

AGRONOMIC PRACTICES OF THE NEVADA TEST SITE  
EXPERIMENTAL DAIRY FARM FROM  
1974 THROUGH 1977

Monitoring Systems Research and Development Division  
Environmental Monitoring and Support Laboratory  
U.S. ENVIRONMENTAL PROTECTION AGENCY  
Las Vegas, Nevada 89114

Published November 1978

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by  
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## ABSTRACT

This report is one of a series on the agronomic practices of the experimental dairy farm at the Nevada Test Site. It summarizes the agronomic practices at the farm for the calendar years 1974 through 1977. The topics covered include land preparation and seeding, irrigation, fertilization, weed and insect control, and forage production. Descriptive tabular data are included as appendixes.

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## INTRODUCTION

The U.S. Environmental Protection Agency's Environmental Monitoring and Support Laboratory-Las Vegas, maintains and operates an experimental dairy farm on the U.S. Energy Research and Development Administration's\* Nevada Test Site. The Farm and Animal Investigation Branch of the Laboratory's Monitoring Systems Research and Development Division is responsible for operating the farm and for assisting in or carrying out the related research activities.

This farm is located approximately 177 kilometers (110 miles) north of Las Vegas in Area 15 of the Nevada Test Site and is situated in a high desert valley at an elevation of about 1,370 meters (4,500 feet) (see figure 1). The soil is classified as coarse, gravelly, sandy loam with cobbles intermixed; low in organic matter, nitrogen, and phosphorus; and moderately high in potassium. It has an average pH of 8.3 (Leavitt and Mason 1971). The history and physical description of the farm were reported previously (Douglas 1967; Daley 1969, 1971, 1972, and 1976).

As shown in figure 2, the experimental farm consists of 6.5 hectares (16 acres) of irrigated cropland divided into 17 plots or lands by irrigation laterals. Each of the end lands has an area of approximately 0.20 hectares (0.5 acre), while the remaining 15 lands each contain 0.40 hectare (1 acre).

Adjacent to the northeast corner of the farm is approximately 1 hectare (2.5 acres) of small irrigated crop areas called "microplots." These microplots are used to study the behavior of pollutants in soils and the uptake, retention, and residence time of these pollutants in various crops.

This report is one of a series that describes the agronomic practices at

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\*Effective October 1, 1977, the U.S. Energy Research and Development Administration was designated the U.S. Department of Energy. Prior to January 19, 1975, the U.S. Energy Research and Development Administration was designated as the U.S. Atomic Energy Commission.

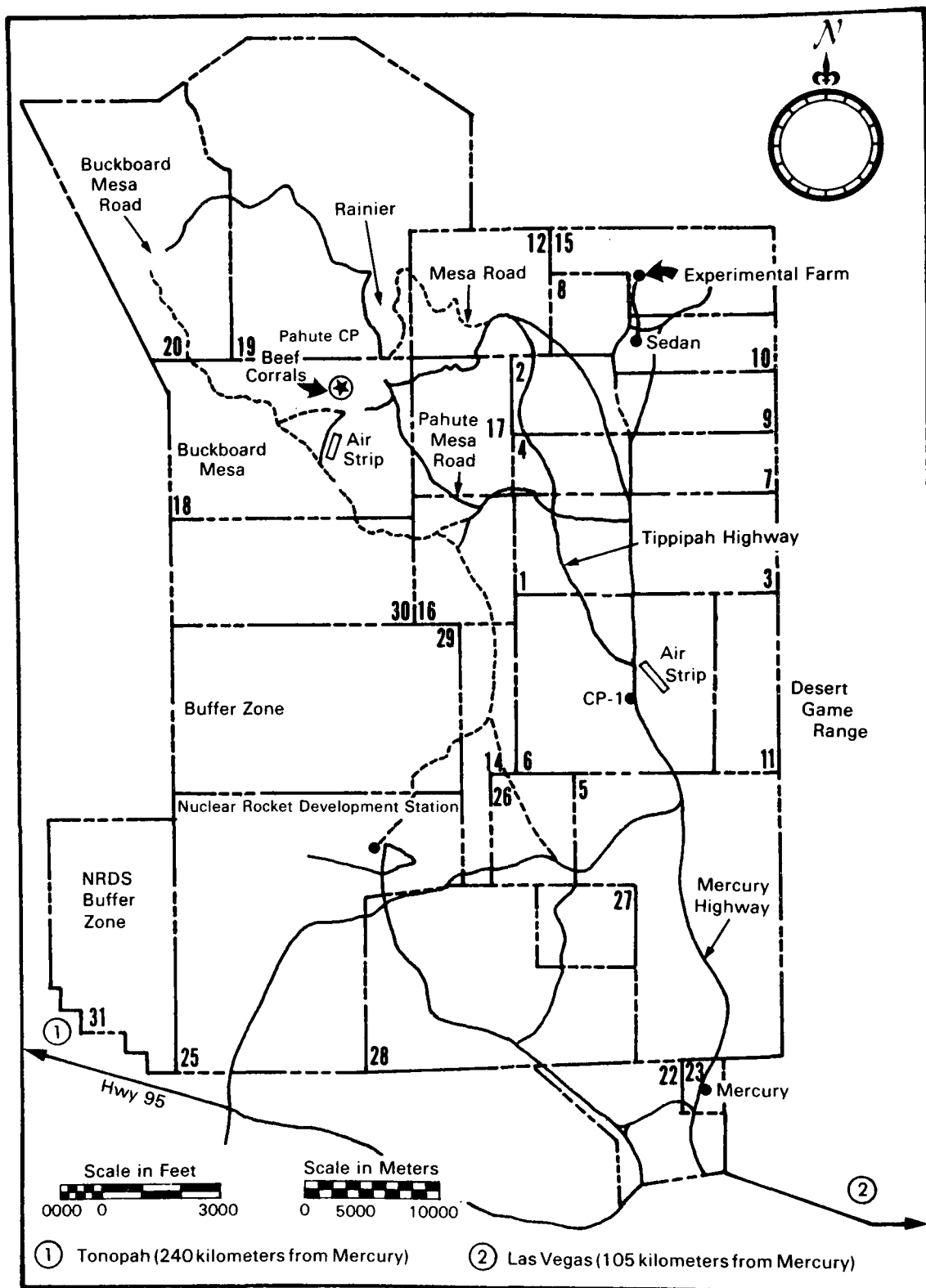


Figure 1. Map of the Nevada Test Site showing approximate locations of the Environmental Protection Agency Facilities



