

# GUIDE LINES

to production costs  
and practices



1987-1988



## IMPERIAL COUNTY

### FIELD CROPS

Circular 104-F

\$3.00

Cooperative Extension

University of California

Imperial County

939 Main St., El Centro, CA

92243



# FOREWORD

September 1987

Circular 104F, Guide Lines to Production Costs and Practices, contains cost data information for field crops; vegetable crops cost data information can be obtained in Circular 104V. Each publication costs \$3.00.

The figures used in the cost data sheets were supplied to the farm advisors by independent contractors, various fertilizer and seed companies, growers, pest control advisors, the Agricultural Commissioners Office, and the Imperial Irrigation District. The figures represent an average of custom rates charged in Imperial Valley. These figures should be used as estimates only, as exact costs will differ for each field and grower.

The cost of production for the commodities described in this publication is dependent on factors such as: soils, pest management, labor, method of irrigation, fertilizer requirement and application methods.

The 12 percent overhead expense of preharvest costs and land rent include office, utilities, insurance, finance charges, supplies, transportation, and other administrative expenses. Land rents are based on either net or gross acreage depending on the crop. The range analysis can also offer a picture of possible profit or loss situation.

Robert W. Hagemann served as main author in the preparation of this publication, and the specific crop responsibilities are as follows:

Robert W. Hagemann: Alfalfa Hay, Alfalfa Seed, Bermudagrass Seed, Annual Ryegrass, Sudangrass, Sugar Beets.

Adolph F. Van Maren: Cotton, Cereal Crops, Field Corn.

Questions concerning these costs should be directed to the appropriate farm advisor.

In addition, the following farm advisors contributed in their areas of expertise:

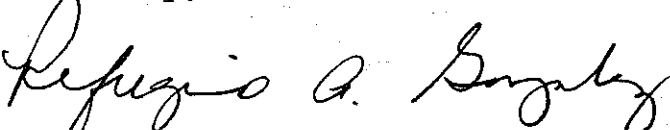
Carl E. Bell: Weed Control

Eric T. Natwick: Insect Control

Franklin F. Laemmlen: Plant Disease Control

We welcome suggestions for improvement.

Sincerely,



Refugio A. Gonzalez  
County Director



# FIELD CROPS

1987-1988

Imperial

Page

Planting Calendar	1
Custom Rate Charges	2
Alfalfa	3
Alfalfa Seed	5
Bermudagrass Seed	7
Cereal Crops	9
Field Corn	11
Cotton	13
Ryegrass	15
Sudangrass	17
Sugar Beets	19



(1)

FIELD CROPS CALENDAR  
PLANTING - HARVEST

FIELD CROPS	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Alfalfa for Hay (3 to 4 year crop)										PPPPPPPPPPPPPPPP		
	PPPPPPPPPPPPPPPP	HHHHHHHHHHHHHHHH	HHHHHHHHHHHHHHHH	HHHHHHHHHHHHHHHH	HHHHHHHHHHHHHHHH	HHHHHHHHHHHHHHHH	HHHHHHHHHHHHHHHH	HHHHHHHHHHHHHHHH	HHHHHHHHHHHHHHHH	HHHHHHHHHHHHHHHH	HHHHHHHHHHHHHHHH	HHHHHHHHHHHHHHHH
Alfalfa Seed										PPPPPPPPPPPPPPPP		
	PPPPPPPPPPPPPPPP	Phay production	HHHHHHHHHHHHHHHH	HHHHHHHHHHHHHHHH	HHHHHHHHHHHHHHHH	HHHHHHHHHHHHHHHH	HHHHHHHHHHHHHHHH	HHHHHHHHHHHHHHHH	HHHHHHHHHHHHHHHH	HHHHHHHHHHHHHHHH	HHHHHHHHHHHHHHHH	HHHHHHHHHHHHHHHH
										seed production		
										usually 3rd or 4th year		
Bermudagrass Seed						PPPPPPPPPPPPPPPP						HHHH
							HHHHHHHHHH					
Cereals (wheat, barley)												PPPPP
	PPPPPPPPPPPP				HHHHHHHHHHHHHH							
Field Corn												
	PPPPPPPPPPPPPP						HHHHHHHHHHHH					
Cotton												
			PPPPPPPPPPPPPP								HHHHHHHHHHHHHH	
Annual Ryegrass (pasture)												
	HHHHHHHHHHHHHHHH										PPPPPPPP	HH
Sorghums (forage)												
			PPPPPPPPPPPPPPPP									HHHHHHHHHHHHHHHH
Sorghum, Grain												
			PPPPPPPPPPPPPPPP									HHHHHHHHHHHHHHHH
Sugar Beets												
										PPPPPPPPPPPP		
Sudangrass												
			PPPPPPPPPPPPPPPP									HHHHHHHHHHHHHHHH

P = Planting      H = Harvest

## GUIDELINES TO PRODUCTION COSTS AND PRACTICES

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 IMPERIAL COUNTY CROPS, CIRCULAR 104  
 1987-1988

