctional System

The correctional system in actuality includes four major components: police, prosecution and defense, courts, and corrections. The latter consists of a complex network of correctional institutions, half-way houses, and other facilities throughout the country, including: the Federal prisons of minimum, medium and maximum security, and community treatment centers; similar institutions for State adult offenders; youth custody and/or treatment facilities; and local detention and correctional facilities.

The goals of correctional institutions today are varied, ranging from punishment to rehabilitation. Reform attempts today are marked by infusions of funds for models, studies, panels, research and other efforts. Recent and on-going efforts include pre-trial intervention; job training, counseling and placement; token economy implementation; the development of prison industries; and post-prison adjustment assistance. It is not yet clear what effects, if any, these programs have on prisoner reform.

## Institutional Vocational Skills Training

Surveys of vocational training in correctional institutions indicate that between 10 and 20 percent of all inmates are enrolled in such programs, the most common being: automotive mechanics, arc and acetylene welding, machine shop, masonry, radio and TV repair, auto body repair, carpentry, barbering, baking and cooking, architectural and mechanical drafting, air conditioning and refrigeration, and small engine repair. About one-half of all inmates are apparently unable to participate in vocational training for reasons such as lack of aptitude or interest, and inability to meet minimum requirements. Many institutions also offer prison industries.

The relationship between acquiring occupational skills and recidivism is not clear, but evidence suggests that training coupled with full support services reduces a person's likelihood of returning to crime. Among the recommendations being advanced for vocational training in prison are: provide a greater diversity of offerings; expand community contacts; improve guidance and placement services; institute apprenticeship programs; cooperate with the military; use CETA and other funds; and expand upon the Free Venture model.

## Institutional Farming

Literature is scarce on correctional institutional farming operations, but it appears that most farms have declined in quality and quantity (output) over the last thirty years. Reasons include: a shift in attitudes regarding hard labor for inmates; lack of funds; and the economic feasibility of buying rather than producing the institution's food. Today, while some inmates work in agricultural operations, few are provided formal agricultural training.

It appears that interest is reviving towards re-developing the potential of penal institutional lands. Reasons include the spiraling costs of purchasing food, and pressure from without to reduce these costs. A good many of these institutions have an abundance of land to work with, as indicated by a survey conducted by the American Correctional Association in cooperation with the Environmental Protection Agency. This survey is published as Appendix B of the full report.

## SKILLS FOR THE IPM PRACTITIONER

Only recently have curricula in IPM become available. Today, many colleges and universities throughout the country are offering bachelor and graduate level educational programs in pest management, producing professionals with the capabilities of providing expert consultative services and and performing research in the field. However, comprehensive training programs at the two-year level and below in IPM are not so common, as indicated by a 1977-78 survey by National Field Research Center.

Two sources have been identified for IPM curricula, at the associate degree level and below. These are abstracted in the following two sections.

Integrated Pest Management Curriculum Report

In 1973, Kirkwood Community College of Cedar Rapids, Iowa and the Associated Research Corporation of Miami, Florida developed a report entitled Integrated Pest Management - A Curriculum Report. It consists of materials developed at and in conjunction with a conference in Berkeley, California, and presents outlined courses of study up to the doctoral level, as well as IPM jobs at each level and the competencies required. Below are the jobs outlined for the two-year level and below. The full institutional farming report details the specific skills required for each job.

High School Level:

Applicator Jobs
People-Oriented Jobs
Technician Jobs

MDTA Skills Center Level (for direct occupational entry):

Applicator
Applicator Assistant
Field Sweeper or Scout
Equipment Operator
Laboratory Assistant
Insectary Technician Assistant
Field Equipment Technician
Inspector Trainee

Community College and Technical Institution Level:

IPM - Laboratory Services

Laboratory Technician: Biological
Laboratory Technician: Chemical
Insectary Technician
Environmental Monitoring Technician
Field Sweeper/Scout

IPM - Application Services

IPM Foreman
Field Equipment Technician
Aerial Applicator
Structural Applicator

IPM - Supplies and Services

Retailer
Salesperson
Technical Salesperson

A Source Book on Integrated Pest Management

In 1977, Mary Louise Flint and Robert van den Bosch of the International Center for Integrated and Biological Control of the University of California, developed and released A Source Book on Integrated Pest Management. It contains curriculum content in environmental education in the context of IPM, and can be used as a base to design and develop curriculum and relevant instructional/learning resources in instructional leadership education such as teacher education, and in the education of children and youth, and in adult/continuing education. Accompanying materials present competence domains relevant to the Source Book for education and teacher education in IPM.

Discussion

IPM-related education/training and career ladders are as yet largely unstructured, especially at lower levels. The above two sources will be useful to those attempting to implementing IPM training programs and career systems. Some suggestions for such implementation in the institutional setting include:

- structure programs around job market needs and institutional variables;
- structure flexibility into the training programs;
- make use of available supportive individuals, institutions, and teaching aids;
- incorporate on-the-job training and field experience;
- provide supportive services such as job counseling and placement; and
- provide for follow-up training.

## POTENTIAL PROJECT PARTICIPANTS

This chapter in the full report presents descriptions, based upon interviews and research, of agencies and institutions which have activities and functions that relate, or potentially relate to an institutional IPM/ eco-agricultural program. As such, they have potential involvement in a national program. The first area, Federal Agencies and their State/Local Counterparts, describes appropriate Federal agencies by their general functions and activities; reviews specific sections and/or programs of these Federal agencies with potential linkages; and reviews State and local public agencies whose functions are at least partially tied to the Federal agencies described.

The second and third sections, Academic Institutions and Private Sector, provide very brief descriptions of the potential involvements of these sectors, as the scope of the project neither permitted nor stipulated the extensive work necessary to provide thorough coverage. Any extensive work towards implementing a large scale institutional farming program must give due consideration to the academic community and the private sector.

Below are outlined the agencies/institutions receiving coverage in the full report.

Federal Agencies and their State/local Counterparts

LEGISLATIVE BRANCH

U.S. Congress Office of Technology Assessment

EXECUTIVE BRANCH

Executive Office of the President, Council on Environmental Quality

Departments:

Department of Agriculture:
- Conservation, Research and Education
  - Science and Education Administration
    - Cooperative State Research Service
    - Extension Service
    - Federal Research
    - Teaching
  - Soil Conservation
- Economic Statistics and Cooperative Service
- Rural Development

Department of Energy:
- Conservation and Solar Applications
  - Division of Industrial Energy Conservation
  - Solar Technology Transfer Branch
- Intergovernmental and Institutional Relations

Department of Health, Education and Welfare:
- Office of Education
  - Bureau of Elementary and Secondary Education
    - Office of Environmental Education
  - Bureau of Occupational and Adult Education

Department of Justice:
- Bureau of Prisons
- Law Enforcement Assistance Administration

Agencies:

Community Services Administration

Environmental Protection Agency

Academic Institutions

Land-Grant Institutions

Other Four-Year Advanced Degree Institutions

Two-Year Institutions

Private Sector

National/State/Local Organizations

Business and Industry

## POTENTIAL PROJECT COMPONENTS

This chapter in the full report summarizes the activities and projects recommended by interviewed officials, those identified through literature review, and/or those successfully implemented during the Memphis project. Specific components actually initiated at a particular project area would depend upon several factors including crops grown, pest problems, soil types, weather and climatic conditions, acreage, the size and population of the institution, the priorities of the participants, and the resources available. Potential project components are briefly summarized below, by major category.

### IPM/Eco-Agriculture

Specific strategies would vary with the situation. It is suggested that an initial project should be to work with the Soil Conservation Service for an area conservation plan. Establishing cooperative relationships with Federal, State and local agencies, academic institutions, and the private sector would also be crucial to successfully implementing IPM/eco-agriculture. Working with researchers would facilitate "technology transfer" of the latest techniques. In a more commercial vein, agricultural operations could be linked with, in some way, existing prison industries programs.

### Gardening/Horticulture

Suggested participants include youths and their families, elderly persons, inmates and their families, and mentally and physically handicapped persons. Suggested activities include training participants in gardening techniques along with classes in related areas; soliciting support from local volunteers, high school and college students; and establishing liaisons with local food fairs. It may be feasible to assist in establishing additional gardening sites in nearby cities and/or build greenhouses or propagation chambers. A related possible activity would involve the maintenance of lawns in an energy-efficient manner.

### Energy Conversion/Conservation

Possible energy conservation measures could include proper insulation, adjustments of equipment, combining field operations, when possible, and reducing tillage when appropriate. On-farm energy production possibilities include the use of biomass for heating buildings and drying crops; the use of solar apparati for heating buildings and water; the construction of wind turbines for electricity and pumping water; and the construction of small hydropower projects. Again, it is stressed that project participants draw upon all of the expertise that is available.

Corrections

In addition to providing training to offenders in eco-agricultural and IPM skills, as outlined in a previous chapter, it has been suggested that involved institutions could tie-in with the solar installer training program for correctional institutions, provided by the Department of Energy. Additionally, some have suggested that research and demonstration projects concerning the offender could be conducted by private or public research bodies in conjunction with an IPM/eco-agricultural program.

Outreach/Promotion

A very important factor for a successful program is obtaining the support and cooperation of the community-at-large, as well as special interest groups, local government, and private organizations. Suggestions for such efforts include:

- speaking before local civic organizations, youth groups, schools and other organizations;
- paying personal visits to key public officials as well as to local farmers and business and industry representatives;
- contacting and preparing news releases for newspapers and TV stations; and
- inviting guest speakers on appropriate topics, and opening the talks to the public.

## ADDITIONAL CONSIDERATIONS

The great majority of those interviewed during the course of this study expressed much enthusiasm regarding the merits of an institutional IPM/eco-agricultural project. Many felt that a unique and exceptional aspect is that such a project has the potential of providing benefits to a number of disciplines. Several of the interviewed officials, however, pointed out potential obstacles to the successful implementation of an institutional program and/or suggested areas for further research or study before actual project, which were not within the scope of this project. These potential obstacles and areas for further research are listed below. Discussions of these can be found in the full report.

Potential Obstacles

1. Placement of Trainees:
   A. The job market for IPM and other agricultural skills may not be good enough to justify the development of training programs in these areas.
   B. Many IPM/eco-agricultural jobs are seasonal in nature.
   C. Farmers may not be willing to hire former inmates.

2. Economic Feasibility:
   A. It may be more economical for institutions to buy their food, while leasing their land to local farmers, as raising their own food may cause extra expenses for additional guards, more equipment, etc.
   B. Implementing IPM and eco-agricultural techniques may prove less cost-efficient than conventional methods.
   C. Many institutional farms may be located on poor land for agricultural purposes, and may be located far from any population centers.

3. Sale of Produce:
   A. Local farmers may resent competition from a public institution.
   B. Many States have laws forbidding prison industries which compete with private enterprise.

4. IPM policy within and among Federal agencies, as well as with other public and private groups, is only in its formative stages.

Areas for Further Research

In response to Potential Obstacles:

1. A national survey on employment opportunities in IPM and related areas.

2. A national survey on attitudes of potential employers towards the hiring of ex-offenders.

3. A national survey on correctional institutions, on such factors as land characteristics, crops and pests, management practices, philosophies, etc.

4. An analysis of probable economic effects on institutions of an IPM/eco-agricultural program.

5. A survey of all State and Federal laws and policies relating to institutional farming, sale of produce, inmate wages, and other relevant factors.

6. A survey of unions and farmers on their attitudes towards the sale of produce by institutional farms.

7. A survey and analysis of Federal legislation relevant to IPM/eco-agriculture - especially as these laws impact the roles of Federal agencies.

Other suggested further research:

1. A survey on other institutional land, e.g., Department of Defense, hospitals, geriatric facilities, that could be used for gardening/farming programs.

2. A comprehensive survey of all curriculum materials developed either by institutions or under grants/contracts in support of both IPM and eco-agricultural techniques.

3. Convene a working conference of identified authorities in the IPM and eco-agricultural fields to identify gaps in existing curricular offerings and develop plans for filling such gaps.

4. A more detailed analysis of potential private sector and academic community participants.

# PLAN OF ACTION

One of the objectives of this study was to develop a procedural program leading to the utilization of institutional farms as IPM demonstration models. With the completion of this study, sufficient interest has been identified in the various agencies to warrant the development of a coordinated program for implementing an institutional program on a large scale. In the process of conducting the interviews, ideas were solicited as to the manner in which such a large scale program could be implemented. Below are briefly outlined the suggestions consistently received and recorded.

## Conduct an Institutional Study

An integral part of any future work must be the provision of more detailed information on the institutions to be involved, with all institutions informed of the possibilities. Institutions should be categorized on such factors as acreage under cultivation, climatic conditions, type of institution, availability of educational support systems, and others. The result should be a rank ordered listing of potential project participants.

## Establish an Interagency Advisory Group

To bring a national program to reality, it will be necessary to "officially" involve interested agencies, and establish a responsible body in charge. The formation of a core interagency advisory group should be backed by formal interagency agreements, while other agencies and groups not in the core could establish their roles with letters of intent. At the outset, the configuration on the following page could depict the advisory group.

## Involve the Private Sector and Academic Community

It should become a major responsibility of the advisory group to provide for the involvement of these extremely important support groups.

## Develop a Long Range Budget

It should be an initial responsibility of the advisory group to develop basic financial projections for at least a five-year period. A primary goal will be to lead the involved institutions in the direction of economic self-sufficiency - which will not happen in one or two years.

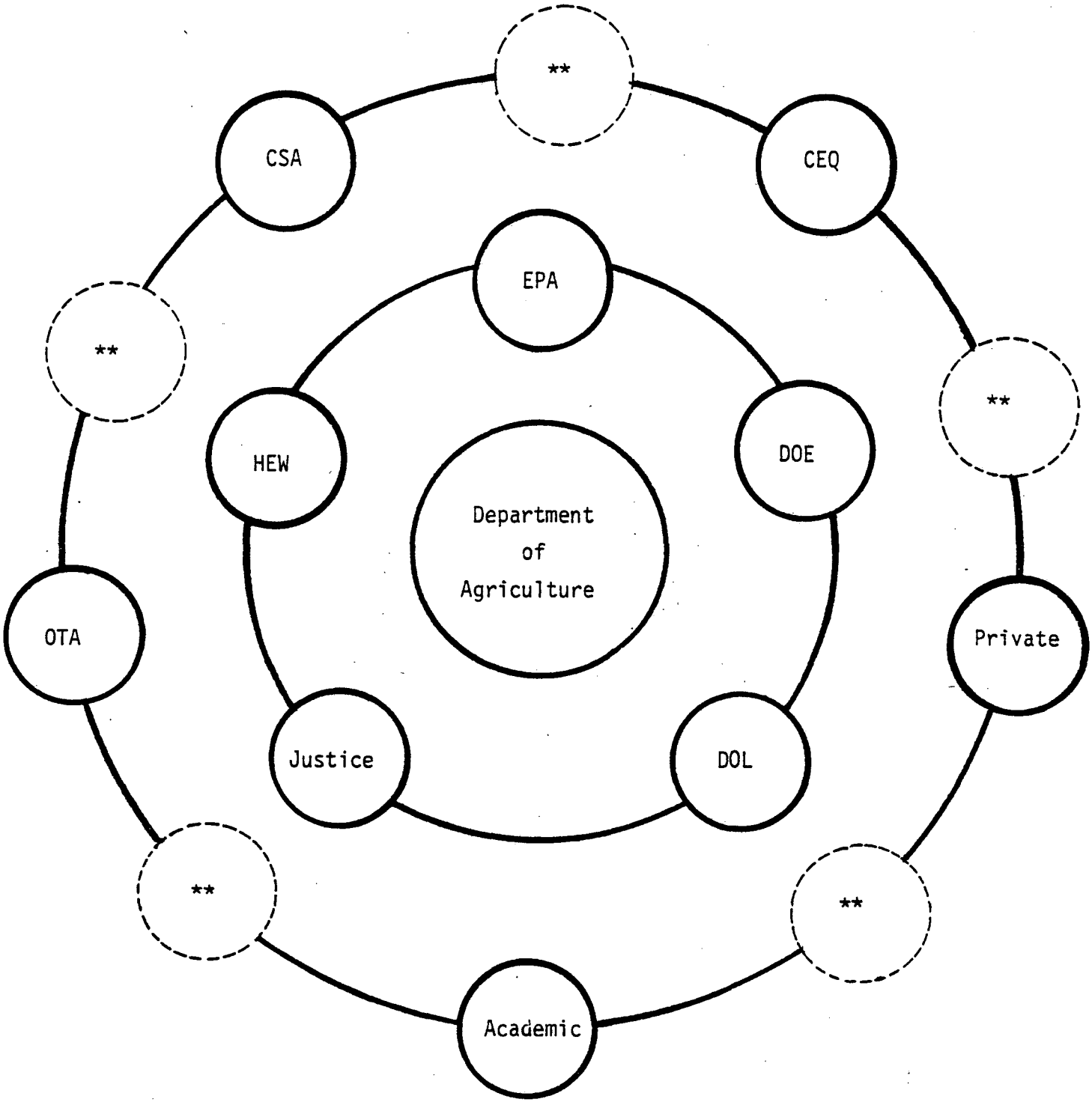
## Establish Realistic Timelines

It should be an initial responsibility of the advisory group to draw up guidelines for participation, making plans for program expansion over a number of years - phasing new institutions into the program and, where appropriate, phasing older programs out. It is suggested that the initial planning stages will consume from twelve to fifteen months.

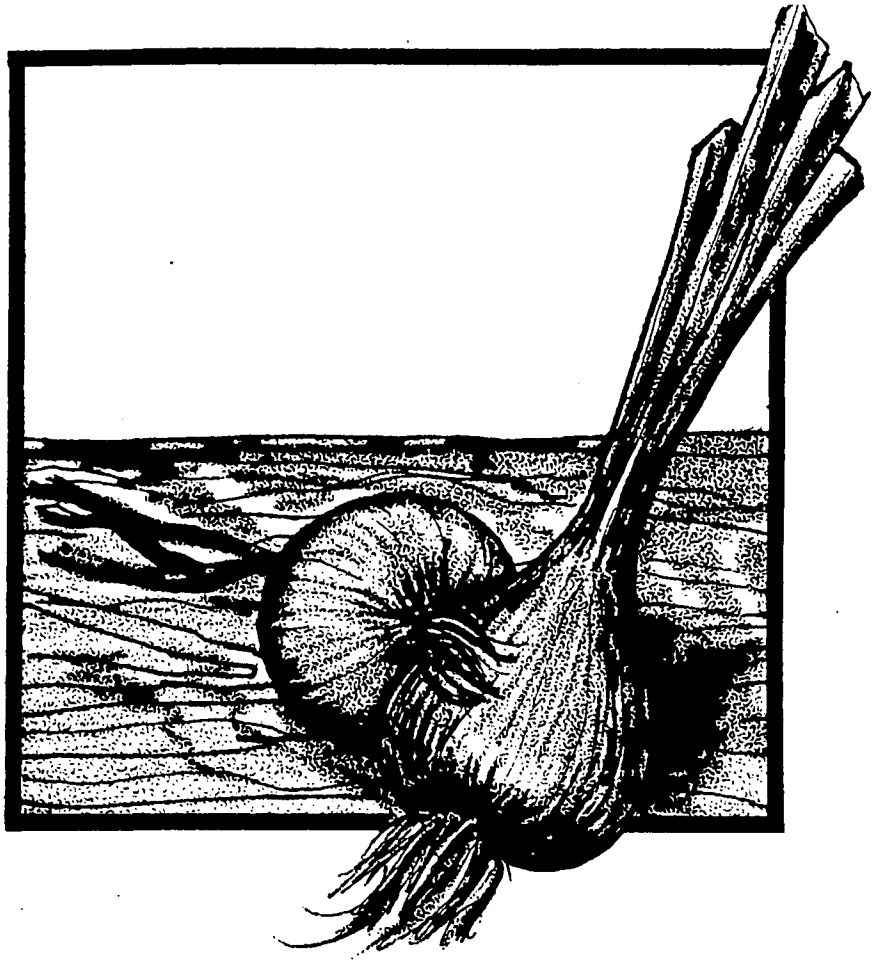
## Provide Technical Assistance and Support Personnel

Technical assistance and support personnel are necessary ingredients to program success in the preliminary and implementation phases. Initially, assistance should be secured from contract personnel to carry out the formative tasks. As the program progresses, assistance will be needed to carry out the mandates of the advisory group, to monitor institutional operations, to assist in securing other appropriate expertise, and for other tasks necessary to successfully implement viable programs.

PROPOSED INTERAGENCY ADVISORY GROUP CONFIGURATION




** Other interested agencies as evidenced by letter of intent.



# BACKGROUND

# BACKGROUND

## Memphis Prototype

Early in 1977, Youth Service in Memphis of Memphis, Tennessee, began seeking gardening opportunities for Shelby County youth. The Shelby County Penal Farm, in northeast Memphis, which had previously provided gardening land to the area's older citizens, agreed to donate ten acres of Penal Farm land to the youth gardening project. From the outset, the chief goal was to instruct local youths and their families in gardening while avoiding the use of chemical pesticides and fertilizers, when possible.

With this in mind, assistance was sought from the U.S. Environmental Protection Agency. Technical assistance and support were provided in the form of two summer interns with agricultural backgrounds, and through the services of National Field Research Center.

Initial efforts in support of the youth gardening project included developing contacts, publicizing the project, and enlisting the support of individuals and organizations. Donations of services, equipment and supplies abounded, which included: three vehicles, water storage units, seeds and tools, a trailer truck for storage, media support, office space, and a homemaking van for instructional purposes.

Throughout the term of the project, young persons and their families received instruction in scientific ecological gardening techniques; received assistance in planting and caring for their crops; and were assisted in harvesting their produce. Crops planted included corn, watermelon, beans, turnips, zucchini squash, squash, okra, pumpkins, radishes, spinach, cucumbers, lettuce, cantaloupe, carrots, collards, beets, peas and mustard.

As the project developed, it became clear that many of the activities undertaken in the youth gardens had equal applicability with prison farms in general, and for inmates in particular. One of the first steps taken in this regard was to provide selected Penal Farm residents with garden plots to grow produce alongside their families, for use by the families. Additionally, with the assistance and support of the Penal Farm administration, project participants expanded their activities towards the implementation of scientific ecological agriculture (or eco-agriculture) throughout the Penal Farm, and towards the upgrading of the Penal Farm agricultural operations in general.

The Penal Farm, which contains over 1,200 acres of pasture, hay, row crops, gardens and orchards, processes and consumes its produce but still must purchase a great portion of its food; in the past it had produced nearly all of the food required within the institution. Among the activities undertaken in developing the farm's potential were:

- the application of compost to the land;
- the involvement of Memphis State University;
- the completion of a farm plan;
- the development of a lagoon upgrading plan;
- consultations with several eco-agricultural experts;
- the use of non-chemical pest controls; and
- the conduct of a farm dealer demonstration school.

Residents of the institution became further involved with the project by attending films, slide demonstrations, and discussions regarding scientific ecological farming and integrated pest management (IPM). Steps were also taken, in cooperation with the State Technical Institute at Memphis, towards the development of a curriculum for interested inmates in agriculture, stressing IPM and eco-agricultural techniques.

Many positive results occurred as a consequence of these gardening and farming operations. Some of the more notable outcomes were:

- numerous youths, families and inmates were provided the opportunity of learning to plant and care for gardens;

- families were able to partially offset spiraling grocery bills by growing their own produce;

- interest grew throughout the network with regard to scientific ecological farming;

- an increased interest was developed in support of an agricultural curriculum for residents of the Penal Farm; and

- the potential for integrated gardening/farming projects based upon IPM and eco-agricultural principles and techniques was demonstrated, providing a basis for future replication and expansion.

The activities and outcomes of this project are described in greater detail in the resultant report entitled Youth and Inmates: A Model Summer Project Involving Scientific Ecological Farming Techniques in Memphis, Tennessee, available from National Field Research Center, Iowa City, Iowa.

## Current Project

The positive outcomes of the Memphis project prompted the Environmental Protection Agency to provide for further study concerning the replication/expansion of the project on a national scale. To do so, it again acquired the services of National Field Research Center (NFRC).