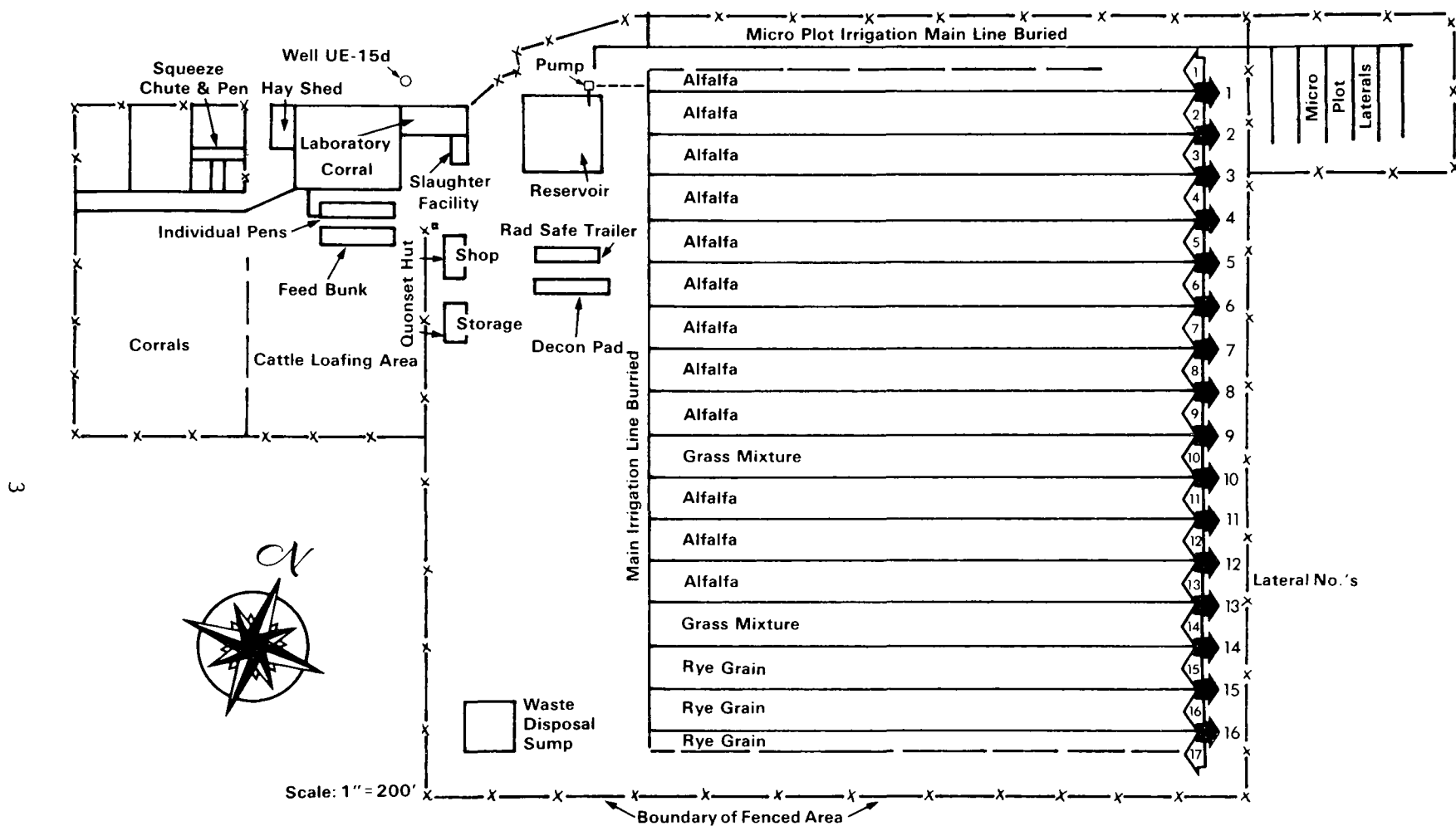


Figure 2. Layout of the Experimental Dairy Farm

the experimental farm, and covers the calendar years 1974 through 1977. The report was prepared from records maintained by Farm and Animal Investigation Branch personnel to document farming practices and to supply information for planned experiments and special ad hoc studies.

## AGRONOMIC PRACTICES

Lands 1 through 14 are maintained in permanent forage crops. All the lands are planted with alfalfa except for lands 10 and 14 which are planted with a mixture of alfalfa and grasses (*Bromus inermis*--smooth brome, *Dactylis glomerata*--orchard grass). Lands 15 through 17 are planted with small grain or left fallow.

### LAND PREPARATION AND SEEDING

Lands 15, 16, and 17 were planted with annual rye grass in 1975, but were left fallow in the fall of 1974 and 1975 and the spring of 1976. These areas were periodically disced during these years in order to control weed growth.

During the first week of October 1976, lands 15, 16, and 17 were disced, fertilized with preplant fertilizer [54 kilograms of nitrogen per hectare (48 lb per acre) and 82 kilograms of phosphoric oxide per hectare (72 lb per acre] (see table 1), and planted with *Secale cereale* Cultivar "Elbon" (annual rye) at the rate of 130 kilograms per hectare. Lands 15, 16, and 17 were disced twice during the summer and once in the fall of 1977. These lands were left fallow after the spring harvesting of green feed.

### FERTILIZATION

During this reporting period, the only nutrients applied were nitrogen and phosphorus. The sources of the nutrients were ammonium sulfate (21-0-0) and double super phosphate (0-45-0). In 1974, double super phosphate (0-45-0) was not available; therefore, 0-18-0 was substituted for 0-45-0. Table 1 lists the nutrients applied to each land and the year and month of application.

Nitrogen is required by small grains and grasses for good growth, high yields, and production of high quality feed. Nitrogen is applied as a top

TABLE 1. NUTRIENT APPLICATION RATE/LAND FOR YEARS 1974, 1975, 1976, and 1977

Year			Nutrient			
	Land Number	Type	Nitrogen		Phosphoric Oxide	45%
Month		(%)	(lb/ land)	(kg/ land)	(lb/ land)	(kg/ land)
1974						
January	1	0-18-0*	None		43	19.5
	2	0-18-0*	None		86	39
	3	None	None			None
	4 through 9	0-18-0*	None		86	39
	10 & 14	0-18-0*	None		43	19.5
	11, 12, & 13	0-18-0*	None		86	39
March	10, 14, 15, & 16	21-0-0	48	21.8		None
	17	21-0-0	16	7.3		None
1975						
April	1	0-45-0	None		45	20.5
	2 through 9	0-45-0	None		90	40.9
	10 & 14	0-18-0*	None		45	20.5
	11, 12, & 13	0-18-0*	None		81	36.8
1976						
February	1	0-45-0	None		45	20.5
	2 through 14	0-45-0	None		90	40.9
October	15 through 17	21-0-0	32	14.5		None
		0-45-0		None	72	32.7
1977						
April	1	0-45-0	None		72	32.7
	2 through 8	0-45-0	None		144	65.4
	9 & 14	21-0-0	48	21.8		None
		0-45-0		None	72	32.7
	10 through 13	0-45-0	None		144	65.4
	15 through 16	21-0-0	64	29.0		None
	17	21-0-0	32	14.5		None

\*Double Super Phosphate 0-45-0 not available.

dressing during the growing season and as a preplant fertilizer application on small grains.

Phosphorus is the primary nutrient requirement of legumes. The *Leguminosae* family has the characteristic of forming nitrogen-fixing nodules on its roots enabling the use of atmospheric nitrogen. The phosphorus is applied during the winter months as a top dressing for the alfalfa. Phosphorus is also applied to small grains as a preplant fertilizer to aid in the development of a good root system.