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 CUSTOM RATE CHARGES  
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HEAVY TRACTOR WORK =====	PRICE/ACRE =====
Plow	\$ 24.25
Subsoil 2nd Gear	27.00
Disc, Regular	9.00
Disc, Stubble	17.75
Float	7.75
Triplane	8.50
List, Regular	10.50
Landplane	9.50
Chisel	18.00
 PLANTING AND CULTIVATING =====	
Plant and Shape Sugar Beet 40" Beds	14.00
Precision Plant 40" Beds	13.50
Plant	12.00
Cultivate 4-Row 30", 40" Beds	9.75
Spike and Furrow Out (2 row)	8.50
Lilliston	9.00
Furrow out alone	7.50
 INCORPORATING, BORDER AND BED WORK =====	
Power Incorporate	18.50
Scraper Borders	11.75
Border, Cross checks and Break Borders	15.00
 FERTILIZER APPLICATION =====	
Broadcast Fertilizer	6.00
Inject Fertilizer (Flat)	10.00
Fertilize and Furrow Out 30", 40" Beds	10.00
 IRRIGATION =====	
Custom Sprinkle (Bermudagrass)	120.00
Custom Sprinkle	130.00
 HARVEST =====	
Swather	7.50
Rake	4.00
 MISCELLANEOUS =====	
Motor Grader/Hour	37.00
Chop Stalks, Etc.	12.00
Cultipacker	6.00
Power Incorporate Herbicides	18.50
Ground Spray Pesticides (4 Row)	7.00
Aerial Spray 5 Gal. (Insecticides)	4.50
Aerial Spray 10 Gal. (Fungicides)	4.90

## ALFALFA PROJECTED PRODUCTION COSTS 1987-1988

Mechanical operations at custom rates. Hand labor at \$5.50 per hour (\$4.30 plus Social Security, unemployment insurance and fringe benefits).

Yield--8.0 tons per acre

OPERATION	CUSTOM RATE	MATERIALS		HAND LABOR		COSTS Per Acre
		Type	Cost	Hours	Dollars	
<b>LAND PREPARATION</b>						
Plow	24.25					24.25
Disc 2x	9.00					18.00
Fertilize	6.00	260# 11-52-0	30.55			36.55
Build & Break borders	15.00					15.00
Flood		1/2 ac ft	4.50	1	5.50	10.00
Disc 2x	9.00					18.00
Landplane 2x	9.50					19.00
Border, dump	11.75					11.75
Float	7.75					7.75
<b>TOTAL LAND PREPARATION COSTS</b>						<b>160.30</b>
<b>COST OF ESTABLISHMENT</b>						
Weed Control	8.75	Herbicide	13.00			21.75
Planting	10.50	20# seed @1.00/lb	20.00			30.50
Irrigate 2x		1 ac/ft	9.00	2	11.00	20.00
Insect Control 1x	4.90	Insecticide	7.00			11.90
<b>COST OF ESTABLISHMENT</b>						<b>84.15</b>
<b>TOTAL COST OF STAND ESTABLISHMENT</b>						<b>244.45</b>
<b>Annual Costs of Hay Production--3 Year Life</b>						
Weed Control		Herbicide	14.60			14.60
Irrigate 16x		6.5 ac. ft.	58.50	9	49.50	108.00
Fertilize	6.00	90# Phosphate	10.58			16.58
Insect Control 4x	4.90	Insecticide	46.00			65.60
<b>TOTAL ANNUAL CULTURAL COSTS</b>						<b>204.78</b>
Land Rent (gross)						150.00
Amortization--	33% of total cost of stand establishment					80.67
Cash Overhead--	12% of annual costs, land rent and amortization					52.25
<b>TOTAL PREHARVEST COSTS</b>						<b>487.70</b>
<b>HARVEST COSTS</b>						
Swather 7x	7.50	7 times				52.50
Rake 9x	4.00	9 times				36.00
Bale	9.00/ton	8 tons				72.00
Haul & Stack	.23/bale	16 bales/ton				29.44
<b>TOTAL ALL COSTS</b>						<b>677.64</b>

PROJECTED INCOME ABOVE COSTS (PER ACRE)  
price/ton

Tons per acre		price/ton							Breakeven \$/ton
		60.00	70.00	80.00	90.00	100.00	110.00	120.00	
7		-245	-175	-105	-35	35	105	175	95
8		-198	-118	-38	42	122	202	282	85
9		-150	-60	30	120	210	300	390	77
10		-103	-3	97	197	297	397	497	70
11		-56	54	164	274	384	494	604	65

ALFALFA CULTURE

1987-1988

<u>YEAR</u>	<u>ACRES</u>	<u>YIELD/ACRE (TONS)</u>	<u>VALUE/TON</u>
1986	176,900	8	\$65
1985	156,200	9	85
1984	143,900	9	82
1983	139,000	9	88
1982	136,700	9	69

SOIL PREPARATION: A uniform seed bed is a prerequisite to a good stand. High spots in the field cause uneven irrigation, resulting in poor stands. A well-drained field is also necessary to lessen the likelihood of salinity, scald, and root rot problems. Most growers will plow and some will subsoil.

PLANTING RATES: One pound of seed per acre will provide 4 to 5 seeds per square foot. At this rate, 15 pounds are equal to 60 to 75 seeds per square foot. Growers use 15 to 30 pounds seed depending on condition of their field, cost of seed, method of planting and time of planting.

PLANTING DATES: Late September through November is the preferred time for planting. Later plantings often result in poor germination. Spring plantings, if necessary, are suggested in February and March.

VARIETIES: Certified CUF 101 and other public varieties are recommended because of their resistance to the spotted alfalfa aphid, the blue alfalfa aphid, and superior yielding ability. A number of commercial proprietary varieties also have good spotted alfalfa aphid and blue alfalfa aphid resistance and are very good yielders.

FERTILIZATION: Approximately 100 pounds of phosphate is taken from the soil by each 7-8 tons of alfalfa. This must be replaced to maintain maximum hay production. A preliminary application of at least 100-150 pounds of phosphate per acre is recommended prior to planting. On soil low in nitrogen, 20-30 pounds of nitrogen stimulates seedling growth. A deficiency in nitrogen may occur on soils recently brought into production. Additional annual applications of 100 pounds of phosphate are recommended.

IRRIGATION: One to 3 irrigations per cutting are necessary depending on the type of soil and time of year.