"To facilitate the ultimate acceptance of integrated pest management as a nationally accepted agricultural practice through a strategy analysis for future demonstration models in the institutional farm setting" is the stated objective of the current project. Specifically, NFRC agreed to:

- develop a national procedural program leading to the utilization of institutional farms as IPM demonstration models;

- identify and define IPM techniques and procedures applicable in the institutional farm setting;

- identify individuals/offices within Federal agencies/ national organizations with activities and objectives paralleling the field of IPM, and to elicit their interest in the model institutional farm concept; and

- identify and categorize individual skill sets required in the successful application of IPM in the institutional farm setting.

The chief strategy in carrying out this study has been interviewing Federal officials in those agencies/offices with activities and functions that relate to, or potentially relate to an institutional IPM/eco-agricultural program. It became obvious early in this four-month project that energies should be focused towards the Federal level for several reasons, including:

- an unexpected abundance of individuals in numerous agencies were strongly recommended by initial Federal contacts as being potential strong assets to an eventual national program, and as sources of expert recommendation for the program's design;

- the Federal government, more than any other body, has the resources and expertise available to instigate the development of such a program; and

- without the enthusiasm, attitudinal support and cooperation by and among Federal agencies, other governmental and private groups would be less likely to contribute their efforts towards an institutional program.

While the cooperation of other groups (e.g., state and local governmental groups, associations, business and industry, and the academic community) will be crucial to the success of any institutional project, their role would best come into play after the "prime movers" have

formed cooperative relationships among themselves, and detailed their specific roles and strategies.

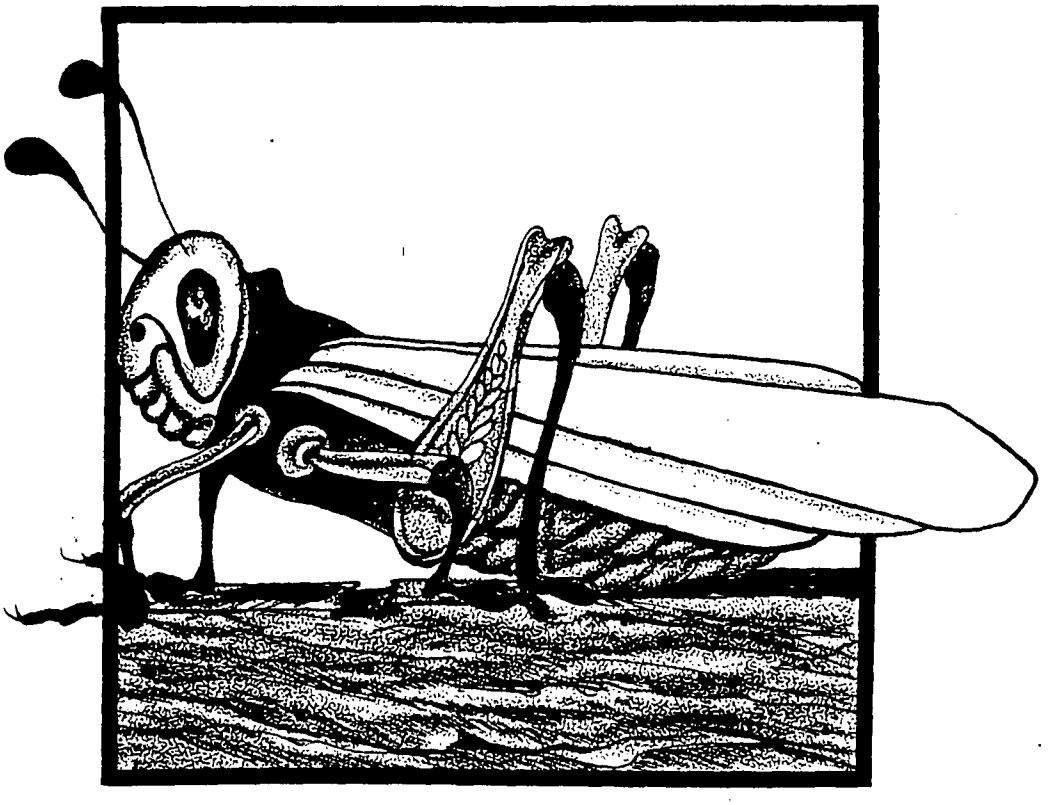
Interviewed officials (listed in Appendix A), after being provided with background on the Memphis and current project, were asked to provide feedback to the following types of questions (varying somewhat with the person and his/her agency and role):

- What is your/your agency's current role (especially as it relates to this project)?
- What IPM/eco-agricultural or other activities do you feel would be appropriate to carry out in the institutional setting?
- What type of training would be needed to teach the required skills?
- What do you feel would be the appropriate strategy in implementing a national program of this nature (e.g., organizational structure, selection of sites, monitoring, evaluation)?
- How would you/your agency be willing to participate in this project?
- What restrictions/constraints do you see towards the development of a national program, and what could be done to overcome them?
- What other agencies/persons do you know who are involved or have potential involvement in activities related to this project?

It is apparent from the above list that the intent of this project and the interview process was not to solicit funds. Rather, the goal was to raise interest in the project and its future possibilities/potentials, and to garner expert advice and feedback to support the development of a viable strategy for demonstration of IPM in the institutional farm setting.

This report, then, presents the outcome of the interview process. While based chiefly upon Federal input, it also represents an extensive

literature review, as depicted in the Bibliography. A limited mail survey was also carried out to key recommended individuals throughout the country, to inform them of the project and provide them the opportunity to provide input if they so chose.



# INTRODUCTION

# INTRODUCTION

An institutional farming and gardening project such as was carried out in Memphis during the summer of 1977 consists of a number of separate but interrelated components. Before embarking upon such a project, it is important to have a background on these components. This Introduction, therefore, presents a brief overview of the fields relating to the Memphis project and being recommended for future projects.* How these components could/should be implemented will be discussed in later chapters.

The Introduction is subdivided in the following manner:

Agricultural Components:
- Integrated Pest Management
- Scientific Ecological Agriculture
- Energy and Agriculture
- Gardening

Corrections Components:
- The Offender
- The Correctional System
- Institutional Vocational Skills Training
- Institutional Farming

Footnotes

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*Readers desiring further information on these subjects should consult the references cited at the end of the Introduction, and the Bibliography.

## AGRICULTURAL COMPONENTS

### Integrated Pest Management

Definitions of integrated pest management (IPM) are nearly as varied as the IPM techniques being researched and implemented. Some of these definitions, offered recently by officials in the field include:

> "All means of managing pests - chemical, cultural practices, resistant varieties, predators and parasites - in a program to attempt to provide farmers with a practice that minimizes the expense of all pest management. It should be a systematic approach and, ideally, a wide approach". - *Dr. Rupert Cutler, Assistant Secretary for Conservation, Research and Education, U.S. Department of Agriculture.* [1]

> "Sound management of pests in agriculture using all tools available including chemicals to produce optimum amounts of safe wholesome food at the lowest possible cost to the public". *Dr. William L. Hollis, Science Coordinator, National Agricultural Chemicals Association.* [2]

> "A pest population management system that utilizes all suitable techniques (and information) to reduce or so manipulate pest populations that they are maintained at tolerable levels, while protecting against hazards to humans, domestic animals and the environment. It strives for maximum use of naturally occurring mortality elements of the pest's environment, including weather factors, pest diseases, predators and parasites. If artificial controls such as chemical pesticides are used, only those that augment the natural controls are imposed . . .the ultimate goal is not maximum destruction of pest populations but maximization of benefits and the concurrent maintenance of environmental integrity". - *Dr. Warren R. Muir, Deputy Assistant Administrator for Testing and Evaluation, Office of Toxic Substances, U.S. Environmental Protection Agency (formerly of the Council on Environmental Quality).* [3]

While these definitions vary in several respects, most IPM researchers and practitioners consider IPM systems to incorporate the following:

- a consideration of all the tools and methodologies available;

- a consideration of the quality, quantity, and safety of the food produced;

- a consideration of the costs to the farmer and the consumer; and

- a consideration of the effects on the environment, animals and humans.

In actuality, some IPM techniques are not new. Such practices as releasing beneficial insects, adjusting crop planting times, burning, and using available pesticides for pest control have been documented in ancient Chinese, Sumerian, Greek and Roman cultures - dating as far back as 2500 B.C.[4] Flint and van den Bosch, in A Source Book on Integrated Pest Management, recount the history of pest control from that time to the present day. Although the science and technology progressed almost continually throughout the years, it was not until after World War II that the war on crop pests appeared to be virtually won - with the development of DDT and other synthetic organic pesticides.[5] Usage of such pesticides to control insects, weeds, nematodes, diseases and other pests has continually increased since that time, and according to the U.S. Department of Agriculture, farm usage of pesticides increased by approximately 40 percent between 1966 and 1971, while total U.S. use increased by 22 percent.[6] Between 1971 and 1975, pesticide use in the U.S. further increased by 46.5 percent, and in 1973 alone 1.36 billion pounds of pesticides were manufactured in the United States.[7]

The availability of such pesticides has significantly contributed to increased agricultural production yields. However, an almost total dependence on synthetic pesticides, as has occurred in recent years, has resulted in a number of problems, including:

- environmental contamination;

- resistances developed by some pests to commonly used pesticides;

- adverse health effects on humans and animals;
- outbreaks of secondary pests as a result of the complete elimination of other pests; and
- resurgence of original pest populations from elimination of natural predators.

These factors, coupled with the increased costs of developing, producing and applying pesticides, and stringent Federal controls (through the Federal Insecticide, Fungicide and Rodenticide Act) over pesticide use and application has led to an increasing acceptance of IPM as an alternative to pest control problems.

IPM today is the focus of an abundance of basic and applied research by the Federal government, State governments, universities throughout the country, and the private sector. Educational programs in IPM at the bachelor and graduate level are producing experts in pest management to assist growers in determining economic thresholds for control measures, and to recommend the pest control measures to be applied, when required, based upon technologies proven viable by the researchers.

IPM techniques being researched and utilized today include:

- pesticides, including insecticides, fungicides, herbicides, mulluscicides, nematicides, rodenticides, and acaricides;
- crop varieties resistant to pests;
- natural pest enemies;
- pheromone (sex lure) traps to lure and destroy male insects;
- preventative measures such as soil fumigation for nematodes, and assurance of good soil fertility;
- avoidance of peak pest populations by changing planting times or pest-controlling crop rotation;
- improving pesticide-application technology; and

- other cultural practices such as flooding, row spacing, and plot spacing to reduce pest populations. [8]

Researchers continue to study, both biologically and economically, possible IPM strategies, and numerous projects have demonstrated positive results. Some examples are:

- intensified use of pest management through the aid of advisors or consultants in the San Joaquin Valley in California reduced cotton insecticide costs $7.00 per acre and resulted in a net savings of $4.50 per acre;

- a related study in Texas brought about a $6.00 per acre reduction in pesticide costs;

- implementation of pest management systems for control of the alfalfa weevil resulted in a 20 percent to 100 percent reduction in pesticides in twelve states - with annual savings estimated at $7 million; and

- a pest management program in Maryland for controlling the Mexican bean beetle has saved farmers an estimated $1 million to $3 million per year. [9]

Through governmental and other efforts, farmers throughout the country are increasingly learning of IPM strategies (many of these efforts are outlined in later chapters). The field of IPM, however, could still be considered in its infancy. Most of the research and demonstration projects to date have been of the one crop/one pest variety, and only recently have projects emerged that cover multiple pests on multiple cropping systems - as a farmer faces. Additionally, most studies have been on a field-by-field basis, rather than areawide which could be more feasible in many cases. And, for crop producers to fully accept IPM practices, the economic feasibility must be demonstrated under real-world conditions, an area that has tended to lag behind the biological research and demonstration efforts.

## Scientific Ecological Agriculture

While there is an abundance of definitions for integrated pest management, "scientific ecological agriculture" (or eco-agriculture) is suffering from a lack of specific definiton. In concept, it is a cross between conventional agriculture and alternative forms that have names such as organic, bio-dynamic, natural and biological agriculture. These alternative systems largely have their roots in Europe, and while differing from each other in a number of respects, generally have the following characteristics:

- little or no use is made of synthetic pesticides and fertilizers, or of other artificial chemicals such as hormones and antibiotics;
- emphasis is placed on feeding plants indirectly through the soil with compost and other natural materials such as seaweed, and the microbes in turn feed the plants;
- the system is seen as holistic, rather than analytical, where land, farmer and consumer are viewed as a whole system, and the farmer is seen as less exploitative of the soil; and
- emphasis is placed on restoring proper soil conditions often through building humus or adding humates, rather than depleting the soil.

Some benefits of these systems are greatly reduced health and environmental risks and a savings in money for the farmer - from the extreme cutbacks on the use of synthetic pesticides and other chemicals. Proponents of these systems claim that their techniques increase the health of the soil, which in turn provides a natural resistance to pests; and that less rainfall is required to maintain healthy crops.

Scientific ecological agriculture, then, borrows alternative agricultural techniques, such as composting and applying animal manure and other materials, and maintaining the soil without toxic chemicals. It also

borrows from conventional agriculture when occasion calls, to carry out the most efficient, economical, productive and scientific agricultural operation possible - while remaining as environmentally sound and energy efficient as possible. Under this scheme, integrated pest management is one component of an eco-agricultural operation. As with IPM, an eco-acricultural scheme would be considered dynamic - changing and improving as a result of research and application.

Virtually no research has been carried out regarding scientific ecological agriculture as a whole. Some separate components, or possible components have been researched, however, such as a multitude of IPM strategies, the application of certain farm compost materials and sewage sludge, the production of methane from manures, and the effects of mulches. A true scientific eco-agricultural practitioner would consider the results and implications of such research in his/her practices.

Several researchers have been studying the economics of organic farming. Robert C. Oelhaf researched for his doctoral dissertation the economics of both conventional and organic agriculture and reached the following conclusions:

> The main reasons that organic farming is rare have to do with market failures, not inherent production costs. These market failures are large and may be having a large impact on human health and future well-being as well as on industrial organization. At any rate, some risk has been introduced into the food system, especially through the widespread use of agricultural chemicals, although organic yields per acre are far higher than those in earlier eras and the price differences between organic food and conventional food are far smaller than at retail, still it does cost more to produce organic food. The market failure and the potential social benefits from more widespread adoption of organic methods argue for a federal role of promoting research into, and adoption of, organic farming.[10]

Oelhaf and Wysong, in another publication, have concluded that organic farming uses less energy than conventional agriculture and generates lower physical food output per person-hour. Although it does require more labor, resource constraints should not be a hindrance to the widespread adoption of organic farming, they conclude, as unemployment continues to rise in this country, and there are plentiful supplies of seaweed and soil amendments.[11]

Lockeretz, et al. of Washington University's Center for the Biology of Natural Systems have reached similar conclusions as a result of comparing the economic performance of fourteen organic farms and fourteen conventional farms, all mixed crop-livestock, in the Midwest in 1974 and 1975. Among their findings were:

- the organic group had an overall production level an average of 10 percent below that of the conventional group in terms of market value of output per acre of cropland;
- the operating costs of organic farms was lower, so that returns to crop production were equal for the two groups;
- the conventional group was 2.3 times more energy-intensive, primarily because of the energy needed to produce conventional fertilizers;
- the organic group required 12 percent more labor per unit of market value of the crops produced; and
- while the input and removal of phosphorus and potassium were in balance in the conventionally managed cropland, the organic farmers were drawing somewhat on pre-existing resevoirs of these nutrients.[12]

Later, this group reported that the organic farms had reduced soil loss and increased soil organic matter as compared to the conventional farms.[13] While these results cannot be directly related to scientific ecological agriculture, or to crop systems outside the Midwest, they do have implications for the development of an eco-agricultural operation. Lockeretz and his associates have acknowledged in their discussion of findings that a

system lying between conventional and organic agriculture may have the most overall viability, and achieve the best balance between environmental, energy, economic, and production concerns.

## Energy and Agriculture

It has been hotly debated whether or not agriculture is the largest energy consumer in the United States. While the U.S. food system (including food transportation, processing and packaging) accounts for about 17 percent of the nation's total energy consumption, direct on-farm agricultural production amounts to about 2.5 percent.[14] This translates into about 258 million barrels of oil each year.[15] These fuels are chiefly consumed on the farm through the operation of tractors and other farm equipment, as well as through irrigation, crop drying, and other purposes connected with agricultural production.

An additional indirect energy use by agriculture comes through the use of petroleum-based commercial pesticides and fertilizers. In 1974, direct agricultural production consumed about 1.27 quads *, while the production of fertilizers and pesticides accounted for an additional 0.62 quads.[16]

While these two agricultural components represent only a small portion of U.S. energy consumption, their importance cannot be underestimated. Oil and gas reserves will eventually be depleted, and the need for food production, which supplies a very basic human need, will undoubtedly increase to feed U.S. citizens and for exports to the world's ever-increasing population. For this reason, U.S. scientists are researching and testing alternate energy sources for agricultural production. The most notable of these are:

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* A quad is the amount of energy equivalent to that contained in 172 million barrels of oil.

- solar energy for crop drying, irrigation, and heating of farm structures (such as chicken houses, pig farrowing and brooding facilities, milking parlors, and greenhouses);

- wind energy for pumping water and generating electric power;

- crop residues and manures (biomass) for conversion to usable energy forms;* and

- heat recovery from air exhausted from animal shelters and crop dryers.

In Energy Policy for the U.S. Food System, a group of leading authorities in the areas of food and energy stated that agricultural dependence on fossil fuels could be reduced by methods such as reduced or minimum tillage,** changes and adjustments in equipment, new management practices, proper selection and management of crops, and combined field operations. They also recommended improving structures and ventilation equipment, reducing overdrying, and improving the animal's utilization of feed through breeding, diet formulation, environment and disease control. [17] In this document, the group recommended national policies and incentive plans to facilitate the acceptance of suggested alternate energy conversion practices and agricultural energy conservation.

Integrated pest management and scientific ecological agriculture, discussed in previous sections, also decrease farm consumption of nonrenewable energy resources. This occurs primarily through decreased application of synthetic pesticides and fertilizers, and secondarily

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*"Energy plantations", or farms raising crops specifically for energy conversion are now being experimentally operated in several parts of the country. Additionally, several projects are using grains and grain residues to produce grain alcohol for an automotive fuel containing 10 percent agriculturally derived ethyl alcohol and 90 percent unleaded gasoline.

**It has been found, however, that while minimum or no-till systems reduce energy consumption and erosion they create more need for pesticide application.

through a reduced use of farm machinery (and airplanes) for application.

Many of the recommendations for alternate energy source development and conservation cited above are only now in the testing stages, and many have not reached the point of economic feasibility. It is certain that none of the new technologies will be fully accepted by the producer until they have been demonstrated under real farming conditions to be money-savers for the already financially troubled farmer.

Gardening

Gardens, including large community gardens, have been found in America since the Pilgrims, and their popularity has tended to come in waves. Today, the community gardening concept has seen a tremendously intensified interest, evident in the great number of community gardens cropping up throughout the country (there are over 160 such programs in California alone, and the demand for more is growing [18]). A Gallup survey stated that in 1976, 47 percent of all households in the U.S. had some form of a vegetable garden. Of these eight million families, 1.5 million used community gardens. The poll further predicted that this number would double in 1977, as it it found that more than thirty million Americans wanted to grow on their own land but lacked the supply and know-how that community gardens supply. [19]

In addition to providing food for families (resulting in financial savings and often improved nutrition), community gardens provide such useful functions as a constructive recreational outlet, an aid to heightened awareness of nature and environmental processes, and a facilitator of the "sense of community". Gardening is an educational process, and some assert that it fosters individualism, self-reliance and creativity. [20]

Most community garden projects are sponsored by private local groups; however, State agencies are increasingly funding such projects. The Federal government has sponsored a number of urban gardening programs, and many of its food and nutrition and employment funds can be applied to gardening programs.

Community gardens require considerable organization as was demonstrated in Memphis, and it is important that there be a knowledgeable supervisor to prepare the plots, solicit community support, provide instruction and coordinate other services offered. This person must also deal with problems that could arrive - such as vandalism of produce.

Gardening not only serves useful purposes for the community-at-large, but also for special populations. The Horticulture Department, Agricultural Experiment Station, of Clemson University has been a leader in the instruction and application of "hortitherapy", although many other universities, correctional institutions, hospitals, nursing and mental institutions throughout the country have recognized its merits and initiated hortitherapy programs. Hortitherapy, sometimes called garden therapy, has been defined as the use of horticultural appeal and methods for improvement of physical and mental well-being. [21]

Hortitherapy may involve caring for a single plant in a patient's room, planting a terrarium, or gaining enough knowledge and experience in horticulture to secure a vocation. The ultimate goal is to help an individual adjust to and feel more content with his/her environment, and helping that person reach his/her highest potential in life. [22]

Positive results in achieving these goals have been reported by Clemson and by other groups throughout the country. Types of individuals served have included the visually, mentally, and physically disabled (special tools are available for the handicapped, as are special greenhouse

designs); substance abusers; the elderly; and adult and juvenile incarcerated offenders. Within South Carolina, a vocational training program for offenders in horticulture and greenhouse management was implemented in a correctional institution, as was a therapeutic program for geriatric inmates.[23]

## CORRECTIONS COMPONENTS

### The Offender

According to the Department of Labor, there were approximately 45 million offenders in the United States in 1977. This estimate includes all youths and adults who are or have been confined to penal institutions or other correctional facilities; and those who have had contact with the criminal justice system through the pretrial, probationary, or parole processes. Of these 45 million individuals, an estimated 500,000 are confined to Federal, State and local institutions and jails. Of the over ten million arrests for misdemeanors and felonies each year, three to four million convictions result. Of these, approximately one and one-half million are for first offenses.[24] The majority of incarcerated persons are confined less than two years.[25]

While the offender population is far from a homogeneous group, the typical offender today is likely to be a young, under-educated male from a minority background; 95 percent of those incarcerated are men. The economic history of most offenders is one of long periods of unemployment, low wages, low job status, and welfare. While this group is generally as intelligent as the "outside" population, school and employment records generally reflect failure.[26]

Men are more likely to be charged with such crimes as robbery, burglary, auto theft, vandalism, weapons offenses, drunkenness, and drunken driving. Women, on the other hand, are more likely to be arrested for larceny, fraud, embezzlement, prostitution and commercialized vice, and vagrancy, according to FBI reports, and they tend to serve shorter sentences than men. Like men, women offenders tend to come from poorer, less educated groups in society, and are most often members of minority groups.[27]

FBI statistics also indicate that the number of arrests of men increased by 82 percent between 1960 and 1972 - while the arrests of women increased by 246 percent. The types of offenses committed by women appears to be expanding.[28]

Studies have shown that society places a stigma upon the offender and ex-offender, often taking the form of refusal for employment by public and private employers alike. A study by the American Bar Association reported that 37 States refused in varying degrees to hire offenders, and documented the existence in 50 states of nearly 2,000 licensing laws affecting offenders.[29*] This problem is compounded by the fact that many ex-offenders do not have sufficient job skills. In a 1974 survey of penal institutions, wardens estimated that 70 percent of the inmates needed to acquire job skills in order to obtain steady outside employment. They also estimated that only 34 percent were likely to acquire sufficient job skills during their stay.[30]

It is not known how many incarcerated persons are rehabilitated by prison efforts or through other means. It is clear that the cost to the taxpayer for incarcerating offenders is enormous - possibly as high as $10,000 to $15,000 per inmate.[31]

## The Correctional System

The correctional system in actuality includes four major components, at the Federal, State and local levels: police, prosecution and defense,

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*The American Bar Association, Section of Criminal Justice formed Project ADVoCATE (Attorneys Donating Volunteer Services to Ex-Offenders) in 1976, funded by the Department of Labor. Its mission is to catalyze local bar associations to launch bar-volunteer projects to provide counseling and civil law assistance to offenders in the locales, and to help eliminate artificial barriers to employment.

courts, and corrections. The latter, which is most germane to an institutional farming project, consists of a complex network of correctional institutions, half-way houses and other facilities throughout the country. The system includes: the Federal prisons of adult minimum, medium and maximum security, and community treatment centers for persons convicted of Federal crimes, overseen by the Federal Bureau of Prisons; similar institutions for State adult offenders, overseen by the State Departments of Corrections; youth custody and/or treatment facilities, most often overseen by State Departments of Youth and Family Services or similar State agencies; and local detention and correctional institutions (well over 3,000 in existence) run by municipal and county governments. The American Correctional Association publishes yearly a Directory of Correctional Institutions and Agencies, providing up-to-date information on juvenile and adult correctional departments, institutions, agencies and paroling authorities in the United States and Canada.