## IRRIGATION

Precipitation and rainfall data from the Area 15 experimental farm for the years 1974 through 1977 are presented in appendix A. The annual rainfall for these years was 16 (6.3 in), 13 (5.1 in), 19 (7.5 in), and 19.4 (7.6 in) centimeters, respectively (see appendix A, table A-1). As the natural precipitation was not sufficient for crop production, irrigation water was supplied by a sprinkler type irrigation system. Irrigation water was supplied from a reservoir with a capacity of about 3,800 cubic meters (1 million gallons). Irrigation water was provided by a 1,645-meter (5,400-foot) well. The well pump was set at 518 meters (1,700 feet) and produced 757 liters (200 gallons) per minute. The monthly irrigation rates for each land are listed in appendix B. The total annual irrigation and precipitation are summarized in table 2.

TABLE 2. IRRIGATION AND PRECIPITATION SUMMARY

Year	Rainfall		Irrigation Water Applied			
	(cm)	(in)	(liter)	(gal)	(Acre-ft)	(Acre-ft/acre)
1974	16.0	6.3	105,163,650	27,784,320	85.27	5.33
1975	13.0	5.1	82,979,269	21,923,188	67.28	4.21
1976	19.0	7.5	104,513,420	27,612,529	84.74	5.30
1977	19.4	7.5	102,525,774	27,087,391	83.13	5.20
Av	16.9	6.6	98,795,502	26,101,850	80.10	5.01

## HARVESTING

Nearly all the forage produced on the experimental farm is used as green feed for the cattle at the farm (Smith 1973). When the growth exceeds the requirements for green feed, the forage is cut and baled as hay. The forage production for each land by monthly and yearly totals is listed in appendix C. The annual average production as shown in table 3 during this period was approximately 66 metric tons per hectare or 30 English tons per acre.

## WEED CONTROL

Both mechanical and chemical weed control were used on the experimental farm during this period.

Mechanical control consists of uprooting of the weeds with the rear-mounted grader blade on the tractor. This is used on the roadways and noncrop areas. It is an effective weed control method but is only temporary and requires repeating several times during the growing season.

Ureabor® (sodium metaborate tetrahydrate, sodium chlorate, and bromacil), a soil sterilant, was used around the irrigation risers and along the irrigation laterals where it is difficult to clip with the harvesting equipment. The chemical treatment is effective but must be repeated annually as the high amounts of irrigation water applied to the coarse, sandy loam soil leaches the herbicide from the soil.

The weeds were controlled along the fence rows by spraying with 2-4 D (2-4 dichlorophenoxy-acetic acid), Paraquat® (dimethylbipyridylumion), and diesel oil.

Only certified weed-free seeds are planted to prevent introduction of new noxious weeds and minimize increase in numbers of weeds already present.

## INSECT CONTROL

During 1974 a heavy infestation of pea aphids occurred in the alfalfa. Lands 1 through 14 were sprayed with Diazinon AG500® (0.5 liter of Diazinon

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®Registered trademark

TABLE 3. GREEN FEED PRODUCTION (ESTIMATED)

Year	<u>Harvest Season</u>		<u>Total Production</u>		<u>Production by Area</u>	<u>Production Daily Av</u>
	Dates (mo/day)	Length (days)	Wet wt Metric tons	Dry wt* Metric tons	Wet wt Metric tons/ha	Wet wt kg
1974	04/21 to 10/12	174	390 (430 tons) <sup>†</sup>	117 (129 tons)	60.2 (26.9 tons/a)	2,200 (4,900 lb)
1975	05/16 to 09/30	137	347 (383 tons)	104 (115 tons)	63.5 (28.4 tons/a)	2,500 (5,600 lb)
1976	05/09 to 10/17	161	438 (483 tons)	132 (145 tons)	80.1 (35.8 tons/a)	2,700 (6,000 lb)
1977	05/04 to 09/24	143	398 (439 tons)	119 (131 tons)	61.4 (27.4 tons/a)	2,800 (6,100 lb)

\*Airdried

<sup>†</sup>Numbers within ( ) are English tons and pounds

in 61 liters of water per acre). Complete control was achieved with one application.

#### MICROPLOTS

During the summer of 1976, four 4-meter square plots of corn and four 4-meter square plots of potatoes were planted for studies on plant stress measurement by leaf fluorescence. An open top fumigation chamber made from fiberglass was constructed and placed over the plants.



## PUBLIC RELATIONS

Due to the uniqueness of an experimental dairy farm operating on the Nevada Test Site, it is visited frequently by various groups on orientation tours of the Nevada Test Site.

During the 4 years covered in this report, about 100 groups totaling 3,000 people visited the experimental farm and were briefed on the activities of the farm and its role in the research and surveillance program conducted for the U.S. Department of Energy by the Environmental Monitoring and Support Laboratory-Las Vegas, Nevada.

## SUMMARY

The agronomic practices used on the experimental farm are those used by commercial farms within the general geographic area or those recommended by the University of Nevada, Reno's Cooperative Extension Service and Agricultural Experimental Stations.

Crop yields are directly related to length of growing season, available nutrients, rate of fertilization, irrigation, harvesting, and weather conditions. As these all vary from area to area and even from farm to farm, direct comparison with other farms is difficult because of the experimental farm's isolation from other farming operations. However, Robinson et al. (1970) reported the average green feed production from small grains grown in an agricultural area about 160 kilometers (100 miles) southeast of the experimental farm was 4,500 kilograms per acre (9,800 lb per acre). This is comparable to the 4,600 kilograms per acre (10,208 lb per acre) of green feed produced from rye grain at the experimental farm during 1974 and 1975.

The average amount of irrigation water applied per acre during the period 1974 through 1977 was 6,158,565 liters (1,629,250 gallons) which is equivalent to an average of 5.0 acre-feet (an acre-foot equals 325,850 gallons or 1,231,713 liters) per acre. The amount of irrigation water applied yearly has not changed significantly during the 12 years of the operation of the experimental farm. During the 8-year period 1966 through 1973, the average usage was 5.1 acre-feet per acre, only slightly higher than the average usage from 1974 through 1977.

Production of green feed has increased significantly. During 1973 the average production on an air-dried basis was 23,000 kilograms (25.5 tons) per acre versus an average 27,000 kilograms (29.6 tons) per acre during the 1974 through 1977 period. This increase in production is partially due to changes in harvesting and feeding procedures; i.e., the fields are now harvested at

shorter intervals (about every 24 days) which stimulates rapid re-growth. During this period, nearly all of the production was utilized as green feed and little was harvested as hay.

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APPENDIX A. SUMMARY OF THE METEOROLOGICAL DATA FROM THE AREA 15 FARM

TABLE A-1. PRECIPITATION DATA

Month	1974 Total for month		1975 Total for month		1976 Total for month		1977 Total for month	
	(in)	(cm)	(in)	(cm)	(in)	(cm)	(in)	(cm)
January	1.9	4.8	0.12	0.30	--	--	0.89	2.26
February	--	--	0.24	0.60	2.6	6.5	--	--
March	0.68	1.7	1.2	3.02	0.15	0.38	0.50	1.3
April	0.15	0.38	0.37	0.94	0.36	0.91	0.05	1.3
May	--	--	0.44	1.1	0.10	0.25	2.1	5.33
June	--	--	0.07	0.18	--	--	0.54	1.37
July	0.50	1.3	0.08	0.20	1.01	2.6	0.02	0.05
August	0.30	0.76	0.44	1.1	--	--	2.21	5.61
September	--	--	0.48	1.2	2	4	0.14	0.35
October	1.6	4.1	1.3	3.4	1	2.6	0.29	0.74
November	0.15	0.38	0.20	0.51	0.02	0.05	0.13	0.33
December	0.85	2.2	0.01	0.25	0.09	0.22	0.75	1.90
Total	6.1	16	5	13	7.3	19	7.62	19.37