PEST CONTROL: The spotted alfalfa aphid can cause damage on nonresistant alfalfa. Control is sometimes necessary for the Egyptian alfalfa weevil and for the pea aphid in February and March. The blue aphid may require additional insecticide costs on alfalfa hay. Alfalfa caterpillar and beet armyworm usually require control in mid to late summer. Occasionally, cutworm outbreaks occur in fall and spring months. Root rots can also be a severe problem. Consult pest control farm advisors for most efficient procedures. Alfalfa planted on beds are more susceptible to cutworm than flat planted alfalfa.

HARVESTING: Alfalfa is normally baled from March until October. During winter months both pasturing and green chopping are practiced. Both pasturing and green chop may return from \$35 to \$65 per acre for the winter months. In 1986, 134,500 acres were pastured.

FLAT PLANTED ALFALFA SEED PROJECTED PRODUCTION COSTS 1987-1988

Mechanical operations at custom rates. Labor at \$5.50 per hour (\$4.30 plus Social Security, unemployment and fringe benefits).

Typical yield of 300 pounds of clean seed in 90 days on an established alfalfa stand.

OPERATION	CUSTOM RATE	MATERIALS		HAND LABOR		COSTS Per Acre
		Type	Cost	Hours	Dollars	
<b>SEED PRODUCTION COSTS</b>						
Irrigate 4x		Water 2 ac/ft	18.00	2	11.00	29.00
Insect Control 3x	4.90	Insecticides	41.00			55.70
Bees		3 colonies (\$18)	48.00			48.00
Defoliation	6.00		15.00			21.00
<b>TOTAL GROWING PERIOD COSTS</b>						<b>153.70</b>
<b>GROWING PERIOD &amp; LAND RENT</b>						
Land Rent (net)						125.00
Cash Overhead--		10% of preharvest and land rent				27.87
<b>TOTAL PREHARVEST COSTS</b>						<b>306.57</b>
<b>HARVEST COSTS</b>						
Combining	35.00					32.00
Hauling	.25/cwt.	@ 300 lbs/acre				.75
Cleaning Seed	5.00/cwt.					15.00
Bags	.75/cwt.					2.25
Alfalfa Seed Research Fee	.08/cwt.					.24
<b>TOTAL HARVEST COSTS</b>						<b>50.24</b>
<b>TOTAL ALL COSTS</b>						<b>356.81</b>

PROJECTED INCOME ABOVE COSTS (PER ACRE)  
price/lb.

		.60	.80	1.00	1.20	1.40	1.60
Pounds	200	-234	-194	-154	-114	-74	-34
	400	-126	-46	34	114	194	274
per	600	-18	102	222	342	462	582
acre	800	90	250	410	570	730	890
	1000	198	398	598	798	998	1198



ALFALFA SEED CULTURE

1987-1988

<u>YEAR</u>	<u>ACRES</u>	<u>YIELD/ACRE (LBS)</u>	<u>VALUE/LB.</u>
1986	15,700	477	\$ .81
1985	16,600	368	.83
1984	7,400	433	.85
1983	15,500	478	1.00
1982	10,100	387	.80

STARTING DATES: The best possibilities for a good seed crop occur when the last hay is cut between May 1 and May 15. By June 1 to 15 the field is in full bloom. Seed crops made at this time of the year avoid lygus, stink bugs, and alfalfa seed chalcid infestations which build up from early spring until late fall when the weather breaks. Later crops, maturing in August and September, may be damaged by rain. Earlier seed crops may not bloom properly due to cold weather, and seed "set" may be light or delayed.

VARIETIES: A number of non-dormant varieties are grown in Imperial County. Varieties that are resistant to the spotted alfalfa aphid, such as CUF 101, are recommended. There are proprietary varieties that are also being grown. Occasionally small amounts of dormants will be grown.

IRRIGATION: Allow the plants to become slightly stressed for water up until the bloom period to prevent rank growth; after bloom begins, the plants should be irrigated no more frequently than necessary to prevent wilting and to help produce well-filled seedpods. The flowers of a slightly stressed plant contain higher concentrations of nectar and are more attractive to bees.

POLLINATION: Bees are the only pollinators of any value on alfalfa. In Imperial County it is necessary to rely on honey bees because of a lack of sufficient solitary pollen-collecting bees. At least three colonies of bees per acre are used in the higher yielding fields. Five or more colonies are suggested on seed fields with both high plant and flower populations.

PEST CONTROL: Lygus control is necessary throughout the season. Stink bugs can cause damage to maturing seed and should be controlled. Seed chalcid is best managed by proper cultural practices, insecticides have not been cost effective. Consult your farm advisors' office for information on pests and their control.

HARVESTING: Most seed alfalfa is defoliated using spray compounds applied by airplane in 8 to 12 gallons of diesel oil per acre. Windowing is also used.

## BERMUDAGRASS SEED PROJECTED PRODUCTION COSTS 1987-1988

Mechanical operations at custom rates. Hand labor at \$5.50 per hour (\$4.30 plus Social Security, unemployment insurance and fringe benefits).