The goals of correctional institutions today appear nearly as varied as their history. The first American prisons were born out of a reform movement against capital punishment, and espoused the ethic of rehabilitation - a change from the eighteenth century philosophy based on vengeance and deterrence. This largely unsuccessful rehabilitation movement was followed by a succession of other reform attempts, including hard labor, discipline, skill training, psychiatry, education, electric shock, counseling, behavior modification and sociology.[32]

Today's inmate reform attempts are marked by the infusion of funds (mostly Federal) for models, studies, panels, research and other efforts - all in an attempt to learn the best way to deal with the growing incarcerated population and offenders at other levels of the correctional

system. Recent and ongoing efforts include pre-trial intervention; job training, counseling and placement services; token economy implementation; the development of prison industries; post-prison adjustment assistance; and others. It is not yet clear what effects, if any, these programs have on prisoner reform, and, attitudes from within and outside the correctional system vary dramatically regarding the purposes of the institutions: rehabilitation or punishment - or a combination of the two. These varying philosophies are reflected in the diversity of prison reform programs, or lack thereof. Still, a large portion of the prison populations return to crime, and many prison officials continually must deal with crimes within the prison walls themselves.

Institutional Vocational Skills Training

A 1972 survey of vocational programs in correctional institutions recorded 12,868 trainees enrolled in 855 vocational education programs in State and Federal institutions, which represents less than 10 percent of the 130,800 persons in the responding institutions. Over one-half of these institutions had five or fewer vocational programs, the most common being: automotive mechanics, arc and acetylene welding, machine shop, masonry, radio and TV repair, auto body repair, carpentry, barbering, baking and cooking, architectural and mechanical drafting, air conditioning and refrigeration, and small engine repair.[33] A similar study in 1974 concluded that 75 percent of all juvenile and adult correctional institutions in the sample (70 percent of all institutions) at that time conducted formal vocational training programs, and that 21 percent of all inmates were enrolled, with an additional 9 percent on waiting lists. About one-half of all inmates were reportedly unable to participate in vocational training for reasons such as lack of aptitude or interest, and inability to meet minimum

academic requirements. Other findings of this study include:

1) only 20 percent of the inmates surveyed indicated that special jobs programs or persons in the institutions assisted then in obtaining outside employment;

2) only 4 percent of the inmates were participating in work release programs and an additional one-half percent in training programs conducted outside the institution;

3) one-third of the institutions had one or more prison industries, employing 11 percent of all inmates - most of whom were also allowed to participate in vocational training; and

4) over 80 percent of the responding institutions assigned inmates to the operation or maintenance of the institution, and nearly one-half of these inmates were working in these activities. Only 57 percent reported this provided them with the required skills for outside employment.[34]

While the relationship between unemployment and crime has been demonstrated, few studies have been able to prove (or disprove) that occupational skills training reduces recidivism. One reason is that follow-up on ex-offenders is quite a difficult undertaking, especially for non-parolees. Even those studies that have been carried out have shown contradictory results. The overriding opinion in current literature appears to be that comprehensive skills training (with full support services*) in occupations likely to lead to gainful employment reduces an individual's likelihood of returning to crime. As Secretary of Labor Ray Marshall testified before the U.S. Congress this year: "In many cases, transition from felon to working citizen can be the step leading to permanent rehabilitation and full return to society".

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*Such support services include skills assessment, training in job hunting, basic education if needed, job development and placement, follow-up with employer and employee, and other services such as medical care and legal aid.

Among the recommendations for vocational training advanced in the previously cited 1974 survey are:

1) there should be a greater variety of offerings to meet individual needs, not only in more diversified occupations, but also to meet the needs of special persons such as the handicapped, elderly, minority and bilingual inmate;

2) community contacts should be greatly expanded, and an occupational advisory committee formed within institutions;

3) improved programs of vocational guidance, counseling and job placement should be implemented, along with attention given to revising training schedules to a more flexible modular format;

4) organized programs for obtaining information on released or paroled inmates should be implemented; and

5) prison industries, maintenance and service activities need to be planned from a vocational point of view, and apprenticeship programs should be instituted in connection with work assignments.[35]

A more recent report (1978) by the American University Law School Institute for Advanced Studies in Justice contains eleven issue papers on crime and employment by persons active in planning, public administration and education. These authors examine from various perspectives the emergence of employment and crime problems in the community, the schools, in prison, in the armed forces, and in the public-at-large. Dr. Richard Tropp, in "Suggested Policy Issues for Employment and Crime Problems", writes in broad as well as specific terms about policy decisions which must be addressed. While chiefly offering suggestions for governmental intervention, many of his suggestions are equally applicable to an individual institution. Some of these are:

1) expand apprenticeship programs, especially for juvenile offenders;

2) emphasize placement and the provision of labor market information to assist offenders in selecting vocational programs;

3) assist offenders in relocating from original (often crime-inducing) areas upon release;

4) make use of the military to facilitate market entry;

5) provide job training, counseling and placement to some offenders after release;

6) identify jobs in which trainees can be placed before providing the training, and direct the training and counseling towards those skills, work behaviors and attitudes required for those jobs;

7) expand upon the Free Venture model, now operating in several States, inviting private industries to lease facilities within prisons for factories and shops which provide training and experience for inmates; and

8) use CETA and other funds to encourage the formation of volunteer "friend" networks to create new contacts in the community for offenders, thereby facilitating employment.[36]

In sum, there appears to be a general consensus that the current correctional vocational skills training system needs improvement. This is not to suggest there are no viable and worthy programs in operation; evidence suggests quite the contrary. However, such "model" programs, as well as an abundance of recommendations and ideas (though often untested) are available for testing and implementation.

## Institutional Farming

Literature is scarce concerning correctional institutional farming operations, but it is clear from materials of individual institutions

from about thirty years ago that at that time such farming operations were large, productive and modernized for that time. Such materials are not found regarding today's operations, and it appears that most of these farms have experienced situations over the last thirty years similar to that of the Shelby County Penal Farm: gradually declining operations both in quality and quantity. According to a variety of sources, this has occurred for several reasons including:

1) a general shift in attitudes regarding the use of incarcerated populations for hard agricultural labor tasks;

2) funds were not available to buy up-to-date equipment as it became available, or to hire farm managers who were up-to-date on the latest technologies; and

3) it became cheaper to buy the food required for the institution than to produce it on the farm.

Today, many institutions utilize inmates, under supervision, to perform the farm operations requiring few skills, and to perform general grounds maintenance. Few, however, provide formal training in agriculturally related skills, it appears. The Federal Bureau of Prisons operates one program in agricultural machinery, in one institution. Additionally, a 1973 source book on correctional vocational training, for which 66 "unique" training programs were analyzed, reported the existence of several horticultural training programs and one in farm equipment repair. Other efforts by the authors to locate agricultural training programs in correctional facilities have been unsuccessful.[37]

Informal contacts by the authors with Federal, State and correctional institutional personnel tend to indicate that interest is reviving towards re-developing the potential of penal institutional lands. Reasons include the spiraling costs of purchasing food for the inmate populations,

and pressure from without to reduce these costs. A good many of these institutions have an abundance of land to work with, as indicated in Appendix B - the Correctional Facilities and Farms Directory - the result of a survey carried out in 1977 by the American Correctional Association in cooperation with the U.S. Environmental Protection Agency.

## FOOTNOTES

[1]Charlotte Sine, "Can Agriculture Wrest Pest Management from the Bureaucrats?", Farm Chemicals (March 1978), Vol. 141, no. 3, p. 24.

[2]Ibid.

[3]Ibid.

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# SKILLS for the IPM PRACTITIONER

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## CURRENT STATUS

Only recently have curricula in integrated pest management become available. Today, many colleges and universities throughout the country are offering bachelor and graduate level educational programs in pest management, producing professionals with the capabilities of providing expert consultative services and performing research in the field.

Not so common, however, are IPM programs at levels below the bachelor degree. According to a 1977-78 survey by National Field Research Center of educational programs in environmental and energy-related fields, those certificate and associate level programs available in the broad area of pesticides chiefly cover pesticide applications. While some offer courses that also cover non-chemical methods, no programs at this level were identified that offer broad coverage of integrated pest management. [1]

The job market for IPM specialists appears to be ever-improving, with jobs available for professionals in Federal and State agencies, including the Cooperative Extension Service, with grower-owned organizations, or as private consultants. Farmers are learning that employing the services of IPM specialists can save them money. Services of such specialists often include field monitoring; management counseling on when control action is needed and what alternatives are available; and advice on procedures such as choosing plant varieties, and the timing of planting, harvesting and cultivation. These specialists generally have at least four years of post-secondary education. [2]

Although less information is available, professionals in the Federal Government and the academic community have indicated that the

IPM field has room for technician-level practitioners - with two years or less of post-high school education. These persons could be employed by farmers and farm cooperatives, private IPM consultants or extension services and perform such duties as field scouting and the application of IPM practices as advised by the specialists.

Two sources have been identified for IPM curricula, both produced as a result of grants from the Office of Environmental Education, of the Office of Education, U.S. Department of Health, Education and Welfare. These are discussed in the two following sections, while the final section, Discussion, relates them to the institutional setting.

## INTEGRATED PEST MANAGEMENT CURRICULUM REPORT

In 1973, Kirkwood Community College of Cedar Rapids, Iowa and the Associated Research Corporation of Miami, Florida developed a report entitled Integrated Pest Management - A Curriculum Report. It consists of materials that were developed at and in conjunction with a conference in Berkeley, California. The purpose of this conference was to develop courses of study in IPM appropriate for use at several levels: secondary schools, MDTA * programs, community colleges and technical institutions, baccalaureate programs, master's level programs, and doctoral level programs. The report presents these outlined courses of study, as well as IPM jobs at each level and the competencies required.[3] Presented here will be this report's data relating to the two-year level and below, as these are felt to be the most appropriate for an institutional program.

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* Manpower Development and Training Act

## High School Level[4]

The authors identified three major job clusters that could be at least partially taught at the high school level: applicator jobs, people-oriented jobs, and technician jobs. Five common elements apply to all of these jobs:

1) basic communication skills;

2) appreciation of the need for pest control;

3) receptiveness to the philosophy of control through IPM;

4) general knowledge of the pest universe; and

5) sensitivity to the environment.

### Cluster I: Applicator Jobs

This category includes jobs which directly relate to the physical application of pest control products, and are usually performed under supervision. Most of these applicators must possess skills in the operation of some type of vehicle for application, and should have an elementary knowledge of crop production, growing cycles, weather conditions and precautionary measures. Unless an applicator were skilled in a wide variety of application techniques for an array of crops, such a job could require much travel as dictated by growing seasons.

At the end of training, such a person should possess the following proficiencies:

1) be aware of acute hazards of chemicals and biologic agents and take all precautionary measures for protection;

2) possess knowledge of proper operation and safety of application equipment;

3) know the procedure used in maintaining simple field records;

4) have a sound knowledge of the kinds of chemicals and biologic agents used, their formulation and their general characteristics, efficacy and potential adverse effect on non-target organisms;

5) possess basic knowledge of the pest species being controlled;

6) know the crop system and the role of chemicals and biologic systems in relation to that system;

7) possess knowledge of application principles in relation to meteorological conditions;

8) be aware of laws and regulations which govern the operational procedures; and

9) possess ability to follow directions carefully and be concerned with accuracy in operation.

Author's note: Today, with applicator certification requirements, private applicators must be certified to apply restricted-use pesticides. Commercial applicators must be certified or apply pesticides under the supervision of a certified applicator. Commercial certification requires the passage of a State-administered examination on such areas as pesticide formulations, uses and restrictions; and safety procedures.

## Cluster II: People-Oriented Jobs

People-oriented jobs are generally those positions contained under the designation of "advisors". Advisors in IPM are involved in assisting the consumer in defining pest management problems and in identifying, proposing, or recommending alternative solutions to those problems. They depend upon supportive personnel to make recommendations, which the advisor passes on to the consumer.

Advisors could be trained through high school courses and on-the-job training (OJT) but increasingly, post-secondary education, possibly up to the associate degree level, will be required.

The general proficiencies for these jobs are:

1) possess elementary knowledge of botany, of how plants grow and of environmental effects on plant growth;

2) possess knowledge of the chemical product and its effect on living systems and the environment;

3) possess basic knowledge of chemical and biological principles;

4) possess knowledge of chemical products and pest management procedures; and

5) possess elementary knowledge of soils and nutrient requirements of plants.

## Cluster III: Technician Jobs

Technicians are supportive personnel under the advisor category, but are not involved in direct contact with the consumer. They enable the professional IPM advisor, through their support, to make recommendations to the consumer based on the most accurate and appropriate information available. Technician personnel should be highly trained in the chemical or biological sciences, and be able to apply basic research and analysis techniques in the laboratory. For this reason, while high school training may be adequate, increasingly higher level jobs in this category will require post-secondary education.

The general proficiencies for technician jobs are:

1) possess an elementary knowledge of specific scientific and mathematical procedures;

2) know the procedures used in field and laboratory techniques;

3) know the techniques and procedures used in reporting data;and

4) possess a knowledge of safety procedures.

### MDTA Skills Center Level[5]

MDTA Skills Centers were operated throughout the country under the Manpower Development and Training Act to train unemployed and underemployed individuals for job entry. Such training was usually designed to enable the student to reach the job entry level in the shortest period of time possible.

Since the release of the IPM Curriculum Report, MDTA has been replaced by the Comprehensive Employment and Training Act (CETA), and MDTA Skills Centers as such no longer exist. CETA programs are reviewed later in this report under the Department of Labor. This section, on the MDTA Skills Center level, could be applied to similar facilities existing today which have job entry training goals.

The authors of the IPM volume believed that training for the following IPM-related jobs could be provided through MDTA Skills Centers:

Applicator, Applicator Assistant, Field Sweeper or Scout, Laboratory Assistant, Insectary Technician Assistant, Field Equipment Technician, and Inspector Trainee. While most of these are further described under Community Colleges and Technical Institutions, they have in common the following job elements (in differing degrees):

1) skill in communication with the farmer and interpersonal relations;

2) skill in practical entomology - how to identify pests and control them, how to identify weeds and control them, how to identify nematodes and control them, etc;

3) an environmental awareness;

4) skill in visually recognizing and identifying a problem;

5) ability to perform arithmetic skills and to report quantitatively;

6) ability to work in the field of chemistry and biology, a practical application of techniques and an understanding of the problems and principles involved;

7) general knowledge of crop production;

8) general knowledge of economic implications of this field;

9) general knowledge of safety procedures and practices;

10) knowledge of products and their effects; and

11) general knowledge of regulations for the use of pesticides.

The conference participants believed that the most appropriate initial MDTA training would begin at the equipment operator level, with the extent of training being ascertained at the local level when employment opportunities are determined. An equipment operator is defined as one who operates equipment that is utilized in IPM management, e.g.,

application of agri-chemicals and biological agents, and the implementation of other techniques implicit to this type of strategy. General skills of the equipment operator (other than aerial) include:

1) practice interpersonal relations with supervisors, clients and residents in the area;

2) know the precautionary measures which must be taken for protection from acute hazards of the materials and equipment being used;

3) operate equipment properly and safely;

4) maintain simple field records accurately;

5) able to recognize the pest being controlled;

6) able to identify and differentiate target and non-target substrate;

7) able to practice application principles in relation to the weather;

8) have a sound knowledge of the equipment and what can be expected of it;

9) possess the ability to take basic decontamination procedures in case of error or accident;

10) know how to use elementary first aid;

11) be aware of laws and regulations which govern his/her operational procedures;

12) possess knowledge of and be aware of the reasons for re-entry regulations and precautions;

13) follow and apply employer policies for the development of the business;

14) possess ability to follow directions carefully and be concerned with accuracy in operation;

15) possess the ability to make minor on-the-job decisions and call the supervisor when decisions are major;

16) practice proper radio-telephone and telephone skills;

17) follow instructions on disposal of excess pesticides and the containers;

18) implement proper maintenance of equipment;

19) know how to use an operators manual and other direction-giving material;

20) know how to calibrate application equipment accurately;

21) have basic knowledge and understanding to make practical application of the principles of chemicals and biological agents, their formulation and their general characteristics, efficacy and potential adverse effects on non-target organisms.

Equipment operator mechanical skills include:

1) know how to operate a vehicle that contains or pulls a tandem;

2) know how to regulate pump flow;

3) know how to clean, care for and change nozzles and other spray devices;

4) know how to operate specific equipment applicators such as fog machines, hydraulic sprayers, mist blowers, field fumigators and knife applicators;

5) know how to make minor repairs in order to maintain peak performance;

6) know exactly what the equipment being used is capable of;

7) be aware of laws and regulations which govern operational procedure;

8) know how to develop and implement a regular maintenance schedule;

9) be able to interpret and practice directions given in the operators manual;

10) be able to mix pesticides with accuracy; and

11) be able to practice precautionary measures appropriate to pesticide application and disposal.

## Community College and Technical Institution Level[6]

Three options are recommended for IPM education at this level: Laboratory Services, Application Services, and Supplies and Services. Proposed curricula give direction for implementation of a two-year associate program, a one- to two-year certificate program, or programs for in-service training. Below are outlined the IPM report's descriptions of the various jobs at these levels and the skills required.

### IPM - Laboratory Services

General Skills:

1) possess elementary knowledge of, and apply chemical procedures;

2) possess elementary knowledge of, and apply biological procedures;

3) possess an elementary knowledge of mathematics procedures as applicable to the job description;

4) possess a knowledge of safety procedures;

5) possess the ability to collect and report data accurately;

6) possess a knowledge of field and laboratory sampling techniques;

7) possess the ability to operate laboratory instrumentation, relative to the job description;

8) possess a command of the metric system; and

9) possess general knowledge of animal and plant pests and elements of their control.

Specific Jobs:

Laboratory Technician: Biological - works with many types of biological agents including microbial and virus organisms.

Specific Skills:

1) know biological principles including sterile techniques, and elementary microbiology;

2) know how to use laboratory instruments such as: microscopes, balances, autoclave, environmental chambers, dissection scopes, incubators, electric pH meters, ovens, refractometer, microscope filters, colony counters, hydrometers, thermometers, etc.;

3) recognize pests common to the area;

4) use appropriate nutrient media;

5) have basic knowledge of staining techniques; and

6) can report data in graph form.

Laboratory Technician: Chemical - engages in sampling procedures and assists in analytical procedures relating to pesticides and other chemical agents.

Specific Skills:

1) elementary knowledge of quantitative and qualitative analyses;

2) know how to use laboratory instruments such as: analytical balances, electric pH meters, ovens, refractometers, sol-u-bridge, muffle furnace, baths, polarizing microscope, hydrometer, burners, etc.;

3) prepare and standardize laboratory solutions;

4) construct specialized pieces of laboratory glassware;

5) set up and use distillation and extraction apparati;

6) have knowledge of chemical symbols, formulae and equations; and

7) can report data in graph form.

Insectory Technician - raises and assumes responsibility for insects.

Specific Skills:

1) know how to use laboratory instruments such as: analytical balance, ovens, pH meter, refractometer, hydrometer, etc.;

2) possess knowledge of sterile techniques, elementary microbiology and entomology;

3) use appropriate nutrient media;

4) possess knowledge of insect life and rearing techniques;

5) can design and construct specialized laboratory equipment drawing upon carpentry, plumbing and electrical skills; and

6) can interpret graphs.

Laboratory Assistant - performs laboratory duties as assigned by a supervisor or technician.

Specific Skills:

1) familiar with laboratory glassware and cleaning techniques;

2) know how to use laboratory instruments such as: analytical balances, pH meter, ovens, refractometer, autoclave, muffle furnace, baths, microscopes, illuminators and light filters, colony counters, hydrometer, thermometers, etc.;

3) can prepare and standardize solutions;

4) prepares nutrient media properly;

5) familiar with ordering laboratory material and equipment;

6) familiar with weight and temperature conversions; and

7) can interpret graphs.

Environmental Monitoring Technician - assigned to specific sampling components of the environment to assure integrity of pest management programs.

Specific Skills:

1) know how to use laboratory instruments such as: analytical balances, ovens, autoclave, pH meter, refractometer, sol-u-bridge, microscopes, illuminators, hydrometer, thermometers, etc.;

2) possess knowledge of insects and their life cycles;

3) can report data in graph form;

4) possess knowledge of crop to be monitored;

5) possess exceptional field-observation acuity; and

6) have knowledge of the environmental factors which impinge upon crop monitoring efforts.

Field Scout-Sweeper - acts as a data collector in field situations.

Specific Skills:

1) possess a general knowledge of cropping systems;

2) have the ability to follow detailed instructions and to make minor on-the-job decisions;

3) recognize and report secondary effects of control measures;

4) possess the ability to operate a motor vehicle; and

5) have the ability to monitor populations of both pests and biological organisms.

## IPM - Application Services

General Skills:

1) possess an elementary knowledge of mathematics and communication;

2) possess a knowledge of IPM programs;

3) possess a knowledge of application equipment including operation, maintenance, calibration and decontamination;

4) possess a comprehensive knowledge of the State and Federal laws relating to pesticidal materials and their application;

5) possess the ability to maintain records and report accurately;

6) possess an understanding of the potential environmental consequences of the use and misuse of pesticides;

7) possess a practical understanding concerning toxicity, hazards, and precautions to be taken in using pesticides; and

8) possess the ability to identify pests and know the importance of the biology of pests relevant to the area of question.

Specific Jobs:

IPM Foreman - uses the disciplines required to perform the tasks of IPM and to supervise the application of pesticidal materials and biological agents.

Specific Skills:

1) understand the role of such factors as climatic conditions, types of terrain, soil and substrata and the presence of various non-target organisms;

2) understand the cultural practices and the related problems involved in the successful growing of plants or animals; and

3) have the ability to supervise and effectively communicate with employees.

Field Equipment Technician - advises and/or develops, adopts, maintains, tests, operates, and calibrates equipment used in IPM.

Specific Skills:

1) have the ability to design, construct, service, repair, regulate, test, evaluate, calibrate, and operate pesticide application equipment;

2) possess a knowledge of application equipment, such as: dusters, seed treaters, spray rigs, slurry applicators, injectors, and fumigators; and

3) understand the cultural practices and the related problems involved in the successful growing of plants or animals.

Aerial Applicator - applies pesticides and/or bio-control agents by aircraft.

Specific Skills:

1) possess a practical knowledge of the types, maintenance, use and calibration of aerial application equipment;

2) possess an understanding of how to apply pesticides in various formulations;

3) possess knowledge of meteorological conditions and their impact upon aerial application; and

4) possess a license to operate and fly an aircraft in a safe manner and understand the parameters of his/her equipment under given conditions.

Structural Applicator - operates equipment for pest control in structures.

Specific Skills:

1) possess a knowledge of safety practices in relation to food, utensils, food processing equipment, sleeping quarters, and food preparation areas;

2) possess a knowledge of the elements of construction such as location of vents and drainage systems, in relation to the work being done and the habits of the pest;

3) possess a knowledge of surfaces on which pesticides are applied such as vinyl or asbestos floors, wax finish, etc.; and

4) possess the ability to operate equipment designed for pest control in structures.

## IPM - Supplies and Services

General Skills:

1) possess knowledge of the product and its effect on living systems and the environment;

2) possess basic knowledge of pests in the person's trade area;

3) possess basic understanding of IPM;

4) possess interpersonal skills;

5) recognize Federal, State and local rules and regulations pertaining to pesticides merchandise;

6) able to tell the safety precautions to follow with pesticide merchandise;

7) have basic knowledge of pesticide application equipment used in his/her trade area;

8) competent in basic mathematics, sales ticket completion, figuring discounts and taxes, pricing merchandise, and using business machines; and

9) able to practice sales techniques.

Specific Jobs:

Retailer - provides the consumer with supplies and materials necessary for pest management.

Specific Skills:

1) possess basic skills in business and pesticide terminology, inventory control, credit control, advertising and promotion, merchandise display; and business law in the IPM industry;

2) competent in personnel management; and

3) able to recommend possible cultural, biological, and chemical control for local area pests.

Salesperson - provides the customer supplies and materials necessary for pest management upon request.

Specific Skills:

1) possess basic knowledge of the product inventory;

2) aware of store delivery systems;

3) able to follow written and oral instructions; and

4) know the storage recommendations and shelf life of products.