## APPENDIX A. (continued)

TABLE A-2. TEMPERATURE DATA

Month	Temperature Extremes															
	1974				1975				1976				1977			
	High (°F) (°C)		Low (°F) (°C)		High (°F) (°C)		Low (°F) (°C)		High (°F) (°C)		Low (°F) (°C)		High (°F) (°C)		Low (°F) (°C)	
Jan	47	8	26	-2	50	10	22	-6	54	12	27	-3	60	16	16	-9
Feb	55	13	27	-3	49	9	23	-5	52	11	30	-1	67	19	22	-6
Mar	62	17	36	1	49	9	26	-2	56	13	30	-1	67	19	15	-9
Apr	66	19	38	3	55	13	29	-2	62	17	35	2	80	27	27	-3
May	82	28	51	11	69	21	47	8	79	26	48	9	92	33	29	-2
Jun	92	33	58	14	86	30	54	12	86	30	55	13	100	38	48	9
Jul	92	33	61	16	93	34	63	17	93	34	63	18	102	39	52	11
Aug	91	33	56	13	90	32	58	14	87	31	58	14	107	42	56	13
Sep	89	32	57	14	87	31	57	14	80	27	55	13	94	34	42	6
Oct	69	21	44	7	71	22	41	5	71	22	43	6	84	30	37	3
Nov	57	13	32	0	57	13	31	-1	64	18	36	1	72	22	19	-7
Dec	45	7	23	-5	54	12	30	-1	53	12	26	-2	69	21	19	-7

# APPENDIX B. LITERS OF IRRIGATION WATER APPLIED TO EACH LAND, 1974-1977

## TABLE B-1. LITERS APPLIED TO LANDS 1 THROUGH 8 DURING 1974

Month	Land 1	Land 2	Land 3	Land 4	Land 5	Land 6	Land 7	Land 8
January	0	0	0	0	0	0	0	0
February	136,836 (36,200)*	136,836 (36,200)	136,836 (36,200)	136,836 (36,200)	136,836 (36,200)	473,256 (125,200)	643,356 (170,200)	473,256 (125,200)
March	326,970 (86,500)	326,970 (86,500)	326,970 (86,500)	326,970 (86,500)	326,970 (86,500)	290,682 (76,900)	290,682 (76,900)	290,682 (76,900)
April	987,336 (261,200)	521,640 (138,000)	521,640 (138,000)	683,046 (180,700)	683,046 (180,700)	165,564 (43,800)	165,564 (43,800)	106,974 (28,300)
May	1,888,866 (499,700)	1,508,069 (398,960)	952,106 (251,880)	956,722 (247,810)	936,722 (247,810)	1,223,284 (323,620)	1,125,873 (297,850)	1,125,306 (297,700)
June	1,859,004 (491,800)	1,180,494 (312,300)	1,220,751 (322,950)	956,340 (253,000)	1,267,812 (335,400)	1,723,680 (456,000)	1,573,614 (416,300)	1,552,635 (410,750)
July	1,068,228 (282,600)	1,214,136 (321,200)	1,214,136 (321,200)	1,335,096 (353,200)	1,335,096 (353,200)	1,318,464 (348,800)	1,173,312 (310,400)	1,275,372 (337,400)
August	1,557,738 (413,100)	1,336,986 (353,700)	1,035,720 (274,000)	798,336 (211,200)	798,336 (211,200)	703,836 (186,200)	703,836 (186,200)	1,060,668 (280,600)
September	1,459,742 (386,175)	941,031 (248,950)	886,599 (234,550)	886,599 (234,550)	1,695,708 (448,600)	1,402,002 (370,900)	1,430,352 (378,400)	1,430,352 (378,400)
October	0	425,628 (112,600)	425,628 (112,600)	205,632 (54,400)	205,632 (54,400)	205,632 (54,400)	402,192 (106,400)	402,192 (106,400)
November	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0
Total Liters	9,284,720	7,591,790	6,723,386	6,265,577	7,386,158	7,506,398	7,508,781	7,717,437
Total Gallons	(2,457,275)	(2,008,410)	(1,777,880)	(1,657,560)	(1,954,010)	(1,985,820)	(1,986,450)	(2,041,650)
Total Acre-Feet†	7.5	6.2	5.5	5.1	6.0	6.1	6.1	6.3

\*Numbers within ( ) are gallons

†Acre-foot = 1,231,713 liters (325,850 gallons)



APPENDIX B. (continued)

TABLE B-2. LITERS APPLIED TO LANDS 9 THROUGH 16 DURING 1974

Month	Land 9	Land 10	Land 11	Land 12	Land 13	Land 14	Land 15	Land 16
January	0	0	0	0	0	0	0	0
February	473,256 (125,200)*	473,256 (125,200)	170,100 (45,000)	170,100 (45,000)	170,100 (45,000)	170,100 (52,000)	103,670 (27,426)	103,670 (27,426)
March	440,370 (116,500)	440,370 (116,500)	523,152 (138,400)	523,152 (138,400)	598,752 (158,400)	449,064 (118,800)	449,064 (118,800)	107,730 (28,500)
April	327,802 (86,720)	327,802 (86,720)	327,802 (86,720)	327,802 (86,720)	327,802 (86,720)	239,180 (63,275)	718,502 (190,080)	1,088,016 (287,835)
May	790,871 (209,225)	1,473,444 (389,800)	1,268,946 (335,700)	960,026 (253,975)	861,462 (227,900)	769,986 (203,700)	244,944 (64,800)	225,817 (59,740)
June	1,211,112 (320,400)	980,532 (259,400)	1,215,648 (321,600)	1,503,684 (397,800)	1,473,444 (389,800)	1,177,092 (311,400)	0	0
July	1,275,372 (337,400)	1,355,508 (358,600)	719,523 (190,350)	582,120 (154,000)	582,120 (154,000)	705,443 (186,625)	0	0
August	850,311 (224,950)	970,326 (256,700)	738,612 (195,400)	1,041,390 (275,500)	965,790 (255,500)	920,430 (243,500)	183,330 (48,500)	183,330 (48,500)
September	1,568,700 (415,000)	1,522,206 (402,700)	1,335,852 (353,400)	651,294 (172,300)	894,726 (236,700)	1,214,136 (321,200)	179,928 (47,600)	179,928 (47,600)
October	182,196 (48,200)	182,196 (48,200)	182,196 (48,200)	594,972 (157,400)	508,505 (134,525)	508,505 (134,525)	513,324 (135,800)	513,324 (135,800)
November	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0
Total Liters	7,119,990	7,725,640	6,481,831	6,354,540	6,386,701	6,180,395	2,392,762	2,401,815
Total Gallons	(1,985,820)	(2,043,820)	(1,714,770)	(1,681,095)	(1,688,545)	(1,635,025)	(633,005)	(635,410)
Total Acre-Feet <sup>†</sup>	6.1	6.3	5.3	5.2	5.2	5.0	1.9	2.0

\*Numbers within ( ) are gallons

<sup>†</sup>Acre-foot = 1,231,713 liters (325, 850 gallons)