Yield--650 pounds seed, double cropped, unhulled

OPERATION	CUSTOM RATE	MATERIALS		HAND LABOR		COSTS Per Acre
		Type	Cost	Hours	Dollars	
<b>LAND PREPARATION</b>						
Plow	24.25					24.25
Disc 2x	9.00					18.00
Build & Break borders	15.00					15.00
Flood		Water .8 ac. ft.	7.20	1	5.50	12.70
Disc 2x	9.00					18.00
Fertilize	6.00	75# N	21.00			27.00
Landplane 2x	9.50					19.00
<b>TOTAL LAND PREPARATION COSTS</b>						<b>133.95</b>
<b>COST OF ESTABLISHMENT</b>						
Plant (flat)	12.00	Seed 15# @ \$1.50/#	22.50			34.50
Sprinkler irrigate						120.00
Irrigate 2x		Water .8 ac ft	7.20	1	5.50	12.70
<b>COST OF ESTABLISHMENT</b>						<b>167.20</b>
<b>TOTAL COST OF STAND ESTABLISHMENT</b>						<b>301.15</b>
<b>ANNUAL COSTS OF SEED PRODUCTION--5 YEAR LIFE</b>						
Irrigate 14x		Water 5 ac ft	45.00	8	44.00	89.00
Fertilize (water-run)		350# N @ .15/lb	52.50			52.50
Insect Control 7x	4.90	Insecticide	145.00			164.60
Weed Control	4.90	Herbicides	10.00			14.90
<b>TOTAL ANNUAL COSTS</b>						<b>321.00</b>
<b>PREHARVEST COSTS</b>						
Land Rent (new lease)						110.00
Amortization		20% on total cost of stand establishment				60.23
Cost Overhead		15% of annual costs, land rent and amortization				73.68
<b>TOTAL PREHARVEST COSTS</b>						<b>564.91</b>
<b>HARVEST COSTS</b>						
Swather 1x	8.00					8.00
Bale 2 tons	12.00/ton					24.00
Haul & Stack	.24/bale @ 18 bales/ton					9.00
<b>TOTAL HARVEST COST</b> (Note last two paragraphs on next page)						<b>41.00</b>
<b>SEED HARVEST &amp; POST HARVEST COSTS</b>						
Cut Rotary mower 2x	15.00					30.00
Combining 3x	29.00					87.00
Hauling	5.00/ton					2.25
Cleaning Seed	9.17/cwt					82.53
Bags	1.00/cwt					9.00
Baling straw 3 tons	12.00/ton					60.00
Rake 2x	4.00					8.00
Haul & Stack	.24/bale @ 20 bales/ton					15.00
<b>TOTAL SEED HARVEST &amp; POST HARVEST COSTS</b>						<b>293.78</b>
<b>TOTAL ALL COSTS</b>						<b>858.69</b>
Value of pasturing and straw ---		45.00				45.00
		Seed cost: (total costs-straw & pasture value)				813.69
		Seed breakeven price/lb. @ 650 lb./acre				1.25

BERMUDAGRASS SEED CULTURE

1987-1988

<u>YEAR</u>	<u>ACRES</u>	<u>YIELD/AC (LBS)</u> <sup>1/</sup>	<u>VALUE/LB</u>
1986	20,800	939	\$1.60 <sup>2/</sup>
1985	15,000	855	2.20 <sup>2/</sup>
1984	12,400	900	1.00
1983	14,200	789	.83
1982	12,360	900	.85

SOIL PREPARATION: A uniform seed bed is a prerequisite to a good stand. High spots in the field cause uneven irrigation, resulting in poor stands. Growers will plow most of the time while others will subsoil.

PLANTING DATES: Late May and early June is the preferred time for plantings.

SEEDING RATES: Plant 5 to 15 pounds of seed per acre on corrugation or flat. There are approximately 1,800,000 plants per pound. This would mean there are 205 plants per square foot with 5 pounds of seed. Heavier seed rates are needed on saline soils. Corrugation cost is \$10/acre extra at planting.

VARIETIES: Two varieties are normally grown for seed in Imperial County, Common and Giant, however, there may be other varieties grown. Varieties that have domestic and foreign demand should be planted.

IRRIGATION: Tensiometers help to obtain a better irrigation. Sprinklers should be used to establish the best stand possible. Call the farm advisors' office for further information.

PEST CONTROL: Early crop control of insects is necessary and more important than later in the crop. Cutworms, spider mites, thrips and aphids may cause damage for spring and fall crops. Grass whiteflies and the fulgorid Toya propingua can cause great damage in the fall with honeydew contaminating seed heads.

A large amount of hand labor may be needed if fields have offtypes and grassy weeds. Call the weed control farm advisor for further information.

HARVESTING: Most seed bermuda is harvested for two crops in the summer and winter. However, some fall crops may be used for pasturing while the spring crop is usually harvested for seed.

Hay can also be harvested instead of one seed crop. Hay harvesting cost averages \$41/acre. Income from hay can be \$69/acre, which can help offset seed cost.

The harvesting costs are not included in the cost data sheet. If you have one crop of seed, you should add the \$41. Reduce seed harvest and post harvest costs from one seed harvest rather than two.

1/ Unhulled seed

2/ Price of hulled seed

## CEREAL CROPS PROJECTED PRODUCTION COSTS 1987-1988

Mechanical operations at custom rates. Labor at \$5.50 per hour (\$4.30 plus Social Security, unemployment insurance and fringe benefits).

Yield--2.5 tons per acre 90-170 days to maturity

OPERATION	CUSTOM RATE	MATERIALS		HAND LABOR		COSTS Per Acre
		Type	Cost	Hours	Dollars	
<b>LAND PREPARATION</b>						
Stubble Disc 1x	17.75					17.75
Disc 1x	9.75					9.75
Inject Fertilizer	8.50	125# N	19.00			27.50
List Borders-Block	8.00					8.00
Float	7.75					7.75
<b>TOTAL LAND PREPARATION COSTS</b>						<b>70.75</b>
<b>GROWING PERIOD</b>						
Plant	8.50	125# Seed	14.50			23.00
Irrigate 5-7x		3 ac/ft	27.00	4	19.25	46.25
Fertilize 2x (water)		160# N	24.00			24.00
Weed control	4.25		12.00			16.25
Pest control 1x	4.90	Insecticides	7.00			11.90
<b>TOTAL GROWING PERIOD COSTS</b>						<b>121.40</b>
<b>GROWING PERIOD &amp; LAND PREPARATION COSTS</b>						<b>192.15</b>
Land Rent (net acres)						125.00
Cash Overhead--	12% of preharvest costs & land rent					38.06
<b>TOTAL PREHARVEST COSTS</b>						<b>355.21</b>
<b>HARVEST COSTS</b>						
Combine and haul	2.5 tons @	15.00/ ton				37.50
<b>TOTAL ALL COSTS</b>						<b>392.71</b>