Technical Salesperson - advises the customer about materials and supplies necessary to pest management.

Specific Skills:

1) competent in field sampling techniques;

2) competent in problem-solving techniques;

3) able to identify those organisms harmful to the environment;

4) able to recommend possible biological, cultural, and chemical control for local area pests; and

5) possess a knowledge of pesticide terminology.

In addition to providing the above job titles, descriptions and skill requirements, the IPM Curriculum Report details suggested curriculum outlines. Discussions on how these can be utilized for an institutional farm setting will be provided towards the end of the chapter.

## A SOURCE BOOK ON INTEGRAGED PEST MANAGEMENT

In 1977, Mary Louise Flint and Robert van den Bosch of the International Center for Integrated and Biological Control, University of California, developed and released a Source Book on Integrated Pest Management. As described in materials developed to accompany this book, the Source Book contains curriculum content in environmental education in the context of IPM. It can be used as a base to design and develop curriculum and relevant instructional/learning resources in instructional leadership education, such as teacher education, and in the education of children and youth, and in adult/continuing education.[7]

The contents of the Source Book can best be depicted by listing the major topics, or chapter headings, which are:

1. MAN, PESTS AND THE EVOLUTION OF IPM: AN INTRODUCTION
2. HUMAN-MANAGED ENVIRONMENTS AS SYSTEMS WITHIN THE BIOSPHERE
3. WHAT IS A PEST?
4. A HISTORY OF PEST CONTROL
5. THE COST OF PEST CONTROL: ECONOMIC, SOCIAL, ENVIRONMENTAL
6. THE PHILOSOPHY OF INTEGRATED PEST MANAGEMENT: THE STRATEGY OF THE FUTURE
7. PRACTICAL PROCEDURES: IPM MONITORING, DECISION-MAKING, AND THE TECHNIQUES OF THE INTEGRATED PEST MANAGER
8. CASE HISTORIES IN INTEGRATED PEST MANAGEMENT
9. THE INTEGRATED PEST MANAGEMENT SPECIALIST
10. THE FUTURE OF INTEGRATED PEST MANAGEMENT [8]

The accompanying materials present "competence domains" relevant to the Source Book for education in IPM and teacher education in IPM. The five competence domains for IPM education and their sub-sets are:

- General knowledge and understanding of underlying environmental Concepts and Principles

    - Understand wholeness as a fundamental concept of organizing life.

    - Understand the functional relationship of a part to the whole and to other parts.

    - Knowledge related to the Biosphere and its various ecosystems.

    - Understand man-managed environments as systems within the Biosphere.

    - Understand the forces at work in the (affected) ecosystem.

    - Understand how the components of ecosystem operate in managed situations.

    - Understand the ecological principles underlying the restoration, preservation, or augmentation of natural checks and balances in ecosystems.

- Technical background knowledge and understanding relevant to pest control

    - View the pest problem as part of an ecosystem out of balance.

    - Know the ecological effects of various agricultural practices.

    - Familiar with the concept of "pest" and the major types of pest problems, such as: weeds, plant pathogens, arthropod, and vertebrate pests.

    - Understand the role of natural enemies, the kinds of damage pests can cause, and crop compensating abilities.

    - Understand the dynamics of the particular ecosystem and pest populations under various conditions.

    - Recognize the existence of economic and aesthetic thresholds (i.e., control action thresholds for pests).

    - Understand the economic, social, and ecological consequences and costs of different control strategies and tactics.

- Specific knowledge about and application of integrated pest control

    - Know the philosophy of Integrated Pest Management (IPM).

    - Know the brief history of pest management and the evolution of IPM.

    - Understand the economics of IPM.

    - Understand why IPM is the most effective way to control pests both economically and ecologically.

    - Know working examples of IPM programs in agricultural, forest, and urban environments.

    - Knowledge of determining economically and aesthetically damaging levels of pests.

    - Knowledge of techniques of IPM; more specifically: actions to take to restore, preserve, or augment the natural checks and balances of ecosystems.

    - Understand the need for public understanding and support of IPM.

- Career information relevant to IPM

    - Know the role of the IPM specialist.

    - Understand the need for IPM professionals.

    - Know the career progression in IPM.

    - Know the skills that the IPM specialist will require.

Teacher education competence domains include the above, with an added dimension:

- Planning and implementing instructional arrangements for education in integrated pest management

    - Formulating instructional/learning objectives relevant to the four competence domains explained above.

    - Acquiring instructional/learning resources relevant to the objectives.

- Planning and implementing instructional/learning arrangements with the application of resources.

- Evaluating the instructional/learning program.

DISCUSSION

IPM-related education/training and career ladders are as yet largely unstructured, especially at lower levels. What we have seen are two attempts to define a career ladder in IPM, and to outline formats for training and education for these careers. Some officials suggest that eventually there will be certification laws and/or regulations regarding IPM practitioners and training programs, in which case curriculum content may be largely pre-determined by the regulating authority. Until that time, though, attemps to implement career systems and training programs will largely be through trial-and-error.

There are several advantages to the development of career systems - including job descriptions with task-related elements. First, it serves as a starting point for localities to determine their own individual needs, thus enhancing the possibilities for the development of the most appropriate job training/educational and workforce planning programs. Second, it enables the prospective IPM practitioner to become more fully aware of the short and long-term career possibilities, facilitating appropriate educational or job entry decisions. Finally, proper workforce planning promotes a stabilization of the farm workforce, enabling the development of permanent and year-round jobs. This latter point was demonstrated recently by the Rural Economics Institute, which developed a farm career system and implemented it on sample farms in California, while working with a variety of State and local organizations. This system resulted in the development

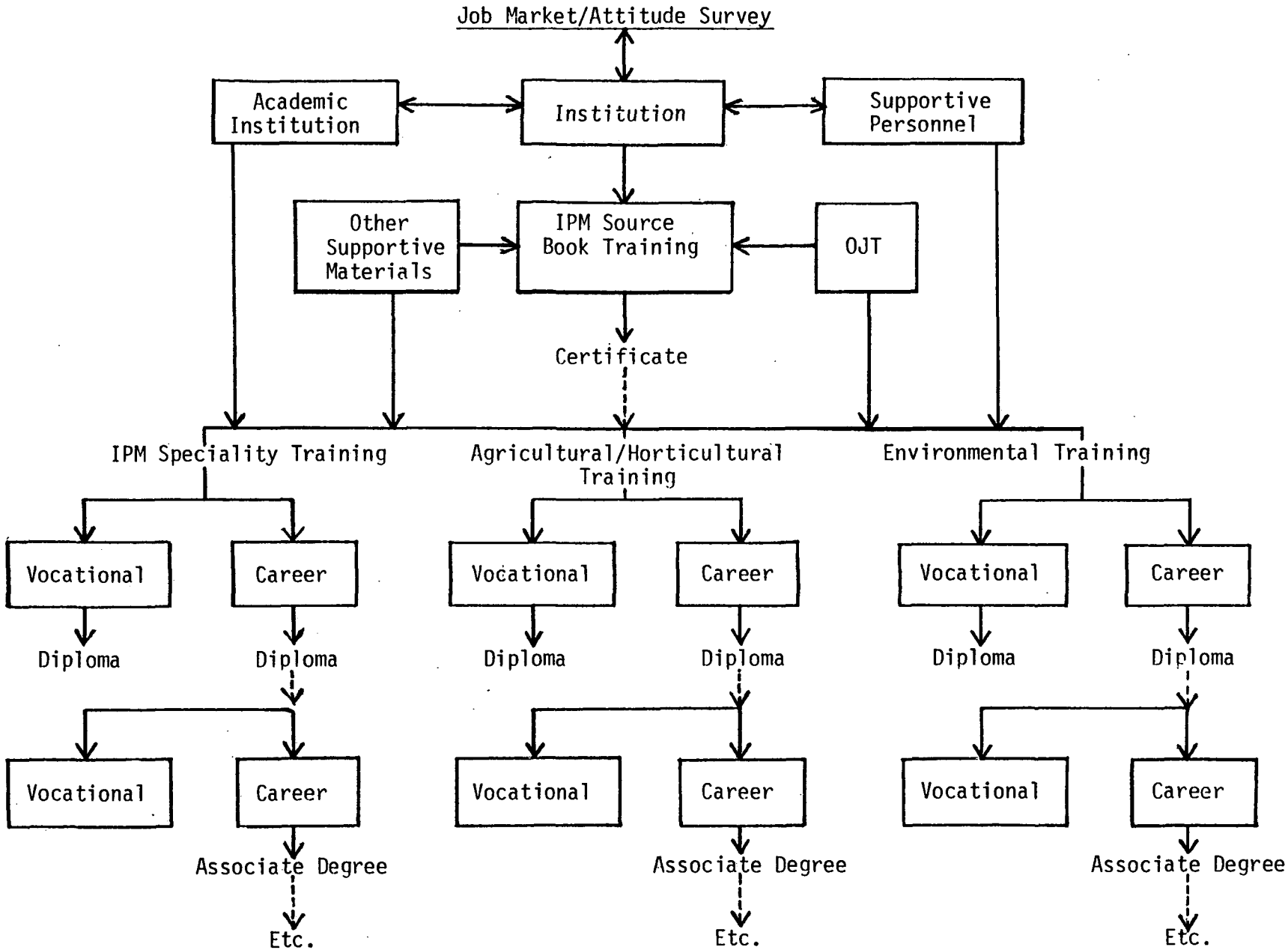
of permanent, year-round jobs, as well as the identification of new skill training short courses and supportive personnel management systems.[9]

In all probability, an institutional program that implements IPM training for inmates will not choose to (and would probably not be wise to) provide training at each level or for every IPM-related occupation set forth in the IPM curriculum report. The development of job training programs should be based upon several variables, perhaps the most important being local job market needs. Also important for consideration would be the interests and average length of stay of the population for which the training will be offered (along with the prospective employers likelihood of hiring this population), and the resources available, e.g., land, equipment and instructional support available through other institutions such as community colleges and the Cooperative Extension Service.

While the nature of training should be based upon the above variables, it would be well to structure flexibility into the programs that are offered, as specific career goals will undoubtedly vary. For instance, while one student may be interested in a terminal program geared completely towards direct occupational entry, another may prefer a program providing the option for further education. Additionally, some students may want to decide how far to advance or what speciality, if any, to pursue during the course of study. In this case, a module approach may be the most appropriate.

While this report cannot set forth specific recommendations for program implementation due to local/institutional variances, a program structure could resemble the flow chart on the following page.

SAMPLE IPM TRAINING STRUCTURE



Built into the chart are such advisable factors as:

1) supportive individuals/agencies such as the Cooperative Extension Service, Soil Conservation Service, farmers and community groups, etc.

2) supportive materials such as appropriate books, slides, films, etc.

3) on-the-job training and field experience to accompany formalized training;

4) career choices (horizontal and vertical), based on previous job market and attitudinal surveys; and

5) the support and cooperation of academic institutions in the community.

Though not depicted on the chart, a number of other factors are strongly recommended for inclusion in such a program:

1) providing job and career counseling to students and prospective students throughout the entire process;

2) establishing liaisons with prospective employers throughout the process, placing students with them for "internships" (through work-release), where possible, and identifying jobs for graduates after release;

3) providing other supportive services to students and graduates where needed;

4) assuring that released inmates will have opportunity for additional instruction, through follow-up training at the institution and/or through the cooperating institutions(s); and

5) utilizing the resources of other existing programs to achieve program goals, e.g., working with prime sponsors in utilizing CETA funds.

FOOTNOTES

[1]National Field Research Center, Inc., Phase II of a National Environmental/Energy Workforce Assessment - Post-Secondary Education Profile, Pesticides Volume, for the U.S. Environmental Protection Agency (Iowa City, Iowa: National Field Research Center, 1978).

[2]Mary Louise Flint and Robert van den Bosch, University of California, International Center for Integrated and Biological Control, A Source Book on Integrated Pest Management, for the Department of Health, Education and Welfare, Office of Education, Office of Environmental Education (Berkeley, California: University of California, 1977), p. 377.

[3]Kirkwood Community College and Associated Research Corp., eds., Integrated Pest Management - A Curriculum Report, for the Department of Health, Education and Welfare, Office of Education, Office of Environmental Education (Cedar Rapids, Iowa: Kirkwood Community College, 1973), p. 2.

[4]Ibid., pp. 93-96.

[5]Ibid., pp. 96-97, 112-124.

[6]Ibid., pp. 125-164.

[7]"An Analysis of the Environmental Education/Integrated Pest Management Curriculum Project", prepared to accompany A Source Book on Integrated Pest Management (unpublished, 1977).

[8]A Source Book on Integrated Pest Management, Table of Contents.

[9]Rural Economics Institute, Career Development for Farm Employment, by Donald G. Bennett, for the U.S. Department of Labor (Davis, California: Rural Economics Institute, 1977), pp. s1-s3.

# POTENTIAL PROJECT PARTICIPANTS

# Potential Project Participants

This chapter presents descriptions, based upon interviews and research, of agencies and institutions which have activities and functions that relate, or potentially relate to an institutional IPM/eco-agricultural program. As such, they would have potential involvement in a national program. The chapter is divided into three broad areas: 1) Federal Agencies and their State/Local Counterparts; 2) Academic Institutions; and 3) The Private Sector.

The first area, Federal Agencies and their State/Local Counterparts, briefly describes appropriate Federal agencies by their general functions and activities; and reviews specific sections and/or programs which were identified as having potential involvement or linkages to a national institutional program. The Federal agency descriptions are based upon three sources: information supplied verbally during interviews; written materials supplied by those interviewed; and the 1977/78 United States Government Manual, where needed. Also included in the first area are State and local public agencies whose functions (and often funding) are at least partially tied to the Federal agencies described. These were not afforded a separate section as it is often less than meaningful to describe one without relating it to its counterpart.

The reader should not construe that the entire universe of agencies, (Federal, State or local) with potentially relating functions has been included in this chapter. Project researchers, while relying upon several types of sources for referral (interviews and research), may not have been directed towards some less visible programs. In other cases, though few, referrals were made but the referred persons proved virtually unreachable.

Additionally, some Federal agencies may have potential involvement in a program, but which is unascertainable at the present time (many of these are discussed more thoroughly towards the end of the chapter - with examples). Finally, in the case of local and State agencies, local and State needs and priorities vary; these variances are reflected in the number and types of agencies created. The authors believe, however, that the major agencies have been identified and described which would have the most direct involvement in a national institutional program.

The second area, Academic Institutions, is based for the most part upon input by Federal officials who work directly with academic institutions. It also is based upon experiences encountered during the Memphis project and literature review (college catalogs, curriculum materials, and research/extension publications). The third area, The Private Sector, is similarly based upon interviews (in the public and private sectors) and literature review. As the scope of this project neither permits nor stipulates the extensive work necessary to provide thorough coverage of these latter two areas, they have received only token consideration. However, the authors felt it necessary to call attention to these two very important segments. Any extensive work towards implementing a large scale institutional farming program must give due consideration to the academic community and the private sector.

# Federal Agencies

# And Their State/Local Counterparts

# LEGISLATIVE BRANCH

## UNITED STATES CONGRESS
## OFFICE OF TECHNOLOGY ASSESSMENT

The Office of Technology Assessment (OTA) is an advisory arm of the U.S. Congress. Its basic function is to help the Congress anticipate and plan for the consequences of the uses of technology, and to examine expected and unexpected ways in which technology affects people's lives. The OTA consists of a bipartisan Congressional Board consisting of six Senators and six Representatives, and the OTA director; it is assisted by an Advisory Council. OTA programs are currently operated in the fields of energy, food, health, materials, national R & D policies and priorities, oceans, technology and world trade, and transportation.

A comprehensive analysis of chemicals used in food and agriculture is currently being conducted by the OTA. One portion of this analysis, an assessment of alternative pest management strategies in food production, will meet the following objectives:

1) to assess the potential development and impact of alternative pest management strategies in major regions of the U.S. over the next 10-15 years;

2) to evaluate Federal policies identified as constraints on the development of alternative pest management strategies; and

3) to assess the potential adaptation and impact of U.S. advances in alternative pest management strategies on pest management in developing countries.

An advisory group consisting of scientists, members of public interest groups, and industry representatives assist in the planning and review. The assessment objectives are addressed by the following working groups:

National Constraints Working Group
Regional Work Group on California Vegetables
Regional Work Group on the Central Corn Belt
Regional Work Group on the Great Plains Wheat Belt
Regional Work Group on Northeastern Potatoes
Regional Work Group on Northern Deciduous Wheat Belt
Regional Work Group on Southeast Grains and Legumes
Regional Work Group on Southwest Cotton and Field Crops

The reports of these committees will provide the basis for the final OTA report, which is scheduled for completion December, 1978.

# EXECUTIVE BRANCH

## EXECUTIVE OFFICE OF THE PRESIDENT
## COUNCIL ON ENVIRONMENTAL QUALITY

The Council on Environmental Quality (CEQ) was established by the National Environmental Policy Act of 1969, and consists of three members appointed by the President. Its function is to formulate and recommend national policies to promote the improvement of environmental quality. It also carries out a continuing analysis of changes or trends in the national environment, administers the environmental impact statement process, provides an ongoing assessment of the nation's energy research and development from an environmental and conservation standpoint, and assists the President in the preparation of the annual environmental quality report to the Congress.

As with other environmental areas, the CEQ's IPM role is to formulate and recommend national policy in the field, and to follow-up on the recommendations, as required. In his 1977 environmental message to Congress, President Carter instructed the CEQ to recommend actions which the Federal Government could take to encourage the development and application of pest management techniques which would emphasize natural biological controls like predators, pest-specific diseases, pest-resistant plant varieties, and hormones, relying on chemical agents only as needed.

In 1972, the CEQ prepared and released a state-of-the-art report on integrated pest management, and has continued to keep abreast of this field. It will release a second report on IPM late in Fiscal Year 1978 pursuant to the President's request.

# DEPARTMENTS

## DEPARTMENT OF AGRICULTURE

The U.S. Department of Agriculture (USDA), through its many and diverse programs, carries out executive policies in agriculture, and implements appropriate Federal legislation through research, regulatory, and grant programs. It works to improve and maintain farm income, and to develop and expand markets abroad for agricultural products. The Department's programs are designed to curb poverty and malnutrition; to enhance the environment; and to maintain U.S. production capacity by helping landowners protect the soil, water, forests, and other natural resources. The implementation of national growth policies is facilitated by rural development, credit, and conservation programs. Inspection and grading services are designed to safeguard the quality of the American food supply. Environmental policies are coordinated through the Office of Environmental Quality Activities, housed in the Office of the Secretary.

Many of USDA's programs filter to the State level through the State Departments of Agriculture (their specific names vary somewhat). These departments, operated with State and Federal funds, are largely regulatory in nature. Programs typically encompass quality control for foods, feed, seeds, plants, plant materials, fertilizers and pesticides. Regulatory programs are also aimed at the control of animal and plant diseases. Marketing practices are regulated according to State laws, and marketing and other farm economy information is typically provided to the public.

In the majority of States, the State Department of Agriculture implements the Federal Insecticide, Fungicide and Rodenticide Act, as amended, and its State counterpart legislation (although in some cases this is carried out by the State environmental departments). With such authority, the departments are responsible for certifying pesticide applicators, and for registering restricted-use pesticides, as defined by Federal and State laws.

USDA has the major responsibility for pest control activities in the Federal Government. As stated in the Secretary's Memorandum No. 1929 dated December 12, 1977, and entitled U.S.D.A. Policy on Management of Pest Problems:

> It is the policy of the U.S. Department of Agriculture to develop, practice, and encourage the use of integrated pest management methods, systems, and strategies that are practical, effective and energy-efficient. The policy is to seek adequate protection against significant pests with the least hazard to man, his possessions, wildlife and the natural environment. Additional controls and selective measures to achieve these goals will be developed and adopted as rapidly as possible.*

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*Robert Bergland. Secretary's Memorandum No. 1929, U.S.D.A. Policy on Management of Pest Problems (December 12, 1977).

## Conservation, Research and Education

Under the USDA Assistant Secretary for Conservation, Research and Education are the Forest Service, the National Agricultural Library, the Soil Conservation Service, and the Science and Education Administration (SEA). The latter is further divided into the Cooperative State Research Service, Federal Research, the Extension Service, and Teaching. The Assistant Secretary chairs a Joint Council on Food and Agricultural Sciences created by the 1977 Farm Bill, P.L. 95-113. This Council communicates to Congress, the President and the Secretary, and was formed to foster coordination of conservation, research and education throughout the country in the areas of the food and agricultural sciences.

SEA, the component of Conservation, Research and Education most strongly tied to IPM, staffs a Coordinator for IPM, who oversees an SEA committee on IPM. This Committee is developing strategies for implementing IPM for urban areas, agro-systems, rangeland, livestock, and aquatic weeds. It will coordinate IPM activities within SEA, with the remainder of USDA, and finally with other Federal agencies.

The IPM and other activities of potential relevance to a national institutional program, in related SEA agencies, as well as in the Soil Conservation Service are described below.

## Science and Education Administration

### Cooperative State Research Service

The Cooperative State Research Service (CSRS) of SEA administers Federal grant funds for research in agriculture, agricultural marketing, rural development, and forestry. These funds are made available to State Agricultural Experiment Stations, as well as to other designated State institutions. A specific grant program is also administered by CSRS on special agricultural programs. With regard to integrated pest management, the CSRS is represented on the various Departmental IPM committees, and cooperates in coordinated interagency IPM research efforts. As with all of its grant programs, the CSRS participates in planning and coordinating IPM research among the various Experiment Stations, and between the stations and the Department of Agriculture.

The State Agricultural Experiment Stations are located within the land-grant institutions in every state. These stations carry out agricultural research for the respective States, geared to their specific crops, soils, pests and other characteristics. They often operate branch stations scattered throughout the State. Experiment Stations typically operate with Federal and State funds, supplemented by grants from private industry, foundations, and other sources. Coordination and communication among Experiment Stations and with USDA is facilitated by the Experiment Station Committee on Organization and Policy (ESCOP).

## Extension Service

The USDA Extension Service is one of three partners in the Cooperative Extension Service; the other partners are State governments (through land-grant universities) and county governments. All three partners share in financing, planning and conducting educational programs in such areas as agricultural production, marketing, natural resources, home economics, food and nutrition, 4-H youth development, energy conservation, and community and rural development. A chief goal of Extension is to assist the public in learning about and applying the latest technology and management knowledge developed through research. Cooperation among the local, State and Federal levels is promoted by the Extension Committee on Organization and Policy (ECOP).

The USDA Extension staff provides national program leadership and assistance to State Extension Services, and coordinates with other Federal agencies, private industry and national organizations. State Extention Services provide statewide leadership and prepare appropriate programs and educational materials. Area offices are located in nearly every county of the United States. Their staffs work directly with individuals and groups in educational services. Historically farmers, ranchers and other rural individuals and groups have been the main recipients of Extension's services. However, urban populations are increasingly receiving Extension assistance. A number of States are locating extension specialists in inner cities. Additionally, the Extension Service has conducted an urban gardening program in sixteen cities.

State Extension Services are responsible for providing training for commercial pesticide applicators in support of certification. In most cases, private applicators are trained by county extension agents. Additionally, many State Extension Services have organized field scouting programs to assist farmers and ranchers in identifying economic thresholds for pesticide application. In support of these programs, these Extension Services provide training to individuals in scouting techniques and procedures.

Federal Extension, in cooperation with the States, has since 1971 conducted a pilot pest management program. The goal of this program is to teach farmers, ranchers and homeowners how to carry out more effective pest controls; protect natural enemies; implement, where feasible, nonchemical means of controlling pests; and applying pesticides on an "as-needed" basis. To date, the Extension Service has funded 52 pilot application projects in 33 states on major commodities. It is beginning to move out of pilot application into an operational mode.

## Federal Research

The Federal Research staff (formerly the Agricultural Research Service) provides, through research, knowledge and technology to assist farmers in producing efficiently, in conserving the environment, and in meeting the nation's food and fiber needs. The research is carried out in cooperation with the States, as well as with other segments of USDA, other Federal agencies, industry, foundations, and private organizations.

Approximately 8,000 employees comprise the Federal Research staff, who are stationed at 150 locations throughout the country. Among the diverse activities of the professional staff are research efforts aimed at mechanizing crop and livestock production and processing; developing superior strains of livestock and poultry; controlling diseases and processing technology that utilize farm commodities; and expanding domestic and foreign markets for agricultural products.