APPENDIX B. (continued)

TABLE B-3. LITERS APPLIED TO LANDS 1 THROUGH 8 DURING 1975

Month	Land 1	Land 2	Land 3	Land 4	Land 5	Land 6	Land 7	Land 8
January	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0
March	474,390 (125,500)*	474,390 (125,500)	474,390 (125,500)	474,390 (125,500)	172,179 (45,550)	245,700 (65,000)	245,700 (65,000)	245,700 (65,000)
April	512,190 (135,500)	283,500 (75,000)	1,088,640 (288,000)	1,419,390 (375,500)	1,145,340 (303,000)	1,071,630 (283,500)	725,760 (192,000)	725,760 (192,000)
May	634,662 (167,900)	757,512 (200,400)	514,836 (136,200)	349,650 (92,500)	349,650 (92,500)	355,320 (94,000)	601,020 (159,000)	601,020 (159,000)
June	976,185 (258,250)	827,820 (219,000)	827,820 (219,000)	827,820 (219,000)	672,840 (178,000)	721,602 (190,900)	721,602 (190,900)	721,602 (190,900)
July	899,640 (238,000)	914,760 (242,000)	651,294 (172,300)	651,294 (172,300)	1,054,620 (279,000)	995,085 (263,250)	1,136,456 (300,650)	1,136,457 (300,650)
August	744,660 (197,000)	744,660 (197,000)	1,009,260 (267,000)	1,009,260 (267,000)	641,277 (169,650)	714,420 (189,000)	714,420 (189,000)	714,420 (189,000)
September	990,360 (262,000)	990,360 (262,000)	1,056,510 (279,500)	1,056,510 (279,500)	1,077,300 (285,000)	1,224,720 (324,000)	1,170,855 (309,750)	1,170,855 (309,750)
October	514,080 (136,000)	514,080 (136,000)	514,080 (136,000)	514,080 (136,000)	472,500 (125,000)	472,500 (125,000)	472,500 (125,000)	571,536 (151,200)
November	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0
Total Liters	5,746,167	5,507,082	6,136,830	6,302,344	5,585,706	5,800,977	5,783,314	5,887,350
Total Gallons	(1,519,850)	(1,456,900)	(1,623,500)	(1,667,300)	(1,477,700)	(1,534,650)	(1,531,300)	(1,557,500)
Total Acre-Feet†	4.7	4.5	5.0	5.1	4.5	4.7	4.7	4.8

\*Numbers within ( ) are gallons

†Acre-foot = 1,231,713 liters (325,850 gallons)

## APPENDIX B. (continued)

TABLE B-4. LITERS APPLIED TO LANDS 9 THROUGH 16 DURING 1975

Month	Land 9	Land 10	Land 11	Land 12	Land 13	Land 14	Land 15	Land 16
January	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0
March	245,700 (65,000)*	245,700 (65,000)	245,700 (65,000)	344,925 (91,250)	344,925 (91,250)	344,925 (91,250)	344,925 (91,250)	344,925 (91,250)
April	725,760 (192,000)	725,760 (192,000)	725,760 (192,000)	951,993 (251,850)	1,001,700 (265,000)	1,001,700 (265,000)	0	0
May	842,940 (223,000)	842,940 (223,000)	967,491 (255,950)	623,700 (165,000)	623,700 (165,000)	623,700 (165,000)	309,966 (82,000)	309,960 (82,000)
June	721,602 (190,900)	721,602 (190,000)	551,880 (146,000)	551,880 (146,000)	551,880 (146,000)	551,880 (146,000)	0	0
July	1,130,220 (299,000)	785,295 (207,750)	738,990 (195,500)	709,695 (187,750)	725,760 (192,000)	738,990 (195,500)	0	0
August	480,060 (127,000)	1,220,373 (322,850)	1,028,160 (272,000)	1,028,160 (272,000)	760,347 (201,150)	760,347 (201,150)	578,340 (153,000)	578,340 (153,000)
September	1,170,855 (309,750)	1,405,782 (371,900)	463,050 (122,500)	767,340 (203,000)	767,340 (203,000)	767,340 (203,000)	196,560 (52,000)	196,560 (52,000)
October	571,536 (151,200)	481,572 (127,400)	220,185 (58,250)	385,560 (102,000)	545,076 (144,200)	545,076 (144,200)	0	0
November	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0
Total Liters	5,888,673	6,429,024	4,941,216	5,363,253	5,320,728	5,333,202	1,429,785	1,429,785
Total Gallons	(1,557,850)	(1,700,800)	(1,307,200)	(1,418,850)	(1,407,600)	(1,410,900)	(378,250)	(378,250)
Total Acre-Feet†	4.8	5.2	4.0	4.4	4.3	4.3	1.2	1.2

\*Numbers within ( ) are gallons

†Acre-foot = 1,231,713 liters (325,850 gallons)

APPENDIX B. (continued)

TABLE B-5. LITERS APPLIED TO LANDS 1 THROUGH 8 DURING 1976

Month	Land 1	Land 2	Land 3	Land 4	Land 5	Land 6	Land 7	Land 8
January	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0
March	225,817 (57,740)*	225,817 (59,740)	225,817 (59,740)	225,817 (59,740)	225,817 (59,740)	246,343 (65,170)	246,343 (65,170)	246,343 (65,170)
April	297,675 (78,750)	656,907 (173,785)	656,907 (173,785)	738,990 (195,500)	862,218 (228,100)	780,079 (206,370)	749,291 (198,225)	749,291 (198,225)
May	749,291 (198,225)	995,614 (263,390)	995,614 (263,390)	1,221,431 (323,130)	1,118,804 (295,980)	790,341 (209,085)	943,110 (249,500)	1,170,099 (309,550)
June	1,221,431 (323,130)	626,119 (165,640)	1,292,760 (342,000)	800,604 (211,800)	1,046,947 (276,970)	841,674 (222,665)	923,794 (244,390)	646,645 (171,070)
July	1,498,581 (396,450)	1,067,472 (282,400)	1,067,474 (282,400)	1,283,027 (339,425)	1,067,472 (282,400)	1,067,472 (282,400)	1,642,259 (434,460)	1,621,752 (429,035)
August	1,334,340 (353,000)	1,170,118 (309,555)	1,170,118 (309,555)	913,626 (241,700)	769,835 (203,660)	1,642,297 (434,470)	1,847,570 (488,775)	1,662,803 (439,895)
September	1,077,678 (285,100)	1,046,947 (276,970)	831,411 (219,950)	831,411 (219,950)	1,046,947 (276,970)	1,211,188 (320,420)	1,313,815 (347,570)	831,411 (219,950)
October	595,350 (157,500)	513,211 (135,770)	513,211 (135,770)	739,028 (195,510)	739,028 (195,510)	656,926 (173,790)	420,827 (111,330)	882,725 (233,525)
November	0	0	0	0	0	0	0	0
December	0	0	0	0	0	0	0	0
Total Liters	7,000,163	6,302,205	6,753,310	6,753,934	6,897,593	7,236,319	8,049,208	7,811,068
Total Gallons	(1,851,895)	(1,667,250)	(1,786,590)	(1,786,755)	(1,824,760)	(1,914,370)	(2,129,420)	(2,066,420)
Total Acre-Feet†	5.7	5.1	5.5	5.5	5.6	5.9	6.5	6.3