		PROJECTED INCOME ABOVE COSTS (PER ACRE)					Breakeven \$/cwt.
		price/cwt					
		4.75	5.00	5.25	5.50	5.75	
Cwt	40	-195	-185	-175	-165	-155	9.63
per	50	-155	-143	-130	-118	-105	7.85
acre	60	-115	-100	-85	-70	-55	6.67
	70	-75	-58	-40	-23	-5	5.82
	80	-35	-15	5	25	45	5.19

CEREAL CROPS CULTURE

1987-1988

WHEATYIELD/ACRE

<u>YEAR</u>	<u>ACRES</u>	<u>(TONS)</u>	<u>VALUE/TON</u>
1986	88,316	3	\$115
1985	108,740	3	122
1984	126,332	3	130
1983	109,676	3	140
1982	170,000	3	122

LAND PREPARATION: When grains are planted in a mulch, the practice is disc, fertilize, disc and float. Next, apply the pre-mulch irrigation and when dry enough, mulch and plant.

PLANTING DATES, RATES AND DEPTH: Optimum planting dates for high grain yields of wheat are from December 1 through January 15. Rates of seeding range from 100-150 pounds per acre. Seed should not be planted deeper than 3-4 inches if planted in a mulch. If the crop is to be irrigated up, shallow planting of 1/2-1 inch is best.

VARIETIES: Recommended varieties of wheat include (common wheats): Yecora Rojo (Durum wheats), Mexicali 75, Aldura, Yavaros, WB 881 and WB Turbo.

The latest barley tests indicate Sunbar 409, Prato, CM 72 and UC Signal have been the best yielders.

FERTILIZATION: Imperial Valley soils usually contain sufficient phosphorus for grain production if phosphates have been applied to other crops in the rotation. In a wheat-sorghum rotation, phosphates should be applied to the wheat. Wheat generally needs added nitrogen at rates of 200-300 pounds per acre, depending on the previous crop. For good yield and quality of varieties with a tendency towards yellowberry (low percent hard vitreous kernels), nitrogen should be applied at a rate of 200-300 pounds per acre split into 3 applications -- at preplant, tillering, and boot stage.

IRRIGATION: Pre-mulch irrigations should be heavy. Subsequent irrigations should be sufficient to maintain good growth and avoid stress. Yield can increase with the last irrigation as late as the medium dough stage, but this late irrigation also increases the risk of shattering and lodging.

PEST CONTROL: Weeds should be controlled in wheat to increase yield and to reduce the weed population in following crops. Planting in a mulch can reduce canarygrass problems. Consult the farm advisors office for herbicides that are available for use.

Aphids are the only insects that may cause serious damage to wheat. Powdery mildew can be serious problem on barley. Contact the farm advisors' office for pesticides that can be used in Imperial Valley.

## FIELD CORN PROJECTED PRODUCTION COSTS 1987-1988

Mechanical operations at custom rates. Labor at \$5.50 per hour (\$4.30 plus Social Security, unemployment insurance and fringe benefits).

Yield--4 tons per acre

165 days to maturity

OPERATION	CUSTOM RATE	MATERIALS		HAND LABOR		COSTS Per Acre
		Type	Cost	Hours	Dollars	
<b>LAND PREPARATION</b>						
Stubble Disc 1x	17.75					17.75
Disc 2x	9.00					18.00
Landplane 2x	9.50					19.00
Triplane 1x	8.50					8.50
Fertilizer	6.00	300# 11-52-0	35.25			41.25
List	10.50					10.50
Irrigate 1x		3/4 ac. ft.	6.75	2	11.00	17.75
List-inject fertilizer	10.00	80# N @ .15/#	12.00			22.00
<b>TOTAL LAND PREPARATION COSTS</b>						<b>154.75</b>
<b>GROWING PERIOD</b>						
Plant - shape beds	10.00	Seed	28.00			38.00
Herbicide	6.50	Herbicide	2.50			9.00
Cultivate 2x	9.75					19.50
Spike 2x	8.50					17.00
Lilliston 1x	9.00					9.00
Fertilize 2x	10.00	150# N	34.50			54.50
Irrigate 10x		3 ac. ft.	27.00	6	33.00	60.00
Insect control 2x	4.90	Insecticides	32.00			41.80
<b>TOTAL GROWING PERIOD COSTS</b>						<b>248.80</b>
<b>GROWING PERIOD &amp; LAND PREPARATION COSTS</b>						<b>403.55</b>
Land Rent (net acres)						125.00
Cash Overhead--	12% of preharvest costs & land rent					63.43
<b>TOTAL PREHARVEST COSTS</b>						<b>591.98</b>
<b>HARVEST COSTS</b>						
Harvest and haul		4 tons @ 12.00/ ton				48.00
<b>TOTAL ALL COSTS</b>						<b>639.98</b>

## PROJECTED INCOME ABOVE COSTS (PER ACRE)

	Cwt per acre	price/cwt					Breakeven \$/cwt.
		5.00	5.50	6.00	6.50	7.00	
	40	-416	-396	-376	-356	-336	15.40
	60	-328	-298	-268	-238	-208	10.47
	80	-240	-200	-160	-120	-80	8.00
	100	-152	-102	-52	-2	48	6.52

FIELD CORN CULTURE

1987-1988

The acreage of field corn during the past 3 years has ranged from a high of 2,000 to a low of 650 acres. The gross price per ton has ranged from \$130 to \$90 per ton.

PLANTING: Direct seeding can be done in January, February, and March. The best yields have been obtained in mid to late January plantings. Field corn can be either irrigated up and/or planted in the mulch. Thirty inch (30") rows have produced the highest yields with a plant population of 32,000 to 34,000 plants/acre. An in-row spacing of 8-10 inches has been satisfactory.