Federal Research efforts emphasize the effective use of soil and water resources while keeping the soil, water and air relatively free from pollution. While working to improve the quality and yield of field and horticultural crops, and protecting crops against insects, diseases, weeds, nematodes and other pests. Federal Research staff study biological as well as chemical methods of control.

In addition to carrying out research and publishing resultant technical reports, Federal Research publishes informational bulletins for homeowners and farmers on practical applications. Many are aimed at controlling pests, stressing non-chemical methods.

## Teaching

The role of the Teaching office in SEA was mandated by P.L. 95-113 of 1977, Section 1417. For the first time, USDA was assigned a role in post-secondary education, coordinating a competitive grants program in the food and agricultural sciences for all colleges and universities in the United States. This office, assigned the responsibilities for this program, has not yet received any appropriations for this effort.

## Soil Conservation Service

The Soil Conservation Service (SCS) has responsibility for developing and carrying out a national soil and water conservation program in cooperation with landowners and operators. It also works in conjunction with community planning agencies, regional resource groups, and other agencies of the Federal, State and local governments. The SCS assists in agricultural pollution control, environmental improvements, and rural community development.

Technical staff of the SCS includes soil conservationists, soil scientists, economists, and engineers. Assistance is chiefly provided through the nearly 3,000 local conservation districts - which cover over two billion acres of the U.S. and its territories. Their activities include carrying out watershed protection and flood prevention programs; assisting in USDA's conservation cost-sharing program; participating in the national land cooperative soil survey, and heading the national land inventory and monitoring activity; appraising potential for outdoor recreation developments; and coordinating snow surveys for water supply forecasting.

Assistance to landowners and communities includes the development of area conservation plans for agricultural land areas which help to lay the foundation for land-use determinations. Other such services of SCS district offices include:

1) preparing soil maps, range-site and range-condition maps and woodland suitability interpretations;

2) providing information for each type of soil about different safe uses and adapted crops, conservation measures needed, and potential limitations;

3) providing technical assistance in laying out and checking the construction and maintenance of dams, terraces, and other structures; in selecting plant varieties, seeding methods and rates, and cultural practices to establish grass or trees as planned; and in solving problems in managing pastures, woodlands, or wildlife habitats;

4) outlining alternative cropping uses, conservation treatments, and soil management procedures required to safeguard soil under different cropping systems; and

5) providing technical assistance on range, woodland, and wildlife conservation; conservation engineering; recreation planning; and agricultural waste management.

On February 3, 1978 the Secretary of Agriculture established a National Rural Clean Water Coordinating Committee, chaired by the Administrator of the Soil Conservation Service. Other members are the Administrators of the Agricultural Stabilization and Conservation Service, Farmers Home Administration, Science and Education Administration, and Economics Statistics and Cooperative Service; the Chief of the Forest Service; and the Assistant Administrator for Water and Hazardous Materials of the Environmental Protection Agency (EPA). This Committee coordinates and advises on the Rural Clean Water Program, pursuant to an agreement between EPA and USDA. The Program provides cost-sharing assistance to areas with critical water quality problems resulting from agricultural activity, to incorporate best management practices in the control of such pollution. Additional information is provided in the review of the Environmental Protection Agency.

## Economics, Statistics and Cooperative Service

The Economics, Statistics and Cooperative Service (ESCS) develops and carries out a program of economic research to assist governmental and private agencies and individuals in areas relating to the production and evaluation of farm commodities. Also carried out are farmer's cooperative services, through research and technical assistance. The Statistical Reporting Service prepares estimates and reports on production, supply, price, and other items necessary to the orderly operation of the U.S. agricultural economy.

Within the ESCS's Natural Resources Economics Division are five groups. The Environmental Studies Group consists of ten economists who study economic impacts of pesticide regulation, and the economics of new pest management technology. Its economic research is conducted in conjunction with other research projects, often with Federal Research. Its economic feasibility studies are intended to complement ongoing biological feasibility studies.

To date, the Environmental Studies Group has focused on the augmentation of three beneficial insects: trichogramma to attact bollworms and budworms in cotton; the stiltbug to parasite the tobacco budworm; and pediobius to parasite a soybean pest, the Mexican bean beetle. It is also comparing conventional and alternative methods of controlling weevils in pecans. Two of its major projects, conducted in cooperation with ongoing projects in North Carolina and Mississippi, are a boll weevil eradication scheme and an "optimum" boll weevil management trial, respectively.

The Environmental Studies Group hopes to expand its pest management research efforts. As proposed, the group would expand to carry out specific programs covering weeds and diseases, as well as insects, in mixed cropping systems. This would necessarily more closely simulate actual farming conditions.

## Rural Development

Under the USDA Assistant Secretary for Rural Development are the Farmers Home Administration and the Rural Electrification Administration. The former provides credit for those in rural America who are unable to get credit from other sources, at reasonable rates and terms; diverse loan guarantee programs are operated by this Administration. The Rural Electrification Administration finances electric and telephone facilities in rural America and its territories, through loan and loan guarantee programs.

The Assistant Secretary for Rural Development serves as the chairperson of the National Rural Development Committee, created by the Rural Development Act of 1972. The Committee is directed to monitor all federal actions that affect rural areas, and is composed of four task forces: Water and Sewer; Housing; Transportation; and Health Care. This group relates to the State Rural Development Committees, offering suggestions and information, and submitting at least two project ideas to them each year. The State Committees coordinate Federal actions with State and local initiatives, and formulate their own State/local priorities.

Rural Development handles most of USDA's migrant, transportation, Indian affairs, and alternate energy programs. In support of alternate energy source development and energy conservation in rural areas, it has conducted demonstration projects in biomass (from animal wastes) and in gasohol. It has also developed a low cost solar unit, and is studying the use of algae ponds for wastewater treatment.

The office is also involved in weatherization programs for rural areas, offering incentive loan programs through the Farmer's Home Administration and the Rural Electrification Administration; it has also developed insulation standards. The Secretary has requested that the Farmers Home

Administration conduct a preliminary study concerning requiring, after a certain year, that a certain amount of energy in a house financed by the agency be from an alternate source, e.g., solar or wood. The chief concern will be assisting persons in lowering costs of maintaining their homes.

## DEPARTMENT OF ENERGY

The Department of Energy (DOE) was created in 1977 to provide the framework for a balanced national energy plan, through the coordination and administration of the energy functions in the Federal Government. Major responsibilities include: the research, development and demonstration of energy technology; the marketing of Federal power; energy conservation; the nuclear weapons program; regulation of energy production and use; pricing and allocation; and a central energy data collection and analysis program. Of concern to the department are the promotion of consumer interest and the encouragement of competition in the energy industries, as well as the protection of the nation's environment, and the health and safety of its citizens. The Department is represented by Regional Representatives and staff offices in each of the ten Standard Federal Regions.

Most State governments maintain State-level energy agencies, whose functions and size vary considerably. Most have fuel allocation functions, while others conduct energy supply and demand studies, and recommend State policies and strategies for wise resource use. A growing number of these agencies are coordinating energy conservation plans and programs for the State.

The following briefly describes several offices of the Department of Energy which have potential relevance to a national institutional farming program, and details specific programs with significant potential applicability.

### Conservation and Solar Applications

Program responsibilities of the Assistant Secretary for Conservation and Solar Applications include those designed to improve energy efficiency and system utilization and reduce energy consumption in the transportation industry, public and private buildings, and agricultural and industrial process heating; and preparation of a solar commercialization plan. The office's Office of Small Scale Technology seeks to utilize fully the services of individual inventors and small business firms.

### Division of Industrial Energy Conservation

This Division has three main objectives: 1) reduce the energy consumed per unit of production throughout the industrial/agricultural sector by assisting the penetration of existing and new energy conservation technologies: 2) identify existing but underutilized technologies for which Federal action can stimulate implementation; and 3) assist a shift in fuel use from scarce to plentiful fuels. It does so by developing economically viable technologies, accelerating industrial initiatives and promoting the acceptance of technologies, and by establishing leadership in the conduct of analysis, design, experimentation, and implementation of economically viable techniques for improving the efficiency of industrial/agricultural processes.

The Division's Agricultural and Food Process Efficiency Branch is currently involved with thirteen sub-programs. The first, AGRIMOD, is a dynamic simulation model of the U.S. food production system, designed for the analysis of : 1) the implications of alternative national policies on the food supply; 2) the effects of possible natural resource and energy constraints on the food supply and prices; 3) the impacts of policies on imports, exports and other reserves; and 4) the effects of technological change. The other twelve sub-programs will feed into this model. They are:

Energy Integrated Farm Systems
Irrigation Systems
Crop Drying Systems
Alternative Farm Equipment Systems
Fertilizer
Dairy and Milk Processing
Meat Processing Systems
Food Processing Efficiency Systems
Food Sterilization
Packaging
Sugar Processing
Citrus Processing

The contracting is completed and the projects are underway for all but the following:

Energy Integrated Farm Systems - A Notice of Program Interest will be issued late in FY 78.

Alternate Farm Equipment Systems - A feasibility study will be initiated in FY 79.

Fertilizer - One project is underway. A Program Opportunity Notice will be issued in late FY 78 for more projects.

Packaging - A feasibility study of sterile aseptic packaging will be initiated in FY 79.

## Solar Technology Transfer Branch

This branch attempts to facilitate the transfer of known solar technologies into the private sector. Among its projects is a solar installer training program being carried out in correctional institutions. It is based on a DOE-sponsored correspondence course entitled Fundamentals of Solar Heating, and is designed to train instructors to teach the skills necessary (to the institutions' inmates) to install solar systems. In offering this program, DOE provides the textbooks and other required materials.

To be eligible, an institution (Federal, State, or local ) should be an established adult or juvenile facility with a training program in heating, air conditioning, or plumbing. Upon completion of the course, which is designed for those already possessing skills in one or more of the above areas, a student should be able to size and lay out the typical solar components used in residential or light commercial systems, to assist in planning and supervising the installation of solar components, and assist in troubleshooting solar operational problems.

This program has been established thus far in three institutions, in the States of Connecticut, Florida, and Tennessee. Program coordinators hope to establish this training program in at least fifty institutions nationwide.

## Intergovernmental and Institutional Relations

The Office of the Assistant Secretary for Intergovernmental and Institutional Relations is the major outreach and consumer affairs coordinator of DOE. The Office oversees and maintains DOE relations with Congress, the news media, States, regional and local agencies, private agencies, and consumer interests.

A major project of this office is the coordination of the Energy Extension Service. Ten pilot Energy Extension Services have been in operation, in Alabama, Connecticut, Michigan, New Mexico, Pennsylvania, Tennessee, Texas, Washington, Wisconsin, and Wyoming. Guidelines are to be published by October 1978 for other States to apply for Energy Extension grants.

The aim of the Energy Extension Service is to help States develop educational programs to assist small energy consumers to conserve energy and to switch to renewable or less scarce energy resources. Individual programs are designed by the States, and are operated by the States with technical assistance and backup from DOE Headquarters.

## DEPARTMENT OF HEALTH, EDUCATION AND WELFARE

The activities of the Department of Health, Education and Welfare (HEW) are varied and far-reaching, as its name implies. Through its five Principal Operating Components (Office of Human Development, Public Health Service, Health Care Financing, Social Security Administration, and Education) its programs and policies have great impact on the general public, in all aspects of health, education and welfare. Specialized programs are carried out for such groups as the elderly, the handicapped, Indians, children and youth, rural Americans, the unemployed and poverty-stricken, veterans, drug and alcohol abusers, the mentally ill, and students. The Department's form of assistance varies from research to grant programs and personal financial assistance.

There is no single State counterpart to the Department of Health, Education and Welfare. Funds are distributed to State Departments of Education largely through HEW regional offices as well as to State Departments of Health/Human Services (names and functions vary). Health and welfare funds and priorities are often further funneled to local offices and programs. These State and local offices provide services such as vocational rehabilitation, drug abuse programs, health care services, youth development programs, Food Stamp and other welfare programs, and elderly services. HEW education funds are distributed to State Boards/Departments of Education, and sifted to school districts and institutions of higher education.

The following describes activities of two components of the Office of Education, Education Division, which have potential relevance to an institutional farming program.

### Bureau of Elementary & Secondary Education

#### Office of Environmental Education

The function of the Office of Environmental Education is to implement the Environmental Education Act of 1970. Its main activity is operating a grants program to public school systems, local school agencies, State education agencies, and institutions of higher education to implement environmental education programs. It also awards contracts on a competitive basis.

The Office first had involvement in integrated pest management in 1973 when it supported an IPM conference and the development of IPM curriculum materials. In 1977 it supported a grant for the development of a source book on IPM. Also in 1977, it funded a grant to Grady County Public Schools in Georgia to develop a pilot course in environmental studies focusing on IPM for grades 9-12, using the previously developed source book.

Other than the above, the office has received few proposals for programs related to IPM or other aspects or agriculture. As with all proposals it receives, it is most interested in funding programs that could be easily adapted to other localities and populations throughout the country.

Bureau of Occupational and Adult Education

The Bureau of Occupational and Adult Education administers programs of grants, contracts, and technical assistance for vocational and technical education, occupational education, metric education, adult education, consumer education, education professions development, and community schools. The appropriate State policy groups receiving the funds, such as the State Boards of Vocational Education, plot their own courses for program development within the Federal guidelines; they are formulated through the State Plan process. A number of these State policy boards have developed close working relationships with the State and/or local corrections boards or agencies.

## DEPARTMENT OF JUSTICE

The Department of Justice serves as counsel for the citizens of the United States, representing them in enforcing the law in the public interest. It represents the U.S. Government in all legal matters in which it is concerned. The Department plays a key role in the protection against criminals and subversion; in ensuring healthy competition of business; in safeguarding the consumer; and in enforcing drug, immigration, and naturalization laws.

The following summaries describe those programs/agencies identified as having potential involvement in a national institutional farming project.

### Bureau of Prisons

The Bureau of Prisons is responsible for the care and custody of persons convicted of Federal crimes and sentenced to incarceration in a Federal penal institution. It operates a nation-wide system of minimum, medium and maximum security prisons, halfway houses, and community program offices. Through its various divisions, programs are offered in population management; community services; unit management; case management; correctional service; education, vocational training and recreation; psychology and drug abuse treatment; chaplaincy service; personnel management and training; medical services; farm operations; and other services. The Bureau's five regional offices manage institutions and programs within their areas of responsibility.

The Farm Administrator, located in Kansas City, Missouri, has responsibility for distributing funds to Federal institutions for feeding inmates; a portion of these go to farming operations. This office does not carry out special programs, but has cooperated with other agencies for such.

Education programs provide training to Federal inmates in a wide variety of fields, including welding, automotive mechanics, and computer programming. One agriculturally related training program is offered in one institution, in farm machinery. There have been no training programs offered in horticulture, grounds maintenance, or related areas, although inmates historically have participated in such activities without formal training.

The Bureau of Prisons operates the Federal Industries, Inc., a wholly-owned, self-supporting government corporation. Approximately 60 industrial operations in 25 institutions provide goods and services for sale to Federal agencies. Corporation policies are directed by a Board appointed by the President.

The National Institute of Corrections (NIC) of the Bureau of Prisons is a source of technical assistance for State and local correctional agencies. Its assistance is geared toward upgrading and strengthening the practice of corrections, in four program priority areas: 1) staff development; 2) probation and parole services; 3) jail operations and programs;

and 4) screening for risk. Technical assistance is provided through several avenues: on-site visits by NIC staff members; grants or contracts to the agency requesting assistance; and/or on-site visits by an individual or team to other agencies to gain experience and expertise.

State correctional programs for adult men and women are chiefly administered by State Corrections Departments/Boards, which oversee various types of corrections/rehabilitation facilities for prisoners under the State's authority. Youthful offender programs are generally administered by State Departments of Youth Social Services. Local programs vary significantly with the local population and needs. Many cities and counties operate their own correctional facilities for offenders requiring minimum to maximum security.

## Law Enforcement Assistance Administration

The Law Enforcement Assistance Administration (LEAA) assists State and local governments in strengthening and improving law enforcement and criminal justice. Block grants are made to States for approved criminal justice programs and projects. Discretionary monies are also awarded to States, units of local government, and private, non-profit organizations for criminal justice projects. Efforts supported by LEAA include the areas of court administration, organized crime, white collar crime, public corruption, disorders and terrorism, the rehabilitation of offenders, victim assistance and the implementation of criminal justice standards and goals. Other efforts supported by LEAA include programs for research, evaluation, technical assistance, information, training and education. Assisstance is also provided for juvenile justice and delinquency prevention programs. LEAA programs are administered through its ten regional offices.

The Corrections Division of LEAA is involved with a prison industry or Free Venture program for state institutions. Currently three states (Minnesota, Illinois and Connecticut) receive grants for such programs, to bring private enterprise into the institutions; Florida also receives limited assistance. Four additional states may be funded during the next fiscal year for Free Venture programs. While the current programs deal with manufacturing, several States are considering expanding into agricultural operations.

The LEAA National Institute of Law Enforcement and Criminal Justice provides assistance for research and development programs to improve and strengthen law enforcement and criminal justice, and to evaluate and disseminate the results of programs and projects supported by LEAA funds. It also serves as the clearinghouse for the exchange of criminal justice information. The corrections research carried out involves both pre- and post-release experiences; service delivery systems are also designed for offenders and ex-offenders.

## DEPARTMENT OF LABOR

The purpose of the Department of Labor (DOL) is to foster, promote and develop the welfare of wage earners of the United States, to improve their working conditions, and to advance their opportunities for profitable employment. It promulgates and enforces occupational safety and health standards; collects and disseminates data in all facets of labor economics; serves as a focal point for labor-management relations through all sectors; administers employment standards dealing with overtime, equal pay, age discrimination, affirmative action and other areas; and oversees all of the Federal Government's employment programs. Administration of these programs is funneled primarily through regional offices established in the ten Standard Federal Regions.

State Departments of Labor, partially funded by DOL, are responsible for the administration of the Employment Security programs in their respective states, and for conducting specialized employment and training programs for target groups. Many also enforce appropriate state laws relating to occupational safety and health, child labor, workman's compensation, and other areas. Most States maintain local public employment offices throughout the state to assist residents in finding employment, and to assist employers in locating suitable employees (over 2,400 have been established in the United States). These offices, in conjunction with the State and Federal Labor Departments, also participate in analyses of current labor markets.

The following describes programs and activities within the DOL Employment and Training Administration which have potential relevance to a national institutional farming program.

### Employment and Training Administration

The Employment and Training Administration (ETA) is that component of DOL with responsibilities for conducting certain work-experience and work training programs; funding and overseeing programs conducted under the provisions of the Comprehensive Employment and Training Act (CETA); administering the Federal-State Employment Security System; and conducting a continuing program of research, development and evaluation.

A DOL Task Force for Rural Development, located in ETA, has recently been formed at the request of the President to participate in the Executive rural policy effort. This group will attempt to ascertain how the Department can best contribute to this rural effort, and to take steps in dealing with these issues. Eventually the Task Force may develop innovative projects, on an interagency basis, to demonstrate the potential of rural programs.

The Employment and Training Administration has been involved with offender research and development projects since 1963. This effort has evolved from initial research and experimentation to the development and

testing of programs models in selected areas, and finally, to promotion and dissemination of approaches that have proven successful. ETA's offender efforts have included training for employment; pre-trial intervention; supported work projects; income assistance for releasees; and bonding assistance. For a variety of reasons offenders programs have been de-emphasized in recent years; however, there are some indications that a forthcoming CETA amendment may place a higher priority on offender programs than it has in the recent past.

As it stands, CETA is several ways encourages the development of employment and training programs for offenders. Title III of CETA (national programs) identifies offenders as one of the special target groups requiring special attention at the Federal level, calling for the development of information concerning the special needs of offenders and efforts to increase employment opportunities for offenders. At the State and local level, Title I of CETA encourages prime sponsors (recipients of CETA funds) to establish "special model training and employment programs and related services including services to offenders . . ."

A brief synopsis of the CETA titles is as follows:

Title I: Grants to prime sponsors for comprehensive manpower services including recruitment, orientation, counseling, testing, placement, classroom instruction, on-the-job training, allowances, supportive services, and transitional public employment programs.

Title II: Grants to prime sponsors for programs of transitional public service employment in areas of high unemployment.

Title III: Grants for special target groups as authorized under Titles I and II.

Title IV: Authorizes Job Corps, a residential program of intensive education, training and counseling for disadvantaged persons ages 16 through 21, operating at 60 centers nationally.

Title V: Establishes the National Commission for Manpower Policy.

Title VI: Grants for emergency public employment programs to augment Title II.

Title VII: General provisions.

Title VIII: Establishes Young Adult Conservation Corps, providing jobs and training for disadvantaged youth in conservation, wildlife and recreation.

There are 445 prime sponsors nationwide; they are States, units of local government with populations of 100,000 or more, or combinations of local governments with populations of 100,000 or more. Those local areas not qualifying as prime sponsors fall under the jurisdiction of the "Balance of State". CETA provides prime sponsors maximum flexibility in planning and operating their programs, within Federal guidelines.

# AGENCIES

## COMMUNITY SERVICES ADMINISTRATION

The overall purpose of the Community Services Administration (CSA) is to reduce poverty in America. It attempts to do so by helping low-income families and individuals attain economic self-sufficiency. Agency guidelines, revised annually, fix the incomes which qualify persons or families, both rural and urban, for participation in antipoverty programs. These programs seek to help the poor help themselves out of poverty by providing educational and economic opportunity, and financial support. CSA operates a regional office in each of the ten Standard Federal Regions.

With the combined use of Federal, State and local funds, CSA sponsors 865 Community Action Agencies located in 2,210 counties throughout the United States. Six basic programs operate under the community action concept:

1) Local initiative: local funds used to support community needs;

2) State Economic Opportunity Offices: advise Governors, mobilize resources, and advocate for the poor;

3) Senior Opportunities and Services: projects provide services for and with poor elderly persons and groups;

4) Community Food and Nutrition: programs provide funds to assist local communities combat hunger and malnutrition;

5) Energy Conservation and Winterization: explores methods of providing cheaper electric energy, and provides insulation and other weatherproofing for the poor; and

6) Community Economic Development: operates mainly through Community Development Corporations (CDC's), which are resident-controlled and profit-oriented businesses for low income persons. CDC's operate various businesses, including manufacturing for toys, canoes, furniture, blue jeans, and metal fabrication; shopping centers, production and marketing cooperatives, franchises, industrial parks, housing projects and land development, grocery stores and supermarkets. They hire the poor, providing training where needed, while seeking to run a profit-making business that will eventually become self-sustaining.

Since 1976, CSA has funded the National Center for Appropriate Technology (NCAT) which addresses the need for small-scale technology as solutions to the problems of the rising costs of energy, the increasing shortages of non-renewable energy resources, and the continuing problem of devising ways in which individuals and communities can become self-sufficient and self-reliant. The primary mission of NCAT is the development and application of technologies appropriate to the needs of low-income

communities. During its first year of operation, the NCAT carried out a wide range of activities, including the development of a National Information Sharing Network for appropriate technology; developing a library, hot line and clearinghouse for appropriate technology; organizing conferences, and workshops on energy and appropriate technology; and providing outreach, education and training on small-scale technology to Community Action Agencies, CDC's and low-income groups.

In addition to the NCAT, CSA has recently funded various other energy-related projects. These include: weatherization and other energy conservation programs; solar, wind and composting demonstrations; agricultural energy reduction projects; energy-related economic development activities; youth employment projects in energy-related fields; public policy research; energy education; and consumer protection and advocacy.

CSA currently supports two offender programs: 1) a planning grant towards the development of a statewide program for ex-offenders; and 2) a rural program to give comprehensive pre- and post-release services for offenders to facilitate adjustment and self-sufficiency. CSA also works on a limited basis with LEAA for community crime prevention.

## ENVIRONMENTAL PROTECTION AGENCY

The purpose of the Environmental Protection Agency (EPA) is to enhance the environment today and for future generations under laws enacted by Congress. It enforces such laws in the control and abatement of pollution in the areas of air, water, solid waste, toxic substances (including pesticides), noise and radiation.