\*Numbers within ( ) are gallons

†Acre-foot = 1,231,713 liters (325,850 gallons)

## APPENDIX B. (continued)

TABLE B-6. LITERS APPLIED TO LANDS 9 THROUGH 16 DURING 1976

Month	Land 9	Land 10	Land 11	Land 12	Land 13	Land 14	Land 15	Land 16
January	0	0	0	0	0	0	0	0
February	0	0	0	0	0	0	0	0
March	246,343 (65,170)*	307,938 (81,465)	307,938 (81,465)	307,938 (81,465)	307,938 (81,465)	307,938 (81,465)	0	0
April	687,695 (181,930)	564,543 (149,350)	615,857 (162,925)	964,845 (255,250)	1,077,754 (285,120)	1,108,523 (293,260)	0	0
May	1,118,804 (295,980)	831,373 (219,940)	923,756 (244,380)	923,756 (244,380)	1,422,981 (376,450)	1,005,896 (266,110)	236,080 (62,455)	236,080 (62,455)
June	821,148 (217,235)	1,046,947 (276,970)	1,046,947 (276,970)	1,046,947 (276,970)	1,381,533 (365,485)	564,543 (149,350)	0	0
July	1,724,398 (456,190)	1,539,632 (407,310)	1,539,632 (407,310)	964,826 (255,245)	667,170 (176,500)	944,320 (249,820)	0	0
August	944,320 (249,820)	1,385,672 (366,580)	1,159,855 (306,840)	1,190,643 (314,985)	1,190,643 (314,985)	1,231,713 (325,850)	256,605 (67,885)	256,605 (67,885)
September	106,747 (282,400)	1,057,209 (279,685)	769,816 (203,655)	1,087,997 (287,830)	1,149,593 (304,125)	1,088,016 (287,835)	636,383 (168,355)	636,382 (168,355)
October	882,725 (233,525)	882,725 (233,525)	851,918 (225,375)	780,079 (206,370)	441,372 (116,765)	441,372 (116,765)	441,372 (116,765)	441,372 (116,765)
November	0	0	0	0	112,909 (29,870)	112,909 (29,870)	16,424 (43,450)	16,424 (43,450)
December	0	0	0	0	0	0	0	0
Total Liters	7,492,905	7,616,039	7,215,718	7,267,031	7,751,892	6,805,229	1,734,680	1,734,680
Total Gallons	(1,982,250)	(2,014,825)	(1,908,920)	(1,922,495)	(2,050,765)	(1,800,325)	(458,910)	(458,910)
Total Acre-Feet†	6.1	6.2	5.9	5.9	6.3	5.5	1.4	1.4

\*Numbers within ( ) are gallons

†Acre-foot = 1,231,713 liters (325,850 gallons)

APPENDIX B. (continued)

TABLE B-7. LITERS APPLIED TO LANDS 1 THROUGH 8 DURING 1977

Month	Land 1	Land 2	Land 3	Land 4	Land 5	Land 6	Land 7	Land 8
January	0	0	0	0	0	0	0	0
February	132,413 (35,030)*	132,413 (35,030)	132,413 (35,030)	132,413 (35,030)	132,413 (35,030)	256,605 (67,885)	256,605 (67,885)	360,272 (95,310)
March	307,938 (81,465)	307,938 (81,465)	307,938 (81,465)	307,938 (81,465)	307,938 (81,465)	289,454 (76,575)	533,736 (141,200)	370,535 (98,025)
April	872,424 (230,800)	520,393 (137,670)	520,393 (137,670)	513,211 (135,770)	513,211 (135,770)	189,888 (50,235)	264,827 (70,060)	184,766 (48,880)
May	1,334,340 (353,000)	1,293,289 (342,140)	951,487 (251,715)	833,452 (220,490)	833,452 (220,490)	1,192,703 (315,530)	1,124,966 (297,610)	1,117,066 (295,520)
June	1,293,289 (342,140)	1,170,118 (309,555)	1,216,309 (321,775)	935,077 (247,375)	1,061,330 (280,775)	1,354,865 (358,430)	1,262,501 (333,995)	1,334,340 (353,000)
July	1,067,472 (282,400)	1,213,229 (320,960)	1,213,229 (320,960)	1,324,077 (350,285)	1,129,048 (298,690)	1,159,855 (306,840)	1,180,381 (312,270)	1,170,099 (309,550)
August	1,462,652 (386,945)	1,159,855 (306,840)	1,035,663 (273,985)	800,604 (211,800)	800,604 (211,800)	703,080 (186,000)	703,080 (186,000)	957,644 (253,345)
September	1,437,005 (380,160)	821,129 (217,230)	886,826 (234,610)	886,826 (234,610)	1,654,601 (437,725)	1,113,663 (294,620)	1,001,795 (265,025)	991,513 (262,305)
October	0	0	0	0	0	195,010 (51,590)	390,039 (103,185)	380,797 (100,740)
November	564,543 (149,350)	564,543 (149,350)	564,543 (149,350)	564,543 (149,350)	564,543 (149,350)	615,857 (162,925)	615,857 (162,925)	615,857 (162,925)
December	0	0	0	0	0	0	0	0
Total Liters	8,483,283	6,627,119	6,837,830	6,306,472	7,006,395	7,070,981	7,333,824	7,482,907
Total Gallons	(2,241,290)	(1,750,890)	(1,806,560)	(1,666,175)	(1,851,095)	(1,870,630)	(1,940,165)	(1,979,605)
Total Acre-Feet†	6.9	5.4	5.5	5.1	5.7	5.7	6.0	6.1

\*Numbers within ( ) are gallons

†Acre-foot = 1,231,713 liters (325,850 gallons)

APPENDIX B. (continued)

TABLE B-8. LITERS APPLIED TO LANDS 9 THROUGH 16 DURING 1977

Month	Land 9	Land 10	Land 11	Land 12	Land 13	Land 14	Land 15	Land 16
January	0	0	0	0	0	0	0	0
February	360,272 (95,310)*	360,272 (95,310)	169,363 (44,805)	169,363 (44,805)	169,363 (44,805)	197,070 (52,135)	236,080 (62,455)	236,080 (62,455)
March	370,535 (98,025)	370,535 (98,025)	262,767 (69,515)	272,009 (71,960)	491,646 (130,065)	446,494 (118,120)	447,514 (118,390)	384,917 (101,830)
April	307,919 (81,460)	327,424 (86,620)	327,424 (86,620)	434,171 (114,860)	434,171 (114,860)	595,331 (157,495)	626,119 (165,640)	626,119 (165,640)
May	789,321 (208,815)	1,164,996 (308,200)	1,064,391 (281,585)	1,046,947 (276,970)	771,876 (204,200)	769,835 (203,660)	574,787 (152,060)	574,787 (152,060)
June	1,107,502 (292,990)	980,230 (259,320)	1,009,997 (267,195)	1,286,107 (340,240)	1,062,350 (281,045)	1,175,259 (310,915)	256,605 (67,885)	256,605 (67,885)
July	1,161,915 (307,385)	1,148,572 (303,855)	693,861 (183,561)	581,988 (153,965)	581,988 (153,965)	692,836 (183,290)	0	0
August	847,835 (224,295)	968,946 (256,335)	738,007 (195,240)	835,512 (221,035)	836,533 (221,305)	913,513 (241,670)	0	0
September	1,159,855 (306,840)	1,183,461 (313,085)	1,129,067 (298,695)	753,411 (199,315)	792,401 (209,630)	1,129,067 (298,695)	266,868 (70,600)	266,868 (70,600)
October	179,626 (47,520)	181,686 (48,065)	181,667 (48,060)	181,667 (48,060)	508,089 (134,415)	508,089 (134,415)	0	0
November	615,857 (162,925)	615,857 (162,925)	725,495 (191,930)	725,495 (191,930)	725,494 (191,930)	725,495 (191,930)	153,959 (40,730)	0
December	0	0	0	0	0	0	0	0
Total Liters	6,900,636	7,301,958	6,302,039	6,286,669	6,373,912	7,152,989	2,561,933	2,407,973
Total Gallons	(1,825,565)	(1,931,735)	(1,667,206)	(1,663,140)	(1,686,220)	(1,892,325)	(677,760)	(637,030)
Total Acre-Feet†	5.6	5.9	5.1	5.1	5.2	5.8	2.1	2.0