VARIETIES: Several varieties have made good yields in experimental trials and in growers fields. They are DeKalb T-1230, DeKalb XL-73, Pioneer 3183, Taylor Evans 6998, Northrup-King PX-87, Paymaster UC 5990, DeKalb XL-74B, and Wheeler Ridge TMI 1173.

SOILS: Well-drained medium heavy soils will produce the best yields. Soils on the light side (high percent sand) will also produce good yields.

IRRIGATION: Eight to 12 irrigations during the season will be necessary. Corn should not be stressed for moisture at any stage of growth.

FERTILIZER: If corn follows a vegetable crop heavily fertilized with phosphate, probably no more phosphate needs to be applied. Corn does respond to a good supply of phosphate, particularly during early plant growth when soils can be on the cool side. One hundred to 150 pounds of phosphate per acre should be adequate, applied before or at planting.

Corn also needs a good supply of nitrogen available from the seedling stage through early kernel development. Two hundred to 300 pounds of actual nitrogen will be needed, depending upon soil type and any carryover from a previous crop. Nitrogen should be applied in 3 to 4 applications.

PEST CONTROL: There are several good herbicides registered for field corn. Spider mites and the corn earworm can be particularly damaging. Consult your farm advisor for the latest pesticide recommendations.

HARVESTING: Field corn is well adapted to mechanical picking. Moisture can be a problem at harvest. Do not pick when the moisture is about 15 percent or less. More corn can be recovered in harvesting if the moisture is from 20 to 25 percent. This moisture will have to be dried down to at least 15 percent after harvest and before selling to a local feedlot. Drying methods that are economical need to be investigated at this time.

COTTON PROJECTED PRODUCTION COSTS 1987-1988 Full Season

Mechanical operations at custom rates. Labor at \$5.50 per hour (\$4.30 plus Social Security, unemployment and fringe benefits).

Yield--2.5 bales or 1250 pounds lint per acre 170-200+ days to harvest

OPERATION	CUSTOM RATE	MATERIALS		HAND LABOR		COSTS Per Acre	
		Type	Cost	Hours	Dollars		
<b>LAND PREPARATION</b>							
Chisel	18.00					18.00	
Disc 2x	9.00					18.00	
Fertilize (broadcast)	6.00	300# 11-52-0	35.25			41.25	
Float	7.75					7.75	
Border-cross check	15.00					15.00	
Irrigate		1/2 ac. ft.	4.50	2	11.00	15.50	
List-injected	10.00	80# NH3 @	12.00			22.00	
Lilliston	9.00					9.00	
<b>TOTAL LAND PREPARATION COSTS</b>						<b>146.50</b>	
<b>GROWING PERIOD</b>							
Plant - Shape	10.00	Seed 20# @ .53	10.60			20.60	
Weed Control	6.50	Herbicide	15.00			21.50	
Cultivate 2x	9.50					19.00	
Fertilize 2x	10.00	200# N	40.00			60.00	
Hand thin - Weed				8	44.00	44.00	
Lilliston 2x	9.00	Herbicide	17.00			35.00	
Irrigate 10x		Water 5.5 ac/ft	49.50	8	44.00	93.50	
Insect control 15x	4.90	Insecticide	190.00			258.60	
Defoliate 2x	6.00		24.00			36.00	
Chop stalks	12.00					12.00	
<b>TOTAL GROWING PERIOD COSTS</b>						<b>600.20</b>	
<b>GROWING PERIOD &amp; LAND PREPARATION COSTS</b>						<b>746.70</b>	
Land Rent (net acres)						150.00	
Cash Overhead--		12% preharvest cost and land rent					107.60
<b>TOTAL PREHARVEST COSTS</b>						<b>1004.30</b>	
<b>HARVEST COSTS</b>							
Machine picking	48.00/bale @	2.5 bales/acre				120.00	
Hauling	10.00/bale @	2.5 bales/acre				25.00	
Ginning	2.75/cwt of	seed cotton					
<b>TOTAL ALL COSTS</b>						<b>1149.30</b>	

PROJECTED INCOME ABOVE COSTS (PER ACRE)  
price/lb lint

		.60	.65	.70	.75	.80	Breakeven \$/lb.
Pounds	1000	-520	-470	-420	-370	-320	1.12
lint	1250	-399	-337	-274	-212	-149	.92
per	1500	-278	-203	-128	-53	22	.79
acre	1750	-157	-70	18	105	193	.69
	2000	-36	64	164	264	364	.62



COTTON CULTURE

1987-1988

<u>YEAR</u>	<u>ACRES</u>	<u>YIELD/ACRE</u> <u>(IN LBS)</u>	<u>VALUE/LB</u>
1986	17,169	1,260	\$1.02 <sup>1/</sup>
1985	23,276	1,355	.75
1984	32,816	1,245	.87
1983	27,000	1,400	.85
1982	51,000	1,200	.72

LAND PREPARATION: Most cotton continues to be grown on raised beds 38 to 40 inches wide. A small acreage is grown on beds at 30 inch beds. The crop is generally planted in a semi-mulch and irrigated up. Cotton can be grown on all types of soil in Imperial County.

PLANTING DATES AND RATES: Cotton yields are normally higher if planted in March to early April. Yields decrease when cotton is planted later in the season. A soil temperature of at least 60°F at a depth of 8 inches is desirable. Spacings within the row of 3 to 12 inches result in approximately the same yields.

VARIETIES: Delta Pine 61, Delta Pine 77 and Stoneville 825 have been successfully grown. Other varieties grown are Delta Pine 90, Delta Pine 80 and Delta Pine 20.