Specific activities of EPA include research, monitoring, standard setting, and enforcement; as well as coordinating with State and local governments, public and private groups and individuals, and educational institutions in their research and other antipollution activities. EPA is represented by regional offices in each of the ten Standard Federal Regions.

Most states now have designated environmental quality control departments that enforce applicable air and water pollution control laws. States must demonstrate capability to carry out Federal law provisions before being allowed to do so. Many of these agencies also have responsibilities for pollution control from solid wastes, noise, and radiation - but in some cases these are carried out by State Departments of Health. Similarly, State Departments of Agriculture often carry out Federal/State pesticide control provisions.

EPA's role and authority in pesticides stems from the Federal Insecticide, Fungicide and Rodenticide Act, as amended in 1975. Among EPA's authorities by this law are:

1) to classify pesticides by general and restricted use, and require and administer the registration of all pesticides;

2) to prescribe standards for the certification of applicators, and establish standards for State certification plans;

3) to issue experimental use permits;

4) to prohibit the distribution, sale or transportation of unregistered pesticides, and the alteration of pesticides or labels;

5) to issue "stop sale, use and removal" orders for pesticides;

6) to establish regulations for the disposal or storage of pesticides, and pesticide containers;

7) to set up a national monitoring plan; and

8) to conduct research to carry out the purposes of the Act, giving emphasis to biologically integrated methods of control.

This Act also directs EPA and States administering certification plans to make IPM information available upon request to applicators and other individuals. It may not be required that individuals seeking certification receive instruction in IPM techniques.

In addition to supplying information to the public, the EPA Office of Pesticide Programs is attempting to improve access to information pertaining to pests, pest control methods, and IPM, and is developing improved processes for the registration of pheromones, hormones and other non-conventional means of pest control commonly employed in IPM strategies. It is also exploring incentives for increased private sector involvement, and has discussed the potential of incorporating IPM strategies into its existing regulatory framework. Pursuant to the President's request for a national IPM strategy, EPA is working cooperatively with USDA, CEQ, and other public and private agencies to help formulate such a strategy.

Through another interagency cooperative arrangement, EPA is working with USDA on a Model Implementation Program to demonstrate united efforts to clean up water quality problems caused by non-point water pollution sources (including sediments from croplands, forests, road and stream banks; animal wastes from feedlots and pastures; and nutrients and pesticides from agricultural lands). EPA, which has primary responsibility for the control of non-point pollution under Section 208 of the 1972 Amendments to the Clean Water Act, has overseen areawide and State water quality management agency plan development. Under the Model Implementation Plan, seven model farm projects were selected to implement comprehensive programs. They will be overseen by EPA and USDA cooperatively.

## OTHER POTENTIAL PUBLIC AGENCY PARTICIPANTS

As previously discussed, there are numerous Federal, State and local agencies which could have useful tie-ins with institutional farming projects - but their potential linkages cannot be ascertained until specific goals and objectives are established for each program developed. Their involvement (or lack thereof) would vary with such factors as population(s) served, geographical location, type(s) and diversity of land on each specific institution, and special services and programs offered (e.g., various supportive services to offenders and ex-offenders).

The following list represents a sampling of Federal agencies with such potential involvement, along with State/local counterparts, and the potential roles of these agencies in a national program. The State and local counterparts are usually related to their corresponding Federal agencies through funding, goals, and activities. In some cases, though, the non-Federal agencies may be financially independent from the Federal Government, though similar in goals and/or programs to their listed Federal counterparts.

| FEDERAL | STATE/LOCAL |
|---|---|
| Department of Agriculture | |
| Agricultural Conservation & Stabilization Service | State & County Committees |
| *Cost-sharing for environmental control and conservation of lands* | |
| Forest Service | State & Local Forestry Agencies |
| *Technical assistance in private forest management* | |

| FEDERAL | STATE/LOCAL |
|---|---|
| **Department of Commerce** | |
| Economic Development Administration | Community Affairs/ Development Agencies |
| *public works grants and loans; business loans; lease guarantees; technical assistance* | |
| Office of Minority Business Enterprise | |
| *Assistance to minority ex-offenders* | |
| **Department of Defense** | Local military installations |
| *possible available unused land for gardening/ farming projects* | |
| **Department of Health, Education and Welfare** | |
| Office of Human Development | State & Area Agencies on Aging; Local Senior Centers; Youth Service Agencies; Native American Programs; Vocational Rehabilitation; Offices for Handicapped Services |
| *Supportive Services for special populations* | |
| Public Health Service | State and Local Health Departments and Clinics; Regional Health Systems Agencies; State and Local Drug and Alcohol Abuse Agencies and Programs; Mental Health Centers |
| *Special services for offenders and ex-offenders* | |

| FEDERAL | STATE/LOCAL |
|---|---|
| Social Security Administration | State & Local SSA offices |
| *Information to qualified ex-offenders regarding services/funds available* | |
| **Department of Housing and Urban Development** | |
| Housing | |
| *Low income housing assistance* | |
| **Department of the Interior** | |
| United States Fish and Wildlife Service | Fish and Game/Wildlife Commissions |
| *Technical assistance* | |
| National Park Service | State & Local Park Agencies |
| *Technical assistance; environmental education* * | |
| ACTION | State & Local Volunteer Coordination Agencies |
| *Coordination of volunteer programs* | |
| **Appalachian Regional Commission** | |
| *Support to/cooperations with programs within its 13-state area of jurisdiction* | |

*Of special note is that the National Capital Region of the National Park Service is developing, in cooperation with the Department of Energy, a handbook on low-energy maintenance of park areas. It will include such areas as pest management, composting of wastes, plant selection, irrigation, pond maintenance, mowing, and park design.

| FEDERAL | STATE/LOCAL |
| --- | --- |
| National Science Foundation | |
| *Technical assistance; technical information source* | |
| Small Business Administration | |
| *Loans & other assistance to ex-offenders wishing to establish small businesses* | |
| Tennessee Valley Authority | |
| *Support and cooperation to programs within its geographical boundaries* | |
| Veterans Administration | VA Offices, Hospitals and Centers, State & Local Veterans Service Programs |
| *Support services to veteran offenders and ex-offenders* | |

# Academic Institutions

# ACADEMIC INSTITUTIONS

## Land-Grant Institutions

Every State in the U.S., and Puerto Rico, maintains one State institution of higher education as a "land-grant institution." The land-grant system was initiated 116 years ago through Federal legislation. Since that time, USDA funds have been parceled to the States through the Hatch Act for the land-grant schools, based upon farm population and outputs.

As land-grant institutions, their missions are research, education and public service. Supplied with Federal, State, local and sometimes private funds, these institutions house the Cooperative Extension Services and the Agricultural Experiment Stations. Colleges of Agriculture focus on offering four-year and advanced degree programs in all aspects of the food and agricultural sciences - including entomology, plant pathology, and often specifically in pest management. Some additionally offer agricultural education programs at the two-year level.

Land-grant institutions' programs and services are not limited to agriculture. Most also house Colleges of Engineering; Arts and Sciences; Business; Education and others.

## Other Four-Year Advanced Degree Institutions

Agricultural education and services are not strictly limited to the land-grant institutions. Many viable and comprehensive agriculturally related curricula are offered by non-land-grant colleges and universities - both public and private. While some do offer actual agricultural educational curricula, many offer related programs such as environmental health, conservation, environmental and agricultural engineering, water resources, and toxicology; along with their other diverse educational offerings.

Many of these institutions conduct research supported by funds from such sources as USDA (on a competitive basis), EPA, the National Science Foundation, State and local groups, and private industry. Public service activities vary from the conduct of conferences and seminars for the public and special interest groups, to on-site technical assistance and troubleshooting.

Two-Year Institutions

The number of public community and junior colleges has increased by about 50 percent in the last fifteen years. These schools, along with offering basic educational development and prebaccalaureate degree programs, usually also offer a number of terminal degree career programs. A large number of these schools offer such programs in agriculture, or specialized agricultural areas. Related programs in environmental technology (including air, soil, and water sampling and analysis; and water and wastewater treatment) are available, and several pest control programs (urban and/or agricultural) have been identified.

Public community and junior colleges typically stress, along with their educational/training curricula, adult and continuing education, and other forms of public services. Credit and non-credit courses are often offered for the public, as well as wide array of workshops, seminars and short courses.

Post-secondary vocational and technical schools offer two-year (or less) programs intended for direct occupational entry. Like community and junior colleges, some offer training programs in agriculture and related fields - as well as a variety of short courses and adult/continuing education programs.

# Private Sector

## PRIVATE SECTOR

The involvement of the private sector at many levels could be crucial to a national institutional farming project's success or demise. Its input could come through technical assistance and support, publicity, and other cooperative efforts.

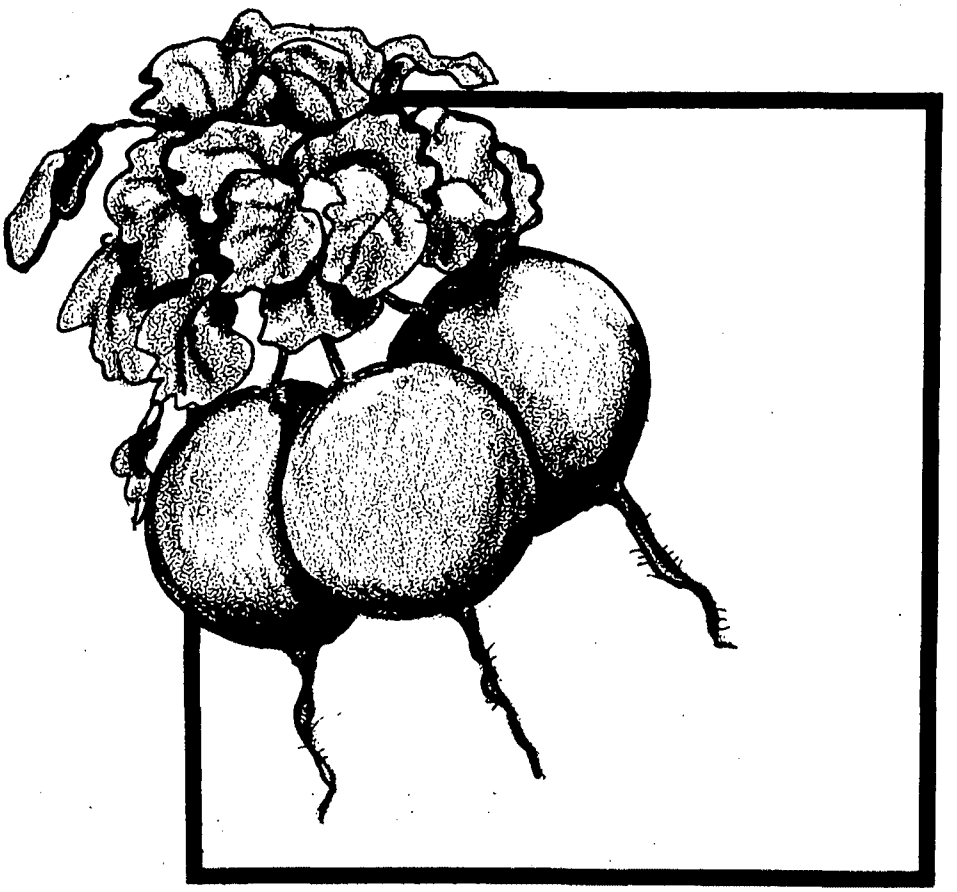
National associations have at their disposal a wide array of experts who, individually or collectively, could provide recommendations in project design and implementation; assist in gaining widespread recognition and support to the project; and possibly provide direct technical assistance. Some of these national organizations identified as being related to or having potential involvement with an institutional farming project are:

Agricultural Council of America
American Association for the Advancement of Science
American Association for Extension Education
American Association for Higher Education
American Association of Agricultural College Editors
American Association of Community and Junior Colleges
American Association of Institutional Farm Supervisors
American Association of Retired Persons/National Retired Teachers Association
American Association of Teacher Educators in Agriculture
American Bar Association
American Chemical Society
American Correctional Association
American Corrective Therapy Association
American Rehabilitation Counseling Association
American Society of Agricultural Engineers
American Vocational Association
Association for Supervision and Curriculum Development
Association of Community College Trustees
Association of Private Colleges and Universities
Crop Science Society of America
Entomological Society of America
Intersociety Consortium on Plant Protection
National Academy of Education
National Agricultural Chemicals Association
National Association for Environmental Education
National Association of Colleges and Teachers of Agriculture
National Association of County Agricultural Agents
National Association of Farmworkers Organizations

National Association of Industrial and Technical Education Teachers
National Association of State Universities and Land-Grant Colleges
National Association of State Units of Agriculture
National Association of Trade and Technical Schools
National Education Association
National Vocational Agricultural Teachers' Association
National Wildlife Association
Rural Education Association
Public Offender Counselor Association

A number of these associations have State and/or local chapters which could be of equal value. States and localities may additionally have their own groups and associations which would have interest in an institutional farming/gradening project such as horticultural societies, farmers' markets, farmers' cooperatives, and growers associations, organic gardening/farming associations, churches, chambers of commerce, and other civic groups.

Local businesses that may have interest in and wish to cooperate with an institutional program include nurseries and seed distributors, environmental and agricultural consultants and laboratories, recycling centers, chemical outlets, newspapers and television stations - as well as the local farmers. Industries with potential tie-ins include utilities, chemical and equipment manufacturers, water and waste treatment facilities, and any other industries with potentially recyclable waste products.



# POTENTIAL PROJECT COMPONENTS

# Potential Project Components

The majority of the potential project components have been covered in some manner in previous chapters. This section will serve to summarize these activities and projects which were recommended by interviewed officials, identified through literature review, and/or successfully implemented during the Memphis project.

At the present time, it is impossible to specify specific IPM, eco-agricultural or other techniques which would be appropriate for each institutional project that might be initiated. Such specifics would necessarily depend upon several factors, including crops grown, pest problems, soil types, weather and climate conditions, acreage, the size and population of the institution, the priorities of the participants, and the resources available. Moreover, implementation of one component may preclude another, e.g., composting of manure for fields, or its use as an energy source.

The following, then, as the chapter heading states, consists of potential project components identified during the course of this study. It is not intended to be limiting, but as a base for further discussion, as other viable ideas may emerge in the future. The potential components included here are presented by major topic areas.

## IPM/Eco-Agriculture

While these two areas are basic to the intents of an institutional project as it is now envisioned, for reasons stated earlier it would be less than meaningful to recommend specific techniques for future projects. Such techniques should be selected upon all information available, specific to pests, crops, weather, etc. It has been suggested that before plans

and projects are initiated, it would be wise to work with the Soil Conservation Service in the development of an area conservation plan to obtain a total perspective.

It would be important for project participants to identify and draw upon all resources available, such as Extension IPM experts, private consultants, local farmers (eco-farmers do exist throughout the country), and college/university faculty and students (internship arrangements could possibly be made). Several universities have on-line computer systems for IPM, designed to use current information from the field, plus historical information and data gathered from scientific experiments, in order to increase the efficiency and effectiveness of pest management techniques. While these are essentially in their formative stages, they could be very useful to the IPM practitioner in the institutional setting.

These practitioners, in order to make the institutional farms true demonstration areas for up-to-date IPM and eco-agricultural techniques, would do well to keep abreast of all relevant current research results coming from the Federal Government, universities, and private researchers. Working in conjunction with these researchers could also prove very fruitful, and "technology transfer" arrangements could be made, i.e., attempts to pass techniques demonstrated under controlled research conditions to real agricultural conditions.

Depending upon a specific project's stated objectives, other types of agriculturally related applied research and demonstration projects could be carried out in conjunction with an institutional project. Several suggestions are:

-controlled studies on the economic comparisons of IPM/eco-agricultural vs. conventional techniques, on a plot-by-plot basis; and

-studies and applications of adapting production methods to be more self-satisfying.

In a more commercial vein, it has also been suggested that agricultural operations be linked with, in some way, existing prison industries programs. The possibility of this would vary with the type of institution and the laws governing its sale of products (or produce) on the open market (discussed in Additional Considerations), along with other factors. With adequate land, equipment and labor, it could be possible for an institution to meet most of its own food needs and have surplus for sale on the open market. Or, smaller operations could be similarly commercialized, such as worm farming or beekeeping.

Whatever the specific agriculturally related activities chosen for a particular project, it has been emphasized that the entire farming operation should be considered - including both crops and livestock - to achieve the best balance between environmental, energy, health and economic factors.

Gardening/Horticulture

Many ideas were offered regarding gardening/horticulture projects. With regard to gardening on institutional land, suggested participants included community youths and their families, elderly persons, inmates and their families, and mentally and physically handicapped persons. Specific activities here could include providing training to participants on gardening techniques along with classes in related areas such as nutrition, canning, and freezing; soliciting support from local volunteers, high school and college students; and establishing liaisons with local food fairs for those gardeners wishing to sell their produce.

To help expand the concept community-wide, project participants could work with other individuals and groups in establishing additional gardening programs within nearby cities. These could be on land owned by churches, nursing homes, hospitals and other institutions, as well as on city- or county-owned acreage. The populations served would vary with the goals and purposes of the land owner. With proper staff, nursing homes, hospitals and similar institutions could establish comprehensive hortitherapy programs. While the project's staff could assist in setting up other such community gardening programs, it would probably be most feasible to help these other programs reach self-sufficiency as soon as possible.

An institutional gardening project could make use of (or possibly establish) a "hotline" such as has been implemented by faculty members of the University of Georgia College of Agriculture. This toll free Dial-A-Gardener program covers about twelve counties, and offers 44 three-minute tapes to give the calling gardener information on insects, diseases, cultural practices and other relevant topics.

Several officials suggested the possibility of the construction of greenhouses for wintertime vegetable growing, or for raising flowers. They could be heated with alternate energy sources, such as solar or manure compost, or be designed for specific populations such as the handicapped, as a public service. Other sources have noted that greenhouses may not be feasible because of the expense to construct and operate, and they suggested relying upon propagation chambers.

A related possible activity concerns lawn care and design. Based upon available resources and expertise, institutional lawns could be designed and maintained in the most energy-efficient manner available - while promoting the use of techniques by other institutions/agencies, and the general public.

## Energy Conversion/Conservation

This area overlaps a good deal with the two areas above, as IPM, eco-agriculture and alternative lawn care represent energy-conserving measures. Other energy conservation strategies could include adding insulation to farm buildings, assuring proper functioning of all farm equipment, combining field operations when possible, and reducing tillage when appropriate.

On-farm energy production possibilities include the use of animal and crop residues as energy sources for heating buildings and drying crops; the use of solar apparatuses for the heating of buildings and water, and for crop drying; and the construction of wind turbines for electricity and pumping water. In some cases, small hydropower projects may be feasible. Again, each situation varies, and it would be important for project participants to draw upon all expertise available for decision-making and project implementation.

## Corrections

In addition to involving the offender in many of the above potential components, it has been suggested that a worthwhile and viable option would be to train selected inmates for IPM-related occupations. This has been detailed in the chapter "Skills for the IPM Practitioner". A suggestion in this chapter is that curricula be structured flexibly, allowing the inmates to choose among levels of training, and about the nature of training. For example, one offender may prefer to specialize strictly in IPM, while another may want additional knowledge and experience in all phases of farm production. Other recommendations concerning training have included:

- working with prime sponsors to make use of CETA and/or job placement;

- emphasizing, along with formal training, OJT and/or work-study off of the institution, and providing for follow-up training;

- making use of a variety of resources; e.g., community college and university programs, students and faculty, guest lecturers, audio-visuals, etc.

An additional training possibility would be to work with the Department of Energy in establishing its solar installer training program at the institution.

Some have suggested that research and demonstration projects concerning the offender could be conducted by public or private research bodies in conjunction with an IPM/eco-agricultural project. These could include follow-up studies on released inmates who were provided training, studies concerning the effectiveness of other supportive services, or as suggested by one official, the implementation of a penalty alternative program in which offenders, particularly youth, are given the choice of either incarceration, or service to the farm or garden area.

Outreach/Promotion

A very important factor for a successful program is obtaining the support and cooperation of the community-at-large, as well as special interest groups, local government, and private organizations. This was clearly demonstrated during the Memphis project in which outreach and promotional efforts resulted in donations of equipment, vehicles, seeds, expert advice, and other goods and services.

Suggestions for such efforts include:

- speaking before local civic organizations, youth groups, schools and other organizations;

- paying personal visits to key public officials as well as local farmers and business and industry representatives;

- contacting and preparing new releases for newspapers and TV stations about the project; and

- inviting guest speakers, and opening the talks to the public.

# ADDITIONAL CONSIDERATIONS

# Additional Considerations

The great majority of those interviewed during the course of this study expressed much enthusiasm regarding the merits of an institutional IPM/eco-agricultural project. Many felt that a unique and exceptional aspect is that such a project has the potential of providing benefits to a number of disciplines. Of special interest is the fact that many appeared to be as enthused concerning its contributions to another discipline, as to their own. Also evident from the interview process was that an institutional project as proposed, or components of such a program, fit in very well with the goals and objectives of a variety of agencies.

Several of the interviewed officials pointed out potential obstacles to the successful implementation of an institutional program and/or suggested areas for further research or study before actual project implementation, which were not within the scope of this study. This chapter will present and discuss the potential obstacles to an institutional program, as brought forth by interviewed officials, and convey their recommendations for further research.

## Potential Obstacles

1. Placement of Trainees:

   A. The job market for IPM and other agricultural skills may not be good enough to justify the development of training programs in these areas.

   B. Many IPM/agricultural jobs are seasonal in nature.

   C. Farmers may not be willing to hire former inmates.

Discussion: These potential problems would definitely need to be dealt with before embarking upon offender training programs. Providing training for inmates in occupations with little chance of permanent full-time employment would defeat the purpose of the program and probably would be worse than providing no training at all.

Throughout this report it has been emphasized that local job market surveys must be carried out before training program development, to determine what IPM/agricultural skills, if any, are in demand, and to structure the programs accordingly. Also at the local level, it may be wise to survey potential employers concerning their receptivity to hiring ex-offenders, and about other factors such as wages, opportunities for advancement, specific job requirements, and seasonal characteristics, if any, of the jobs.

It also may be wise, for initial planning purposes, to perform a similar national survey before specific localities are selected. Such a survey should help indicate which geographical areas would be best for locating programs, for placement purposes. It should also be helpful in identifying viable job training programs, and in eliminating wasted efforts at the local level.

2. Economic Feasibility:

   A. It may be more economical for institutions to buy their food, while leasing their land to local farmers, as raising their own food may cause extra expenses for additional guards, more equipment, etc.

   B. Implementing IPM and eco-agricultural techniques may prove less cost-efficient than conventional methods.

   C. Many institutional farms may be located on poor land for agricultural purposes, and may be located far from any population centers.

Discussion: Presently available information is not adequate to verify or disprove the potential of these obstacles arising. Recent research suggests that organic farming, while somewhat less productive than conventional farming, is as cost-efficient as conventional due to lower production costs. However, to what extent these findings can be generalized to all geographical areas or to institutional farms in particular, is questionable. Further, although the need for extra equipment and other resources depends to a large extent upon the ingenuity and innovativeness of the project staff (as evidenced during the Memphis project), little is known about the resources and resource constraints of correctional farms in general, or about their management practices.

It has been suggested that a more in-depth study of correctional farms may be in order before delving deeply into a national project. Such a survey could include management practices, philosophies (e.g., rehabilitation or punishment), soil fertility and other land characteristics, financial constraints and other relevant factors. Further research could be carried out on the economics of IPM and scientific ecological farming techniques, and based upon results of the above survey, an analysis could be made regarding the project's economic feasibility.

Several additional comments are in order. First, an underlying philosophy of IPM and scientific ecological agriculture is that the strategies are flexible, and adaptable according to economic and other considerations. Second, while a survey and analysis such as were described above could be very useful for initial decision-making purposes, only actual demonstration can prove or disprove an idea's feasibility or non-feasibility. Although the Memphis project showed economic viability, its duration

was not long enough to justify reaching firm conclusions or making generalizations. Therefore, project policy-makers may be wise to start small, and expand when positive economic results have been indicated.

3. Sale of Produce:

   A. Local farmers may resent competition from a public institution.

   B. Many States have laws forbidding prison industries which compete with private enterprise.

Discussion: The sale on the open market of institutional farms' produce is not a necessary factor for the development of institutional farming projects. However, it may be worthwhile to include, along with the previously mentioned surveys, a study concerning potential problems that could arise in this regard, including farmers' and unions' attitudes, as well as concerning relevant State and Federal laws.