\*Numbers within ( ) are gallons

†Acre-foot = 1,231,713 liters (325,850 gallons)

APPENDIX C. KILOGRAMS OF GREEN FEED PRODUCED ON EACH LAND, 1974-1977

TABLE C-1. KILOGRAMS PRODUCED ON LANDS\* 1 THROUGH 9, 1974

Month	Land 1	Land 2	Land 3	Land 4	Land 5	Land 6	Land 7	Land 8	Land 9
June	4,000 (9,000)†	16,000 (36,000)	0	0	6,800 (15,000)	6,800 (15,000)	5,500 (12,000)	5,500 (12,000)	2,700 (6,000)
July	2,700 (6,000)	6,800 (15,000)	14,000 (30,000)	6,800 (15,000)	5,500 (12,000)	5,500 (12,000)	5,500 (12,000)	5,500 (12,000)	5,500 (12,000)
August	1,400 (3,000)	5,500 (12,000)	5,500 (12,000)	8,200 (18,000)	14,000 (30,000)	6,800 (15,000)	5,500 (12,000)	5,500 (12,000)	5,500 (12,000)
September	2,700 (6,000)	5,500 (12,000)	5,500 (12,000)	5,500 (12,000)	5,500 (12,000)	2,700 (6,000)	5,500 (12,000)	5,500 (12,000)	8,200 (18,000)
October	0	0	0	0	0	5,500 (12,000)	4,100 (9,000)	2,700 (6,000)	2,700 (6,000)
TOTALS									
kilograms	10,800	33,800	25,000	20,500	31,800	27,300	26,100	24,700	24,600
pounds	(24,000)	(75,000)	(54,000)	(45,000)	(69,000)	(60,000)	(57,000)	(54,000)	(54,000)
TOTALS									
Metric tons	10.8	33.8	25.0	20.5	31.8	27.3	26.1	24.7	24.6
English tons	(12)	(37.5)	(27)	(22.5)	(34.5)	(30)	(28.5)	(27)	(27)

\*Land = 1 acre

†Numbers within ( ) are English pounds.



APPENDIX C. (continued)

TABLE C-2. KILOGRAMS PRODUCED ON LANDS\* 10 THROUGH 17, 1974

Month	Land 10	Land 11	Land 12	Land 13	Land 14	Land 15	Land 16	Land 17
April	0	0	0	0	0	4,100 (9,000) <sup>†</sup>	2,700 (6,000)	0
May	0	0	0	5,500 (12,000)	5,500 (12,000)	4,600 (10,000)	6,600 (14,500)	4,100 (9,000)
June	2,700 (6,000)	5,500 (12,000)	5,500 (12,000)	6,800 (15,000)	5,500 (12,000)	0	0	900 (2,000)
July	5,500 (12,000)	5,500 (12,000)	5,500 (12,000)	5,500 (12,000)	5,500 (12,000)	0	0	0
August	5,500 (12,000)	5,500 (12,000)	5,500 (12,000)	5,500 (12,000)	2,700 (6,000)	0	0	0
September	14,000 (30,000)	14,000 (30,000)	14,000 (30,000)	5,500 (12,000)	8,200 (18,000)	0	0	0
October	1,400 (3,000)	0	0	0	0	0	0	0
TOTALS kilograms pounds	29,100 (63,000)	30,500 (66,000)	30,500 (66,000)	28,800 (63,000)	27,400 (60,000)	8,700 (19,000)	9,300 (20,500)	5,000 (11,000)
TOTALS Metric tons English tons	29.1 (31.5)	30.5 (33)	30.5 (33)	28.8 (31.5)	27.4 (30)	8.7 (9.5)	9.3 (10.2)	5.0 (5.5)

\*Land = 1 acre

<sup>†</sup>Numbers within ( ) are English pounds.

APPENDIX C. (continued)

TABLE C-3. KILOGRAMS PRODUCED ON LANDS\* 1 THROUGH 7, 1975

Month	Land 1	Land 2	Land 3	Land 4	Land 5	Land 6	Land 7
May	2,700 (6,000) <sup>†</sup>	6,800 (15,000)	0	0	5,500 (12,000)	0	0
June	0	0	0	0	8,200 (18,000)	8,200 (18,000)	8,200 (18,000)
July	2,700 (6,000)	8,200 (18,000)	8,200 (18,000)	8,200 (18,000)	0	0	0
August	5,500 (12,000)	8,200 (18,000)	8,200 (18,000)	8,200 (18,000)	8,200 (18,000)	8,200 (18,000)	8,200 (18,000)
September	2,700 (6,000)	5,500 (12,000)	14,000 (30,000)	8,200 (18,000)	8,200 (18,000)	8,200 (18,000)	12,000 (27,000)
TOTALS kilograms	13,600	28,700	30,400	24,600	30,100	24,600	28,400
pounds	(30,000)	(63,000)	(66,000)	(54,000)	(66,000)	(54,000)	(63,000)
TOTALS Metric tons	13.6	28.7	30.4	24.6	30.1	24.6	28.4
English tons	(15)	(31.5)	(33)	(27)	(33)	(27)	(31.5)

\*Land = 1 acre

<sup>†</sup>Numbers within ( ) are English pounds.

## APPENDIX C. (continued)

TABLE C-4. KILOGRAMS PRODUCED ON LANDS\* 8 THROUGH 14, 1975

Month	Land 8	Land 9	Land 10	Land 11	Land 12	Land 13	Land 14
May	0	0	0	0	5, (12,000) <sup>†</sup>	0	0
June	11,000 (24,000)	8,200 (18,000)	8,200 (18,000)	5,500 (12,000)	5,500 (12,000)	5,500 (12,000)	8,200 (18,000)
July	8,200 (18,000)	8,200 (18,000)	8,200 (18,000)	8,200 (18,000)	8,200 (18,000)	8,200 (18,000)	8,200 (18,000)
August	0	2,700 (6,000)	5,500 (12,000)	5,500 (12,000)	5,500 (12,000)	5,500 (12,000)	5,500 (12,000)
September	9,500 (21,000)	6,800 (15,000)	1,400 (3,000)	1,400 (3,000)	1,400 (3,000)	1,400 (3,000)	1,400 (3,000)
TOTALS kilograms	28,700	25,900	23,300	20,600	26,100	20,600	23,300
pounds	(63,000)	(57,000)	(51,000)	(45,000)	(57,000)	(45,000)	(51,000)
TOTALS Metric tons	28.7	25.9	23.3	20.6	26.1	20.6	23.3
English tons	(31.5)	(28.5)	(25.5)	(22.5)	(28.5)	(22.5)	(25.5)

\*Land = 1 acre

<sup>†</sup>Numbers within ( ) are English pounds.