FERTILIZATION: Two hundred fifty to 300 pounds of nitrogen per acre will produce a good crop on solid planted cotton. The applications should be made before planting, at thinning, and in June to July. Phosphate application is a common practice, although tests have failed to show a yield response. The total nitrogen and phosphate applied depends upon the previous crop.

IRRIGATION: Do not allow the plants to remain wilted for extended periods of time. The number of irrigations depend upon the season and the desired result--a top crop (maximum number of irrigations) or a short season crop (fewer irrigations).

PEST CONTROL: Several herbicides are now in common use both as preemergence and layby treatments. Consult your farm advisors' office for registered, adapted chemicals.

The pink bollworm, the cotton leaf perforator, tobacco budworm, and cotton bollworm are widespread and pose a serious threat to cotton production. Cotton boll weevil may become a serious problem. Other insects such as spider mites, cutworms, lygus bugs, and whitefly may occasionally require treatment. The presence of these insect pests results in increased costs for pest control since multiple applications are necessary to keep them in check. The insecticide costs included in this circular could be higher, depending upon the presence of these and other pests. Consult the farm advisors' office for latest information.

Seedling diseases can reduce cotton stands to the point where replanting may be necessary. The seedling disease problem frequently is more severe where cotton follows sugar beets or alfalfa, and/or cool soil temperatures. Fungicide seed treatments can be used for seedling disease control.

MISCELLANEOUS: If PIX and/or Prep are applied, add \$50 per acre, plus application.

<sup>1/</sup> Price includes government payment

## ANNUAL RYEGRASS PROJECTED PRODUCTION COSTS 1987-1988

Mechanical operations at custom rates. Labor at \$5.50 per hour (\$4.30 plus Social Security, unemployment insurance and fringe benefits).

OPERATION	CUSTOM RATE	MATERIALS		HAND LABOR		COSTS Per Acre
		Type	Cost	Hours	Dollars	
LAND PREPARATION						
Disc 2x	9.00					18.00
Fertilize	8.50	100# NH3	14.50			23.00
Border	8.50					8.50
Float 2x	7.75					15.50
TOTAL LAND PREPARATION						65.00
GROWING PERIOD						
Plant	8.50	40# seed @ .20/lb	8.00			16.50
Irrigate 1lx		3.5 ac/ft	31.50	4	22.00	53.50
Fertilize		250# NH3	36.25			36.25
TOTAL GROWING PERIOD						106.25
GROWING PERIOD & LAND PREPARATION COSTS						171.25
Land Rent (gross)						100.00
Cash Overhead--		10% of growing, land preparation & land rent				27.13
TOTAL COSTS						298.38
COST PER CWT OF GAIN						

Calculations below show the cost per cwt. of gain at various stocking rates and rates of gain, assuming a grazing period of 150 days.

		Stocking Rate (steers per acre)						cwt. gain for 150 days	
		2	2.5	3	3.5	4	4.5		5
	1.00	99	80	66	57	50	44	40	1.5
	1.10	90	72	60	52	45	40	36	1.65
	1.20	83	66	55	47	41	37	33	1.8
	1.30	77	61	51	44	38	34	31	1.95
Average	1.40	71	57	47	41	36	32	28	2.1
daily	1.50	66	53	44	38	33	29	27	2.25
gain	1.60	62	50	41	36	31	28	25	2.4
	1.70	59	47	39	33	29	26	23	2.55
	1.80	55	44	37	32	28	25	22	2.7
	1.90	52	42	35	30	26	23	21	2.85
	2.00	50	40	33	28	25	22	20	3

RYEGRASS PASTURE CULTURE

1987-1988

<u>YEAR</u>	<u>ACRES</u>	<u>VALUE/UNIT<sup>A/</sup></u>
1986	3,200	\$200
1985	3,300	200
1984	6,700	200
1983	2,540	200
1982	2,500	200

A/ Pastured five times

SOIL PREPARATION: A uniform seed bed is a prerequisite to a good stand. High spots in the field causes uneven irrigation, resulting in poor stands.

PLANTING RATES, DATES & VARIETIES: Plant from 20 to 40 pounds of annual ryegrass seed per acre. Heavier rates may be needed on saline soils. Ryegrass may be planted from mid-September through November. Early plantings in September are excellent if weather has cooled down. "Common" is normally a good yielding variety in the Imperial Valley, however, most annual ryegrass varieties can be grown. When in doubt, consult your local farm advisor.

FERTILIZERS: Ryegrass needs approximately 200 pounds of total nitrogen for optimum growth. Fifty to 100 pounds are applied preplant as ammonia, however, nitrogen carryover from previous crops will reduce early season requirements. Fifty pounds of nitrogen, as ammonium nitrate or ammonia, should be applied after pasturing or as needed.

Excess nitrogen can cause nitrate poisoning in livestock, and is most likely in rapidly growing plants. Regular tissue analysis can keep growers aware of nitrate levels.

Phosphate residues from previous crops are generally sufficient for proper ryegrass production.

IRRIGATION: Ryegrass usually thrives under moist soil conditions. Quick applications of irrigation water are sufficient unless leaching of salts is intended. Ryegrass needs about eleven irrigations during the growing period.

PEST CONTROL: Weed control is not normally necessary in ryegrass pasture; 2,4-D gives excellent control of broadleaf plants if weed control measures are needed.

PASTURING: It takes about 75 days under good conditions from planting to pasturing ryegrass.

Ryegrass is normally pastured on a 28 to 40 day cycle. Four fields are pastured on a 7 to 10 day schedule. Stocking rate on the overall acreage will range from 3 to 5 head per actual acre planted.

If only 1/4 of the overall acreage is pastured at one time, the stocking rate for that area would be 4 x 3-5 cattle per acre or 12-20 cattle per acre.