4. IPM policy within and among Federal agencies, as well as with other public and private groups, is only in its formative stages.

Discussion: This potential obstacle is somewhat difficult to address by an outside observer. However, it seems that a cooperative arrangement by Federal agencies as well as State and local, and private groups for an institutional project would facilitate the formation of formal policies. Additionally, the subject of scientific ecological agriculture, which currently receives much less attention than IPM, may necessarily be addressed from a policy standpoint as a result of a cooperative institutional project. Perhaps an assist to Federal agencies and other potential project participants would be a detailed analysis of all Federal legislation pertaining to IPM and eco-agriculture.

## Areas For Further Research

In response to Potential Obstacles:

1. A national survey on employment opportunities in IPM and related areas.

2. A national survey on attitudes of potential employers towards the hiring of ex-offenders.

3. A national survey on correctional institutions, on such factors as land characteristics, crops and pests, management practices, philosophies, etc.

4. An analysis of probable economic effects on institutions of an IPM/eco-agricultural program.

5. A survey of all State and Federal laws and policies relating to institutional farming, sale of produce, inmate wages, and other relevant factors.

6. A survey of unions and farmers on their attitudes towards the sale of produce by institutional farms.

7. A survey and analysis of Federal legislation relevant to IPM/eco-agriculture - especially as these laws impact the roles of Federal agencies.

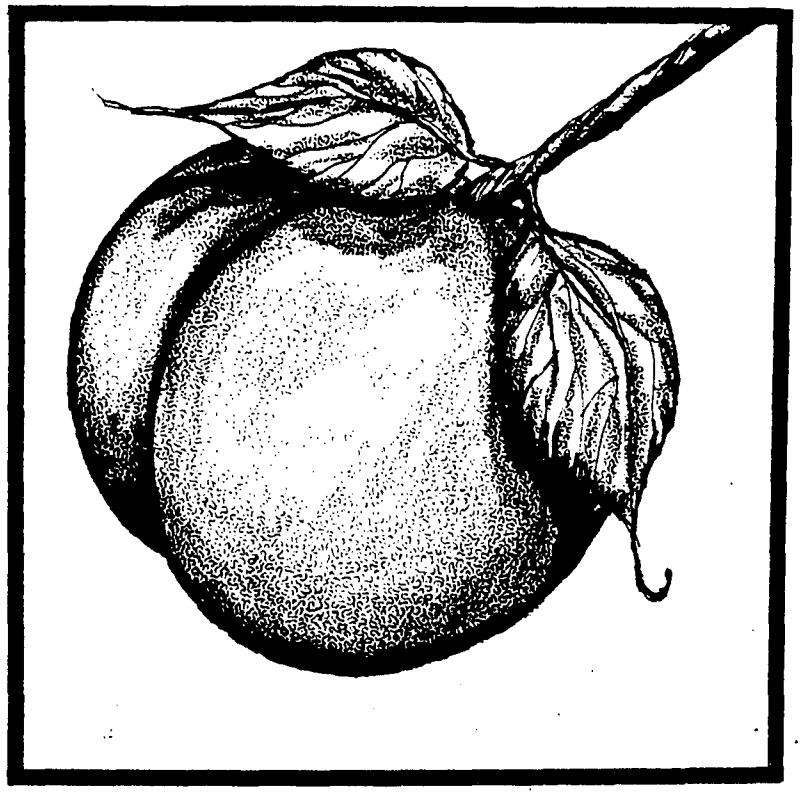
Other suggested further research:

1. A survey on other institutional land, e.g., Department of Defense, hospitals, geriatric facilities, that could be used for gardening/farming programs.

2. A comprehensive survey of all curriculum materials developed either by institutions or under grants/contracts in support of both IPM and eco-agricultural techniques.

3. Convene a working conference of identified authorities in the IPM and eco-agricultural fields to identify gaps in existing curricular offerings and develop plans for filling such gaps.

4. A more detailed analysis of potential private sector and academic community participants.



# PLAN of ACTION

# Plan of Action

One of the objectives of this study was to develop a procedural program leading to the utilization of institutional farms as IPM demonstration models. Previous chapters have identified: those IPM techniques and procedures applicable in the institutional farm setting; individuals and offices within Federal agencies with activities paralleling the field of IPM; and, individual skill sets required in the successful application of IPM.

With the completion of this study sufficient interest has been identified in the various agencies to warrant the development of a coordinated program for implementing an institutional program on a large scale. In the process of conducting the interviews, ideas were solicited as to the manner in which such a large scale program could be implemented. The following suggestions regarding procedure were consistently received and recorded.

1. Conduct an institutional study.
2. Establish an interagency advisory group.
3. Involve the private sector and the academic community.
4. Develop a long range budget.
5. Establish realistic timelines.
6. Provide technical assistance and support personnel.

The remainder of this chapter will be devoted to an elaboration of these suggestions.

## Conduct an Institutional Study

Throughout both the Memphis project and this current project, researchers at National Field Research Center in general, and the authors in particular, have received requests for information concerning involvement in any prototype projects. A study conducted by the EPA intern, previously described, elicited a great deal of interest on the part of particular institutions.

An integral part of any future work in the area must provide more detailed information on the institutions to be involved, with all institutions informed of the possibilities. Responding institutions should be categorized according to such factors as acreage under cultivation, climatic conditions, type of institution, availability of educational support systems, legal constraints imposed on such projects, and evidenced desire on the part of appropriate officials.

The results of such a study could be the development of a broad range, rank ordered listing of potential project participants.

## Establish an Interagency Advisory Group

It is clear from the previous chapters that many agencies have shown interest in participating in a large scale institutional program. It was clear in the interview process that the persons involved were sincere in this desire and that many recognized a responsibility, often unmet, for working with either institutions, offenders or farming practices.

In bringing a national program to reality, it will be necessary to "officially" involve those agencies expressing interest. Such "official" involvement will necessitate establishing a responsible body

in charge. Depending upon one's choice of words, this group might be called a steering committee, a task force, an interagency advisory group, or some other title.

The authors of this report have chosen to call this responsible body an interagency advisory group. While the name applied is not of critical concern, the authority to act is. National Field Research Center has a long history in developing interagency agreements and has found through that experience that it is crucial to such a program's development to have persons involved who are in a position to actually speak for the agency they represent. Any interagency program will lag if the persons on the central work groups serve merely as couriers of information. Other necessary characteristics of participants include the fact that they be supportive of the concept, have some degree of time flexibility to attend meetings and be thoroughly knowledgeable of their own agencies' rules and regulations. (Rules and regulations are important, but of equal importance is the knowledge that a totally new program is being embarked upon and will demand a degree of flexibility which only a knowledgeable person can provide.)

The core interagency advisory group, the formation of which should be backed by formal written interagency agreements, should consist of representatives from the following agencies:

- Department of Agriculture
- Environmental Protection Agency
- Department of Justice
- Department of Health, Education and Welfare (Office of Education)
- Department of Energy
- Department of Labor

The lead agency in this task should initially be the Department of Agriculture by virtue of the nature and design of the program. This is not meant to downgrade the role of the other agencies listed (nor of those not listed in the core group), but rather to recognize both the reality of the situation and the directed goals of the program.

Surrounding this core group should be all of the other agencies expressing an interest in being a part of such a project. These include, but certainly are not limited to, the following:

- Community Services Administration
- Council on Environmental Quality
- Office of Technology Assessment
- Private Sector
- Academic Community

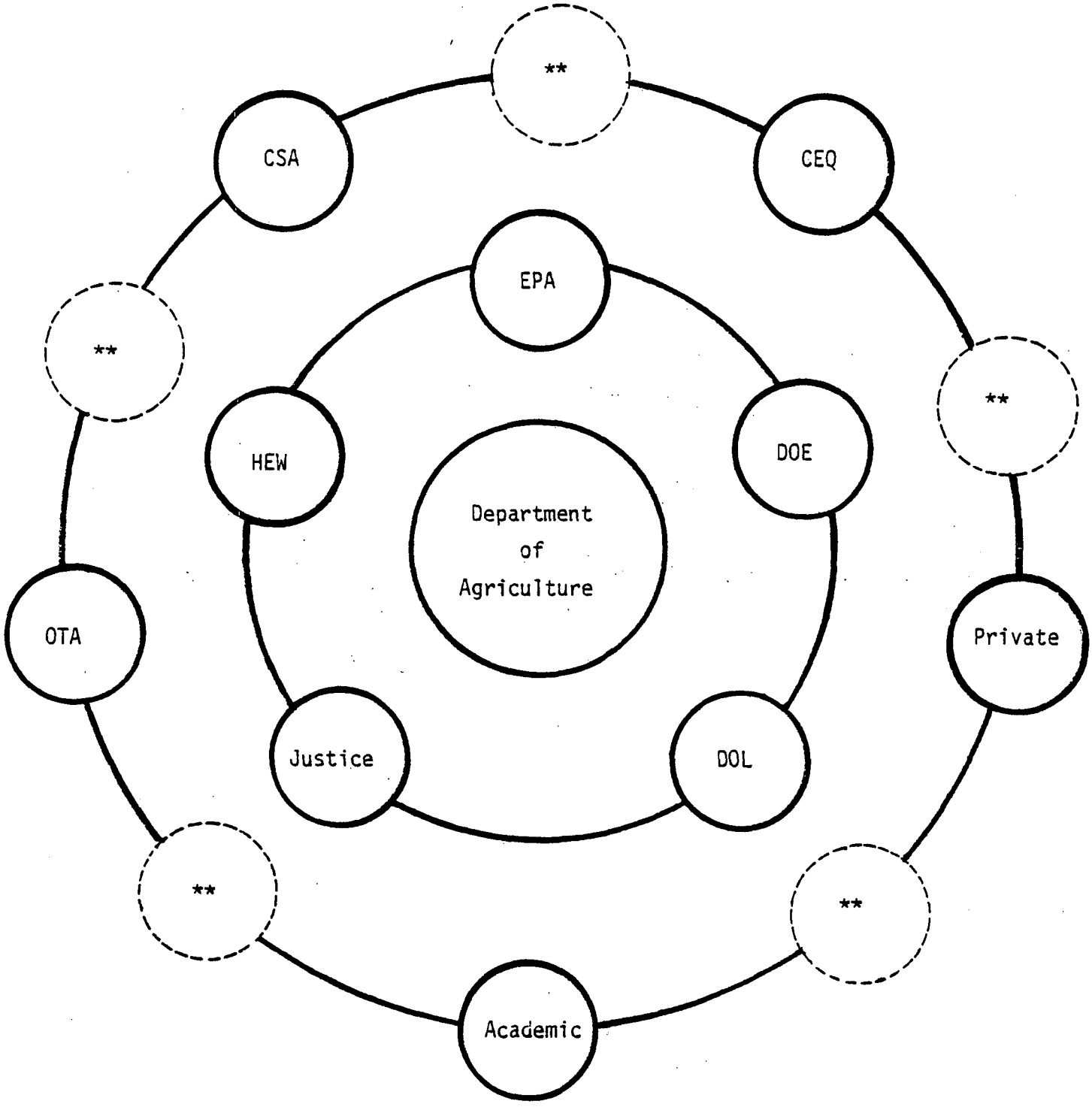
As with the designation of the lead agency of the core group, it is not the intent to denigrate the potential role of this latter listing, but to recognize that the signed, formal interagency agreements would be practically impossible to secure. It will be time consuming enough to get such agreements from the core group agencies. It should be sufficient to have letters of intent filed by these groups with the interagency advisory group.

In summary, at the outset, it would appear that the configuration on the following page could be used to depict the advisory group.

Involve Private Sector and Academic Community

At the outset, it should be recognized that a primary function of the advisory group will be to draw guidelines and generate resources to provide every possible assurance of program success. It should also

PROPOSED INTERAGENCY ADVISORY GROUP CONFIGURATION *




* See preceding page for discussion.

** Other interested agencies as evidenced by letter of intent.

be recognized that there is a lot more to resource generation than just providing a sum of money to the institution.

Using the Memphis project as only one example, the authors found case after case of the willingness of both the private sector and the academic community to become involved. Initially, seeds, tools, fertilizer and other forms of support were forthcoming from the private sector. This was followed by technical assistance and demonstrations from seed and fertilizer companies, from private commercial composting firms and from equipment manufacturers. In work completed since the Memphis project, it remains evident that there is a genuine desire on the part of the private sector to become involved.

Additionally, personnel from the universities and technical institutions in the area were most willing, even desirous, of becoming involved in the Memphis project. They proved most helpful when assistance was needed in technical aspects of lagoon construction, in developing educational materials and in working with local elected officials, to name just a few examples.

It should thus become a major responsibility of the advisory group to provide for the involvement of these extremely important support groups.

## Develop a Long Range Budget

Definitely not to be overlooked in the process is the necessity for marshaling the necessary financial resources to provide a reasonable opportunity for program success. One of the initial tasks of the advisory group should be to develop basic financial projections for at least a five year period. One of the primary goals of the project will

be to lead the involved institutions in the direction of economic self-sufficiency - which will not happen in a one- or two-year period. In most cases, the land on which institutions are located is the poorest, from a farming perspective, that could be found. Additionally, with the demise of "hard labor" operations, much of the land that was once usable has been allowed to lie fallow and leach out, with little attempt being made to maintain it in a productive mode.

Success of the overall program will depend to a great extent upon the ability of the advisory group to draw sound financial plans and guidelines for implementing them. Initial funds will of necessity come from agency budgets. Given preliminary indications of program success, subsequent funds can be appropriated.

Establish Realistic Timelines

The situation confronted with institutional farming, the ambitious goals of the program, and the numerous agencies involved mandate the development of a sound, realistic implementation process. Not all institutions desiring to participate at the outset will be able to due to technicalities in State laws; due to budgetary constraints; or due to the inability of the advisory group to handle such a massive undertaking in its initial stages of development.

It will therefore be an initial responsibility of the committee to draw up guidelines for participation, making plans for program expansion over a number of years - phasing new institutions into the program and, where appropriate, phasing older programs out.

It is suggested that the initial planning stages for this undertaking will consume from twelve to fifteen months, contingent upon such

factors as securing interagency agreements, budgetary cycles and time of year to appropriately take advantage of planting cycles. Institutional studies must be completed and guidelines for participation must be developed during this preliminary phase.

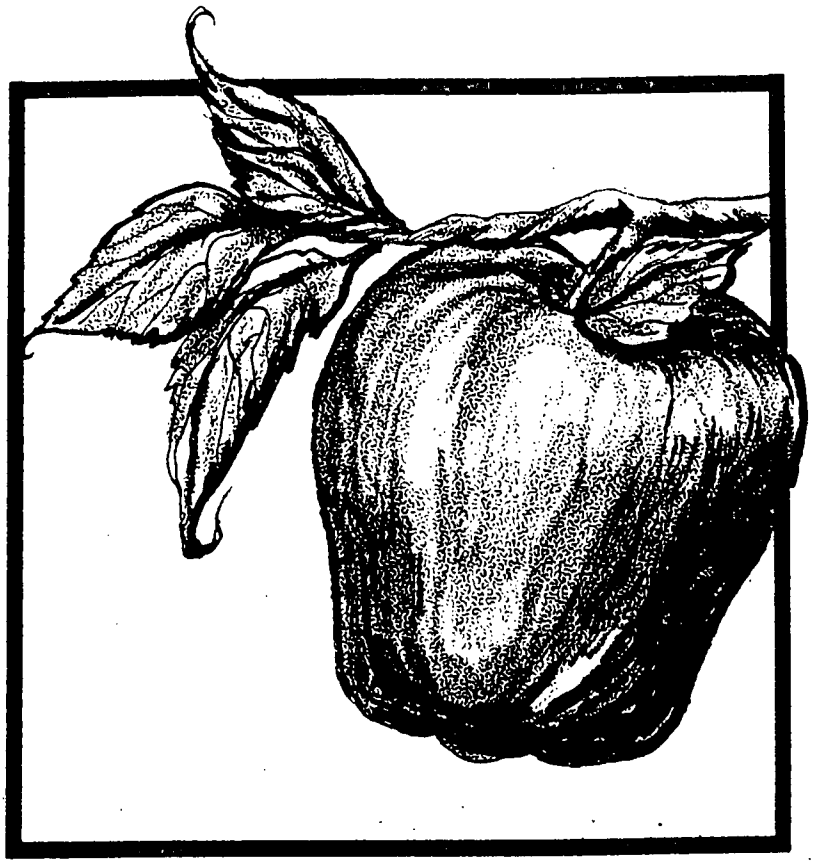
Provide Technical Assistance and Support Personnel

Technical assistance and support personnel are necessary ingredients to program success in both the preliminary phase and the implementation phase. It is unrealistic to think that in spite of good intentions or desires, designees from the various agencies previously described can spend the time necessary to set up a program of this nature in addition to carrying out the responsibilities encumbent upon them with their current position. Initially, assistance must be secured in the form of contract personnel under the direction of the Department of Agriculture to carry out the formative tasks, i.e., institutional study, development of prototype interagency agreements, and drawing up preliminary work plans.

As the program progresses, technical assistance will be needed to carry out the mandates of the advisory group, to monitor institutional operations, and to assist in securing appropriate expertise to bring to to bear on identified problems within each participating institution. In many cases, as pointed out under the section of this chapter on the involvement of the private sector and the academic community, the technical assistance and support personnel exist right in the area of the institution - almost certainly within the State. It will be an additional responsibility of the committee to provide the necessary technical assistance to the institution to secure this support from these elements.

Reports must be developed, technical assistance bulletins developed, and materials disseminated to interested and involved agencies, institutions and individuals. All of these materials are needed to provide for program continuation, growth, and goal attainment. The advisory group should be charged with the responsibility for making provisions for these activities.

Finally, continual monitoring and evaluation of each institution's progress toward goal attainment; be it education and training of inmates, economic self-sufficiency, job placement at the end of incarceration or a combination of these factors, must be provided for by the advisory group. The wise and appropriate use of financial resources will become the responsibility of the granting/contracting agency with assistance from the advisory group.



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# APPENDICES

# Appendix A

# Project Contributors

# PROJECT CONTRIBUTORS

## FEDERAL

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Current and Future Priorities Staff
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400 Maryland Ave., S.W.
Washington, D.C. 20202

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State Programs and Services Branch
Division of Vocational and Technical Education
Bureau of Occupational and Adult Education
Office of Education
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Washington, D.C. 20202

DEPARTMENT OF THE INTERIOR:

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National Institute of Law Enforcement and
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Law Enforcement Assistance Administration
633 Indiana Ave., N.W.
Washington, D.C. 20531

Mr. Shelvy E. Johnson, Assistant Education
Administrator
Bureau of Prisons
320 First St., N.W.
Washington, D.C. 20531

*Mr. H. Teufel, Farm Administrator
Bureau of Prisons
KCI Bank Building
8800 N.W. 112th St.
Kansas City, Missouri 64153

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Law Enforcement Assistance Administration
633 Indiana Ave., N.W.
Washington, D.C. 20531

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Washington, D.C. 20213

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Employment and Training Administration
601 D St., N.W.
Washington, D.C. 20213

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Office of Research and Development
Employment and Training Administration
601 D St., N.W.
Washington, D.C. 20213

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Washington, D.C. 20506

Ms. Barbara Pinn, CAP Specialist
Office of Program Development
1200 19th St., N.W.
Washington, D.C. 20506

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West Tower
Washington, D.C. 20460

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Office of Pesticide Programs
401 M St., S.W.
East Tower
Washington, D.C. 20460

Mr. Charles Reese
Office of Pesticide Programs
401 M St., S.W.
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Athens, Georgia 30602

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Environmental Assessment Team
California Department of Food and Agriculture
1220 N St.
Sacramento, California 95814

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Institute for Local Self-Reliance
1717 18th St., N.W.
Washington, D.C. 20009

Mr. Ray Olson
American Correctional Association
4321 Hartwick Road, Suite L208
College Park, Maryland 20740

*Mr. Jack Schaller
American Foundation, Inc.
1532 Philadelphia National Bank Building
Philadelphia, Pennsylvania 19107

Mr. Ken Thomas, Program Director
Public Offender Programs
District of Columbia Vocational Rehabilitation
122 C St., N.W.
Washington, D.C. 20001

*Assisted through telephone contact.
**Assisted through correspondence.

# Appendix B

## Correctional Facilities and Farms Directory

Author's note: This Directory was prepared as a part of a Correctional Farm Study in September 1977, which was supported by the U.S. Environmental Protection Agency, Office of Pesticide Programs. It was carried out by the American Correctional Association, with Carol S. Lessans as the principal investigator. Readers should note that for local facilities only, the data were obtained from a 10 percent random sample.

# CORRECTIONAL FACILITIES AND FARMS DIRECTORY

The following directory consists of correctional facilities around the country that have farming operations. There are four sections: (1) State Correctional Departments and Farms; (2) Youth Services Departments and Farms; (3) Local Correctional Departments and Farms; and, (4) Federal Correctional Facilities and Farms. All information was obtained through the American Correctional Association's "Correctional Farm Questionnaire". An asterisk (*) indicates those states which did not respond to the mailed survey. Any information about these states was obtained by telephone.

The farms and/or facilities are described by their name, location, type of security (minimum, medium, maximum, etc.), age of inmates (adult or juvenile), total acreage, and cultivated acreage. For example:

State Prison Farm, Midville, min, adult, 500 acres: 250

For each state department (adult and juvenile), the address, telephone number, and director's name are included so that EPA and other interested organizations can obtain even more extensive information about a particular jurisdiction and/or farm operation.

## STATE CORRECTIONAL DEPARTMENTS AND FARMS

ALABAMA — State Board of Corrections, 101 S. Union St., Montgomery 36130 (205) 832-6800
Judson C. Locke, Jr., Commissioner
Bob I. Bright, Associate Commissioner, Agri-Business

Fountain Correctional Farm, Atmore, max, adult, 8500 acres: 3666
Draper Correctional Center, Elmore, max, adult, 3331 acres: 1685
Red Eagle Honor Farm, Montgomery, min, adult, 2300 acres: 1555
State Cattle Ranch, Greensboro, min, adult, 4410 acres: 219

ALASKA — Department of Health and Social Services, Division of Corrections, Pouch H03, Health & Social Services Bldg., Juneau 99811 (907) 465-3376
William H. Huston, Director
Stanley J. Zaborac, Jr., Superintendent

Palmer Correctional Center, min, adult, 640 acres: 20

ARIZONA — Department of Corrections, 1601 West Jefferson, Phoenix 85007 (602) 271-5536
John J. Moran, Director
Tom Rankin, Farm Superintendent

Arizona State Prison, Florence, max/min, adult, 1400 acres: 1000

ARKANSAS — Department of Correction, P.O. Box 8707, Pine Bluff 71611 (501) 535-7231
A.L. Lockhart, Asst. Director of Institutional Services

Cummins Unit, Grady, max, adult, 16500 acres: 11937
Tucker Unit, Tucker, adult, 4400 acres: 4160
Booneville Unit, Logan County, adult, 4600 acres: 2000

CALIFORNIA — Department of Corrections, 714 P St., State Office Bldg. No.8, Sacramento 95814 (916) 445-7688
J.J. Enomoto, Director
Elmer J. Becky, Acting General Manager, Correctional Industries

California Institution for Men, Chino, min, adult, 2000 acres: 1850
Deuel Vocational Institution, Tracy, min, adult, 800 acres: 550
Correctional Training Facility, Soledad, min, adult, 900 acres: 550

*COLORADO — State Department of Institutions, Division of Correctional Services, 4150 S. Lowell Blvd., Denver 80236 (303) 761-0220
Gerald L. Agee, Director

COLORADO (cont.)