APPENDIX C. (continued)  
TABLE C-5. KILOGRAMS PRODUCED ON LANDS\* 1 THROUGH 7, 1976

Month	Land 1	Land 2	Land 3	Land 4	Land 5	Land 6	Land 7
May	2,700 (6,000) <sup>†</sup>	8,200 (18,000)	5,500 (12,000)	5,500 (12,000)	5,500 (12,000)	8,200 (18,000)	0
June	2,700 (6,000)	8,200 (18,000)	2,700 (6,000)	0	0	0	11,600 (24,000)
July	5,500 (12,000)	0	5,500 (12,000)	8,200 (18,000)	8,200 (18,000)	11,000 (24,000)	8,200 (18,000)
August	2,700 (6,000)	8,200 (18,000)	8,200 (18,000)	8,200 (18,000)	8,200 (18,000)	8,200 (18,000)	8,200 (18,000)
September	5,500 (12,000)	8,200 (18,000)	8,200 (18,000)	5,500 (12,000)	0	0	0
October	0	0	0	2,700 (6,000)	8,200 (18,000)	8,200 (18,000)	8,200 (18,000)
TOTALS kilograms	19,100	32,800	30,100	30,100	30,100	35,600	35,600
pounds	(42,000)	(72,000)	(66,000)	(66,000)	(66,000)	(78,000)	(78,000)
TOTALS Metric tons	19.1	32.8	30.1	30.1	30.1	35.6	35.6
English tons	(21)	(36)	(33)	(33)	(33)	(39)	(39)

\*Land = 1 acre

<sup>†</sup>Numbers within ( ) are English pounds.

APPENDIX C. (continued)

TABLE C-6. KILOGRAMS PRODUCED ON LANDS\* 8 THROUGH 14, 1976

Month	Land 8	Land 9	Land 10	Land 11	Land 12	Land 13	Land 14
May	0	0	0	0	8,200 (18,000)†	2,700 (6,000)	8,200 (18,000)
June	5,500 (12,000)	8,200 (18,000)	8,200 (18,000)	11,000 (24,000)	8,200 (18,000)	8,200 (18,000)	8,200 (18,000)
July	11,000 (24,000)	8,200 (18,000)	14,000 (30,000)	11,000 (24,000)	0	0	0
August	11,000 (24,000)	0	0	0	8,200 (18,000)	8,200 (18,000)	5,500 (12,000)
September	0	11,000 (24,000)	8,200 (18,000)	8,200 (18,000)	11,000 (24,000)	11,000 (24,000)	5,500 (12,000)
October	8,200 (18,000)	5,500 (12,000)	5,500 (12,000)	0	0	0	0
TOTALS kilograms	35,700	32,900	35,900	30,200	35,600	30,100	27,400
pounds	78,000	(72,000)	(78,000)	(66,000)	(78,000)	66,000	60,000
TOTALS Metric tons	35.7	32.9	35.9	30.2	35.6	30.1	27.4
English tons	(39)	(36)	(39)	(33)	(39)	(33)	(30)

\*Land = 1 acre

†Numbers within ( ) are English pounds.

## APPENDIX C. (continued)

TABLE C-7. KILOGRAMS PRODUCED ON LANDS\* 1 THROUGH 7, 1977

Month	Land 1	Land 2	Land 3	Land 4	Land 5	Land 6	Land 7
May	1,800 (4,000) <sup>†</sup>	3,600 (8,000)	5,500 (12,000)	3,600 (8,000)	1,800 (4,000)	0	0
June	0	0	0	8,200 (18,000)	14,000 (30,000)	0	8,200 (18,000)
July	2,700 (6,000)	14,000 (30,000)	11,000 (24,000)	8,200 (18,000)	8,200 (18,000)	8,200 (18,000)	8,200 (18,000)
August	5,500 (12,000)	11,000 (24,000)	5,500 (12,000)	5,500 (12,000)	8,200 (18,000)	8,200 (18,000)	8,200 (18,000)
September	2,700 (6,000)	5,500 (12,000)	11,000 (24,000)	2,700 (6,000)	0	5,500 (12,000)	0
TOTALS kilograms pounds	12,700 (28,000)	34,100 (74,000)	33,000 (72,000)	28,200 (62,000)	32,200 (70,000)	21,900 (48,000)	24,600 (54,000)
TOTALS Metric tons	12.7	34.1	33.0	28.2	32.2	21.9	24.6
English tons	(14)	(37)	(36)	(31)	(35)	(24)	(27)

\*Land = 1 acre

†Numbers within ( ) are English pounds.

APPENDIX C. (continued)

TABLE C-8. KILOGRAMS PRODUCED ON LANDS\* 8 THROUGH 14, 1977

Month	Land 8	Land 9	Land 10	Land 11	Land 12	Land 13	Land 14
May	0	0	1,800 (4,000) <sup>†</sup>	0	0	0	7,300 (16,000)
June	0	11,000 (24,000)	8,200 (18,000)	14,000 (30,000)	8,200 (18,000)	5,500 (12,000)	0
July	11,000 (24,000)	0	5,500 (12,000)	8,200 (18,000)	0 <sup>‡</sup>	0 <sup>‡</sup>	8,200 (18,000)
August	14,000 (30,000)	8,200 (18,000)	6,400 (14,000)	0	5,500 (12,000)	8,200 (18,000)	5,500 (12,000)
September	0	8,200 (18,000)	8,200 (18,000)	11,000 (24,000)	11,000 (24,000)	8,200 (18,000)	5,500 (12,000)
TOTALS							
kilograms	25,000	27,400	30,100	33,200	24,700	21,900	26,500
pounds	54,000	60,000	66,000	72,000	54,000	48,000	58,000
TOTALS							
Metric tons	25.0	27.4	30.1	33.2	24.7	21.9	26.5
English tons	(27)	(30)	(33)	(36)	(27)	(24)	(29)

\*Land = 1 acre

<sup>†</sup>Numbers within ( ) are English pounds.

<sup>‡</sup>Hay = 3,000 kg (6,600 lb) and 3.0 metric tons (3.3 tons).

APPENDIX C. (continued)

TABLE C-9. KILOGRAMS PRODUCED ON LANDS\* 15 THROUGH 17, 1977

Month	Land 15	Land 16	Land 17
May	11,000 (24,000) <sup>†</sup>	10,000 (23,000)	5,000 (11,000)
June	0	0	0
July	0	0	0
August	0	0	0
September	0	0	0
TOTALS			
kilograms	11,000	10,000	5,000
pounds	(24,000)	(23,000)	(11,000)
TOTALS			
Metric tons	11.0	10.0	5.0
English tons	(12)	(11.5)	(5.5)

\*Land = 1 acre

<sup>†</sup>Numbers within ( ) are English pounds



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