Colorado State Penitentiary (Medium Security Unit), Canon City, 600 acres
Colorado State Reformatory, Buena Vista

CONNECTICUT — Department of Correction, 340 Capitol Ave., Hartford 06115 (203) 566-4457
John R. Manson, Commissioner

DELAWARE — Department of Correction, Box 343, Smyrna 19977 (302) 653-7545
James T. Vaughn, Commissioner

Sussex Correctional Institution, Georgetown, min, adult, 226 acres: 200

DISTRICT OF COLUMBIA — Department of Corrections, 614 H St., N.W. 20001 (202) 629-3532
Delbert C. Jackson, Director
Marion D. Strickland, Superintendent

Lorton, VA (Minimum Security Facility), adult, 1300 acres: 600

FLORIDA — Department of Offender Rehabilitation, 1311 Winewood Blvd., Tallahassee 32301 (904) 488-5021
Louie L. Wainwright, Secretary

Apalachee Correctional Institution, Sneads, med/min, adult, 6175 acres: 2121
Glades Correctional Institution, Belle Glade, close, adult, 7160: 3960
Union Correctional Institution, Raiford, close, adult, 16909 acres: 3829

*GEORGIA — Department of Corrections/Offender Rehabilitation, State Board of Corrections, 800 Peachtree St, NE Atlanta 30308 (404) 894-5548
William Crump, Asst. Commissioner
Bobby Whitworth, Agriculture

Georgia State Prison, Reidsville, adult, 9000 acres
Georgia Industrial Institute, Alto, adult, 650 acres
Georgia Diagnostic Center, Jackson, adult, 900 acres
Lee Correctional Institution, Leesburg, adult, 350 acres
Wayne Correctional Institution, Odum, adult, 200 acres
Walker Correctional Institutions, Lafayette, youths, 350
Georgia Training and Development Center, Buford, youths, 25 acres
Chatham County, 10 acres
Montgomery Correctional Institution, Valdosta, adult, 45 acres
Milledgeville Colony Farm, Milledgeville, 600 acres

*HAWAII Department of Social Services and Housing, Corrections Division, P.O. Box 339, Honolulu 96809 (808) 548-6441
Michael Kakesako, Administrator

IDAHO Department of Correction, Box 7309, Boise 83707
(208) 336-0740, Don R. Erickson, Director

State Correctional Institution, Boise, med/min, adult, 3500 acres: 1365

ILLINOIS Department of Corrections, 201 Armory Bldg., Springfield 62706 (217) 782-4777
Charles J. Rowe, Acting Director
William Beaty, Agriculture Manager

Menard Correctional Center, Menard, max, adult, 2363 acres: 934
Vienna Correctional Center, Vienna, min, adult, 3310 acres: 501
Vandalia Correctional Center, Vandalia, med, adult, 1513 acres: 875

INDIANA Department of Correction, 804 State Office Bldg., Indianapolis 46204 (317) 633-4697
Robert P. Heyne, Commissioner
Maurice J.R. Jackson, Director of Farms

Indiana State Farm, Greencastle, min, juv. and adult, 2675 acres: 1155
Indiana State Reformatory, Pendleton, max, adult, 1437 acres: 1336
Indiana State Prison, Michigan City, max, adult, 1944 acres: 1806

IOWA Department of Social Services, Robert Lucas Bldg., Des Moines 50319 (515) 281-5459
Kevin J. Burns, Commissioner

Iowa State Penitentiary, Ft. Madison, min, adult, 1000 acres: 500
Iowa Men's Reformatory, Anamosa, min/med, adult, 1467 acres: 650
Riverview Release Center, Newton, min, adult, 1500 acres: 855
Women's Reformatory, Rockwell City, min, adult, 220 acres: 183

KANSAS Department of Corrections, KPL Tower Bldg., 818 Kansas Ave., Suite 500, Topeka 66612 (913) 296-3317
Robert R. Raines, Secretary

KENTUCKY Bureau of Corrections, State Office Bldg., Frankfort 40601 (502) 564-4726
David H. Bland, Commissioner
James T. Patterson, Farm Services Specialist

Western Kentucky Farm Center, Eddyville, max, adult, 2200 acres: 600
Roederer Farm Center, LaGrange, min, adult, 3300 acres: 400
Blackburn Correctional Complex, Lexington, min, adult, 350 acres: 80
Kentucky St. Hospital Farm, Danville, employee operated, 322 acres: 70

LOUISIANA — Department of Corrections, P.O. Box 44304, State Capitol Station, Baton Rouge 70804 (504) 389-5641
C. Paul Phelps, Secretary
Burl Cain, Asst. Secretary, Agri-Business

Louisiana State Penitentiary, Angola, max/med, adult, 18000 acres: 5000
Dixon Correctional Institute, Jackson, med, adult, 250 acres: 1800
Louisiana Correctional Institute for Women, St. Gabriel, med/max, adult, 1000 acres: 1000

MAINE — Bureau of Corrections, 411 State Office Bldg., Augusta 04333 (207) 289-3161
John Rosser, Ed.D., Commissioner

MARYLAND — Department of Public Safety and Correctional Services, Division of Correction, 6314 Windsor Mill Rd., Baltimore 21207 (301) 944-7028
Mark A. Levine, Commissioner

MASSACHUSETTS — Department of Correction, Saltonstall Office Bldg. Government Center, 100 Cambridge St., Boston 02202 (617) 727-3312
Frank A. Hall, Commissioner

Southeastern Correctional Center, Bridgewater, min, adult, 1450 acres
Northeastern Correctional Center, Concord-Acton, min, adult, 550 acres: 200

MICHIGAN — Department of Corrections, Stevens T. Mason Bldg., Lansing 48913 (517) 373-0720
Perry M. Johnson, Director

State Prison Farm of Southern Michigan, Jackson, close, adult, 4000 acres: 2500
Marquette Branch Prison, Marquette, max, adult, 2234 acres: 340

*MINNESOTA — Department of Corrections, 430 Metro Square Bldg., Seventh and Robert Sts., St. Paul 55101 (612) 296-6133 Kenneth F. Schoen, Commissoner

MISSISSIPPI — Department of Corrections, 723 N. President St., Jackson 39202 (601) 354-6454
Dr. Allen L. Ault, Commissioner

Mississippi State Penitentiary, Parchman, mixed, adult, 16000 acres: 200+

MISSOURI — Department of Social Services, Division of Corrections, 911 Missouri Blvd., Jefferson City 65101 (314) 751-2389
Edward E. Haynes, Director

MISSOURI (cont.)

Church Farm, Jefferson City, min, adult, 2825 acres: 1223
Renz Farm, Cedar City, min, coed, 877 acres: 787
Missouri Intermediate Reformatory, Jefferson City, med, juvenile, 750 acres: 293

*MONTANA — Department of Institutions, 1539 11th Ave., Helena 59601 (406) 449-3930
Robert H. Mattson, Director

State Prison Ranch and Dairy Operation, Deer Lodge, min to max, adult, 33000 acres

NEBRASKA — Department of Correctional Services, P.O. Box 94661, Lincoln 68509 (402) 471-2654
Joseph C. Vitek, Director

NEVADA — Nevada State Prisons, P.O. Box 607, Carson City, 89710 (702) 885-5089
Charles L. Wolff, Jr., Warden

Northern Nevada Correctional Center Farm, Carson City, min, adult, 1100 acres: 300

NEW HAMPSHIRE — Adult Institutions, New Hampshire State Prison, Box 14, Concord 03301 (603) 224-6554
William S. Jamieson, Superintendent, Prison Industries

New Hampshire State Prison Farm, Concord, min, adult, 600 acres: 300

NEW JERSEY — Department of Institutions and Agencies, 135 W. Hanover St., Trenton 08625 (609) 293-3717
William H. Fauver, Director
John J. Forker, Chief, Bureau of Institutional Support Services

Annandale Correctional Institution, Annandale, juvenile, 1831 acres
Bordentown Correctional Institution, Bordentown, adult, 565 acres
Clinton Correctional Institution, Clinton, adult, 226 acres
Greystone Park Psychiatric Hospital, adult, 1293 acres
Jamesburg Correctional Institution, juvenile, 725 acres
Leesburg State Prison Farm, adult, 1305
Marlboro Psychiatric Hospital, adult, 1006 acres
Trenton State Prison, Trenton, adult, 1112 acres
New Lisbon State School Farm, adult, 1854 acres

NEW MEXICO Department of Corrections, P.O. Box 2325, Santa Fe 87501
(505) 827-2348
Michael F. Hanrahan, Secretary

Los Lunas Correctional Center, min, adult, 1600 acres: 1200

NEW YORK Department of Correctional Services, State Office
Bldg. Campus, Albany 12226 (518) 457-8134
Benjamin Ward, Commissioner
Frank Harrigan, Farm Consultant

Attica Correctional Facility, Attica, max, adult, 675 acres
Clinton Correctional Facility, Dannemora, max, adult, 334 acres
Coxsackie Correctional Facility, W. Coxsackie, med, adult, 540 acres
Eastern Correctional Facility, Napanoch, med, adult, 375 acres
Elmira Correctional Facility, Elmira, med, adult, 342 acres
Great Meadow Correctional Facility, Comstock, max, adult, 630 acres
Green Haven Correctional Facility, Stormville, max, adult, 520 acres
Wallkill Correctional Facility, Wallkill, med, adult, 551 acres
Woodbourne Correctional Facility, Woodbourne, med/max, adult, 670 acres

*NORTH CAROLINA Department of Correction, 840 W. Morgan St., Raleigh
27603 (919) 829-4926
David L. Jones, Secretary

Caledonia and Odum Complex, Caledonia, adult, 9200 acres Pender, Burgaw, 200 acres

NORTH DAKOTA Director of Institutions, State Capitol, Bismarck 58505
(707) 224-2474
Edward J. Klecker, Director

North Dakota State Penitentiary Farm, Bismarck, min, adult, 3000 acres: 820

OHIO Department of Rehabilitation and Correction, 1050
Freeway Drive North, Columbus 43229 (614) 466-6190
George F. Denton, Director
K.E. Tope, Chief, Division of Business Administration

Chillicothe Correctional Institute, Chillicothe, med, adult, 1498 acres: 944
Grafton Honor Farm, Grafton, min, adult, 1782:1471
Lebanon Correctional Institution, Lebanon, med, adult, 1750 acres: 1694
London Correctional Institution, London, med, adult, 2989 acres: 2765
Marion Correctional Institution, Marion, med, adult, 1208 acres: 930
Ohio Reformatory for Women, Marysville, med, adult, 259 acres: 212
Southern Ohio Correctional Facility, Lucasville, employee operated, 1819 acres: 887
Ohio State Reformatory, Mansfield, med, adult, 1000 acres: 890

OKLAHOMA

Department of Corrections, 3400 N. Eastern, Oklahoma City 73111 (405) 427-6511
F. Warren Benton, Ph.D., Director
Wilson Lamar Galloway, Director, Agricultural Production

McLeod Honor Farm, Ferris, min, adult, 5190 acres: 1200
Oklahoma State Penitentiary, McAlester, min, adult, 1875 acres: 140
Oklahoma State Reformatory, Granite, min, adult, 5760 acres: 1450
Vocational Training Center, Springtown, min, adult, 1225 acres: 50
Lexington Regional Treatment Center, Lexington, min, adult, 1625: 20

OREGON

Department of Human Resources, Corrections Division, 2575 Center St., NE, Salem 97310 (503) 378-2467
Robert J. Watson, Administrator

Oregon State Penitentiary Annex Farm, Salem, min, adult, 2000 acres: 850

PENNSYLVANIA

Department of Justice Bureau of Correction, Box 598, Camp Hill 17011 (717) 787-7482
William B. Robinson, Commissioner

State Correctional Institution, Muncy, med, adult, 450 acres: 334
State Correctional Institution, Dallas, med/max, adult, 1200 acres: 350
State Correctional Institution, Camp Hill, med/max, adult, 750 acres: 430
State Correctional Institution, Rockview, med/min, adult, 6950 acres: 3200
State Correctional Institution, Graterford, med/max, adult, 1700 acres: 1200
State Correctional Institution, Huntingdon, med/max, adult, 750 acres: 450
State Regional Correction Facility, Greensburg, min, adult,100 acres: 44

RHODE ISLAND

Department of Corrections, 75 Howard Ave., Cranston 02920 (401) 464-2611
Bradford E. Southworth, Director

Medium Security Facility, Cranston, adult, 7 acres: 7

SOUTH CAROLINA

Department of Corrections, 4444 Broad River Rd., Box 766, Columbia 29202 (803) 758-6444
William D. Leeke, Commissioner
Fred W. Atkinson, Director, Division of Support Services

Wateree River Correctional Institution, Rembert, min, adult, 6674 acres: 2300

SOUTH CAROLINA (cont.)

MacDougall Youth Correction Center, Ridgeville, min, adult, 921 acres: 442
Walden Correctional Institution, Columbia, min, adult, 1045 acres: 406
Givens Youth Correction Center, Simpsonville, min, adult, 63 acres: 45

SOUTH DAKOTA

Board of Charities and Corrections, Capitol Bldg., Pierre 57501 (605) 224-3478
James Smith, Executive Director
Lt. Robert Tidemann, Total Farm Supervisor

South Dakota Penitentiary Farm, Sioux Falls, min, adult, 1027 acres: 830

TENNESSEE

Department of Correction, 11th Floor, 1st American Center, Nashville 37219 (615) 741-2071
C. Murray Henderson, Commissioner
Bobby Tidwell, Farm Manager

Cockrill Bend State Farm, Nashville, min, adult, 2400 acres: 1140
Ft. Pillow State Farm, Ft. Pillow, min/med, adult, 5779 acres: 2650
Taft Youth Center, Pikerville, min, juvenile, 950 acres: 800
Turney Center, Only, min, adult, 1650 acres: 200

TEXAS

Department of Corrections, Box 99, Huntsville 77340 (713) 295-6371
W.J. Estelle, Jr., Director
James V. Anderson, Asst. Director, Agriculture

Coffield Unit, Tennessee Colony, med, adult, 5188 acres: 484
Ferguson Unit, Midway, med, adult, 1577: 440
Eastham Unit, Weldon, max, adult, 4279 acres: 682
Ellis Unit, Huntsville, max, adult, 4044 acres: 389
Wynne Unit, Huntsville, med, adult, 446 acres: 57
Central Unit, Sugar Land, med, adult, 1784 acres: 341
Jester Unit, Richmond, min, adult, 2617 acres: 575
Darrington Unit, Rosharon, med, adult, 3727 acres: 319
Ramsey Unit, Rosharon, max, adult, 6451 acres: 721
Retrieve Unit, Angleton, med, adult, 3149 acres: 666
Clemens Unit, Brazoria, med, adult, 4551 acres: 380

*UTAH

Department of Social Services, Division of Corrections, 2525 S. Main St., Suite 15, Salt Lake City 84115 (801) 533-5331
Ernest D. Wright, Director

Utah State Prison, Draper, min. to max. adult, 300 acres: 100

VERMONT

Agency of Human Resources, Department of Corrections, 79 River St., Montpelier 05602 (802) 828-2452
R. Kent Stoneman, Commissioner

Residential Treatment Facility, Windsor, min, adult, 900 acres

VIRGINIA

State Department of Corrections, 22 E.Cary St., Richmond 23192 (804) 786-8575
Jack F. Davis, Director
Robert C. Oliver, Superintendent, Agriculture

Southampton Correctional Center, Southampton City, min, adult, 2780 acres: 1235
Bland Correctional Center, Bland City, min, adult, 2127 acres: 1557
James River Correctional Center, State Farm, min, adult, 6528 acres: 3887
Caroline Correctional Unit, Caroline and Hanover Ctys., min, adult, 1688 acres: 795
Baskerville Correctional Unit, Mecklenburg City, min, adult, 371 acres: 270
Fluvanna Correctional Unit, Fluvanna County, min, adult,105 acres: 70
Wise Correctional Unit, Wise County, min, adult, 45 acres: 25
Dinwiddie Correctional Unit, Dinwiddie City, min, adult, 208 acres: 115
Chatham Correctional Unit, Pittsylvania City, min, adult, 202 acres: 160
Halifax Correctional Unit, Halifax County, min, adult, 134 acres: 65

WASHINGTON

Department of Social and Health Services, Adult Corrections Division, Mail Stop 26-1, Olympia 98504
(206) 753-2500
Harold B. Bradley, Director

Honor Farm, Monroe, min, adult, 800 acres: 750

WEST VIRGINIA

Department of Public Institutions, Division of Correction, State Capitol Bldg., Charleston 25305 (304) 348-2091
Calvin A. Calendine, Commissioner

WISCONSIN

Department of Health and Social Services, Division of Corrections, P.O. Box 669, Madison 53701
(608) 266-2471
Allyn R. Sielaff, Administrator
Fred M. Whitemarsh, Farm Supervisor

State Prison Farm, Waupun, min, adult, 750 acres: 602
State Reformatory Farm, Green Bay, min, adult, 1636 acres: 1491
Correctional Institution Farm, Fox Lake, min, adult, 865 acres: 531
Winnebago State Farm, Winnebago, min, adult, 827 acres: 668

*WYOMING State Board of Charities and Reform, Capitol Bldg., Cheyenne 82002 (307) 777-7405
Donald Glidden, Secretary

Wyoming State Penitentiary Farm, Riverton, min, adult, 900 acres

## YOUTH SERVICES CORRECTIONAL FACILITIES AND FARMS

ALABAMA — Department of Youth Services, 2388 Fairlane Dr., Bldg, D-Suite 29 Executive Park, Montgomery 36111
(205) 832-3910
George M. Phyfer, Director

Beef Cattle, Roebuck Campus, Birmingham, min, juvenile, 154 acres: 50

ARKANSAS — Department of Social and Rehabilitative Services, Division of Rehabilitation Services, Junvenile Training School Section, 1320 "E" Brookwood Dr., P.O. Box 3781, Little Rock 72203 (501) 371-2651

Youth Services Center, Pine Bluff, open, juvenile, 360 acres: 25

CALIFORNIA — Department of the Youth Authority, 714 P Street, State Office Bldg. No. 8, Sacramento 95814
(916) 445-2561
Pearl S. West, Director

CONNECTICUT — Department of Children and Youth Services, 345 Main St. Hartford 06115 (203) 566-3536
Francis H. Maloney, Commissioner

Long Lane School, Middletown, open, juvenile, 217 acres: 6

HAWAII — Department of Social Services and Housing, Corrections Division, P.O. Box 339, Honolulu 96809
(808) 548-6441
Michael Kakesako, Administrator

Hawaii Youth Correctional Facility, Kailua, Oahu, med/min, juvenile, 504 acres

IOWA — Department of Social Services, Bureau of Child Advocacy, Robert Lucas Bldg., Des Moines 50319
(515) 281-5126
Larry Jackson, Director

Iowa Training School for Boys, Eldora, juvenile, 225 acres: 160

KENTUCKY — Department for Human Resources, Bureau for Social Services, 403 Wapping St., Frankfort 40601
(502) 564-7220
Jack C. Lewis, Commissioner

MARYLAND — Department of Health and Mental Hygiene, Juvenile Services Administration, 201 W. Preston St. 5th Floor, Baltimore 21201 (301) 383-2600

MASSACHUSETTS — Department of Youth Services, 73 Tremont St., Boston 02108 (617) 727-2733
John A. Calhoun, Commissioner

MISSISSIPPI — Mississippi Department of Youth Services, 407 Woolfolk State Office Bldg., Jackson 39201 (601) 354-6512
*Jimmy R. Russell, Executive Director*

Oakley Training School, Raymond, open, juvenile, 1029 acres: 844
Columbia Training School, Columbia, open, juvenile, 2570 acres: 866

MISSOURI — Department of Social Services, Division of Youth Services, 402 Dix Rd., P.O. Box 447, Jefferson City 65101 (314) 751-3324
Max Brand, Director

Training School for Boys, Boonville, juvenile, 580 acres: 70

NEW HAMPSHIRE — Juvenile Institutions and Services, Box 303, Manchester 03105 (603) 625-5471
Michael Morello, Superintendent

New Hampshire Youth Development Center, Manchester, min, juvenile, 100 acres: 5

NORTH CAROLINA — Department of Human Resources, Division of Youth Services, 401 Glenwood Ave., Raleigh 27603 (919) 829-3011
Ray T. Shurling, Director

OKLAHOMA — Department of Institutions, Social and Rehabilitative Services, Sequoyah Memorial State Office Bldg., Oklahoma City 73125

Boley State School, Boley, min, juvenile, 225 acres: 5
Girls Town, Tecumseh, min, juvenile, 147 acres: 5
Helena State School, Helena, min, juvenile, 110 acres: 90

OREGON — Department of Human Resources, Children's Service Division, 516 Public Service Bldg., Salem 97310 (503) 378-4374
Richard S. Peterson, General Superintendent, Juvenile Correctional Programs

MacLaren School, Woodburn, min, juvenile, 279 acres: 129

SOUTH CAROLINA Department of Youth Services, 1720 Shivers Rd., P.O. Box 21487, Columbia 29221 (803) 758-6592
Edward C. Thomas, Deputy Director

Department of Youth Services, Columbia, juvenile, 1144 acres: 58

TEXAS Texas Youth Council, 8900 Shoal Creek, P.O. Box 9999, Austin 78766 (512) 475-5681
Ron Jackson, Executive Director

Gatesville State School, Gatesville, juvenile, 1242 acres: 191

VIRGINIA Rehabilitative School Authority, Division of Youth Services, 302 Turner Rd., Richmond 23225
(804) 745-0550
William E. Weddington, Director

## LOCAL CORRECTIONAL DEPARTMENTS AND FARMS

| | |
|---|---|
| CALIFORNIA | Los Angeles County Sheriff's Wayside Honor Rancho, 29300, The Old Road, Saugus 91310 min, adult, 2900 acres: 900 |
| | Orange County Branch Jail, James A. Musick Facility, 13502, Honor Farm Rd., El Toro 92630 min, adult, 100 acres: 70 |
| | Santa Rita Rehabilitation Center, Pleasanton 94566 min, adult, 1100 acres: 400 |
| | Sheriff's Rehabilitation Center, P.O. Box 32, San Luis Obispo 93406, min, adult, 5 acres: 1.5 |
| FLORIDA | Jacksonville Correctional Institution, 4727 Lannie Rd Jacksonville 32218 , med, adult and juvenile, 1000 acres: 300 |
| GEORGIA | Worth County Correctional Institution, Sylvester 31791 med, adult |
| MINNESOTA | The Northeast Regional Corrections Center, Rt. 2, Box 119, Saginaw 55779 , min, adult, 3200 acres: 800 |
| NEW HAMPSHIRE | Coos County Farm, W. Stewartstown 03570, min, adult, 1100 acres: 150 |
| NEW JERSEY | Essex County Correctional Center, Box 349, Caldwell 07006 min, adult, 90 acres: 50 |
| NEVADA | Las Vegas Metropolitan Police Dept., Vegas Valley Dr., Las Vegas, min, adult, 86 acres: 71 |
| NORTH CAROLINA | Guilford County Prison Farm, P.O. Box 16, Gibsonville 27249 min, adult, 800 acres: 700 |
| OHIO | Dayton Correctional Farm, 16135 Gettsbury, Dayton 45402 min, adult, 150 acres:50-75 |
| | Toledo House of Correction, Rt. 2 Box 22, Whitehouse 43571 min, adult, 310 acres: 211 |

VIRGINIA

Petersburg Correctional Farm, Rt. 1 Box 161, Disputana 23803, min, adult, 287 acres: 120

City Prison Farm, Clearview Dr., Martinsville 24112 min, adult, 300 acres: 65

## FEDERAL CORRECTIONAL FACILITIES AND FARMS

Bureau of Prisons

320 First Street, N.W., Washington, D.C. 20534 (202) 724-3250
Norman A. Carlson, Director

Hubert W. Teufel, Farm Administrator
8800 N.W. 112th St.
Kansas City, Missouri 64153 (816) 243-5681

Federal Correctional Institution, El Reno, OK, min, adult, 3595 acres: 1146

Federal Correctional Institution, La Tuna, TX, min, adult, 640 acres: 289

U.S. Penitentiary, Leavenworth, KS, min, adult, 2241 acres: 1256

U.S. Penitentiary, Lewisburg, PA, min, adult, 5193 acres: 1699

Federal Correctional Institution, Lompac, CA, min, adult, 43248 acres: 2070

U.S. Penitentiary, McNeil, WA, min, adult, 4409 acres: 175

Federal Correctional Institution, Petersburg, VA, min, adult, 1340 acres: 776

U.S. Penitentiary, Terre Haute, IN, min, adult, 2641 acres: 1875

Federal Correctional Institution, Texarkana, TX, min, adult, 693 acres: 398

# National Field Research Center, Inc.


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IOWA CITY, IA 52240
(319) 351-8789

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22 DOWNING DRIVE
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(217) 483-2751

- WASHINGTON, D.C. -
1522 K STREET, N.W.
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(202) 223-9136


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Dr. Darold E. Albright
President