## SUDANGRASS HAY PROJECTED PRODUCTION COSTS 1987-1988

Mechanical operations at custom rates. Labor at \$5.50 per hour (\$4.30 plus Social Security, unemployment insurance and fringe benefits).

Yield--5.0 tons per acre

OPERATION	CUSTOM RATE	MATERIALS		HAND LABOR		COSTS Per Acre	
		Type	Cost	Hours	Dollars		
LAND PREPARATION							
Disc 2x	9.00					18.00	
Fertilize	8.50	100# NH3 @ .145/#	14.50			23.00	
Border	8.50					8.50	
Float 2x	7.75					15.50	
TOTAL LAND PREPARATION COSTS						65.00	
GROWING PERIOD							
Plant	8.50	Seed 30# @ 30 lb/ac	9.00			17.50	
Irrigate 8x		3.5 ac/ft	31.50	4	22.00	53.50	
Fertilize		100# NH3 @ .145/lb	14.50			14.50	
TOTAL GROWING PERIOD COSTS						85.50	
GROWING PERIOD & LAND PREPARATION COSTS						150.50	
Land Rent (net)						80.00	
Cash Overhead--		10% of preharvest costs & land rent					23.05
TOTAL PREHARVEST COSTS						253.55	
HARVEST COSTS (calculated at 5 tons/acre and 2 cuttings)							
Swather 3x	10.00					20.00	
Rake 2x	5.00					10.00	
Bale (5.0 tons)	12.00/ton					60.00	
Haul & Stack	.25/bale @	17 bales/ton				21.25	
TOTAL HARVEST COSTS						111.25	
TOTAL ALL COSTS						364.80	

		PROJECTED INCOME ABOVE COSTS (PER ACRE)						Breakeven \$/ton
		price/ton						
		40.00	50.00	60.00	70.00	80.00	100.00	
Tons	3	-212	-182	-152	-122	-92	-32	101
per	3.5	-200	-165	-130	-95	-60	10	89
acre	4	-189	-149	-109	-69	-29	51	80
	4.5	-177	-132	-87	-42	3	93	73
	5	-165	-115	-65	-15	35	135	67

SUDANGRASS CULTURE

1987-1988

<u>YEAR</u>	<u>ACRES</u>	<u>YIELD/ACRE (TONS)</u>	<u>VALUE/TON</u>
1986	13,500	5	\$68
1985	15,200	5	65
1984	24,300	5	70
1983	10,400	5	70
1982	7,300	5	43

SOIL PREPARATION: A uniform seed bed is necessary to obtain a good stand of sudangrass. High spots in the field cause uneven irrigation and poor stands result. Low spots in the field will "scald" out, decreasing the stand population considerably.

PLANTING RATES, DATES & VARIETIES: Sudangrass should be planted with 20 to 40 pounds of seed per acre. Sudangrass may be planted from March to June with a drill or broadcaster.

The variety Piper has always performed well in Imperial Valley. There are also a number of other commercial varieties available.

FERTILIZATION: Apply 50 to 100 lbs. of nitrogen as  $\text{NH}_3$  preplant. Eighty to 100 lbs. of nitrogen may be applied in the irrigation water if necessary after the first hay crop is cut.

IRRIGATION: Sudangrass requires a lot of moisture but will scald out during the hot summer days if water is left on for a long period of time or if drainage is poor.

Damage is more likely to occur when irrigation water is applied during the growing season.

PEST CONTROL: Weed control is not normally necessary in sudangrass production. However, 2,4-D gives excellent control of broadleaf plants if required.

HARVESTING: Sudangrass is harvested 2 to 3 times, between June and October. Pasturing is also practiced on some fields.

## SUGAR BEETS PROJECTED PRODUCTION COSTS 1987-1988

Mechanical operations at custom rates. Labor at \$5.50 per hour (\$4.30 plus Social Security, unemployment insurance and fringe benefits).

Yield--26.0 tons per acre

OPERATION	CUSTOM RATE	MATERIALS		HAND LABOR		COSTS Per Acre	
		Type	Cost	Hours	Dollars		
<b>LAND PREPARATION</b>							
Plow	24.25					24.25	
Disc 2x	9.00					18.00	
Build & Break borders	14.25					14.25	
Flood		Water .9 ac. ft.	8.10	1	5.50	13.60	
Disc 2x	9.00					18.00	
Fertilize	6.00	300# 11-52-0	35.25			41.25	
Float	7.75					7.75	
List	10.50					10.50	
<b>TOTAL LAND PREPARATION COSTS</b>						<b>147.60</b>	
<b>GROWING PERIOD</b>							
Plant & Shape	14.00	Seed 4#	40.00			54.00	
Herbicide		Herbicide	20.50			20.50	
Thin	27.00	Machine (synchronous thinner) or hand thin				27.00	
Cultivate 3x	9.75					29.25	
Fertilize 2x	10.00	160# N	47.00			67.00	
Weed Control				11	60.50	60.50	
Insect Control 6x	4.50	Pesticide	70.00			97.00	
Disease Control 2x	4.90	Fungicide	15.00			24.80	
Irrigate 12x		Water 5 ac. ft.	45.00	8	44.00	89.00	
<b>TOTAL GROWING PERIOD COSTS</b>						<b>469.05</b>	
<b>GROWING PERIOD &amp; LAND PREPARATION COSTS</b>						<b>616.65</b>	
Land Rent (gross)						150.00	
Cash Overhead		12% of preharvest costs & land rent				92.00	
<b>TOTAL PREHARVEST COSTS</b>						<b>858.65</b>	
<b>HARVEST COSTS</b>							
Dig	2.35 per clean ton	Yield -- 26 tons per acre				61.10	
Haul	2.54 per clean ton					66.04	
Railroad freight	4.94 per clean ton					128.44	
<b>HARVEST AND FREIGHT COSTS</b>						<b>255.58</b>	
<b>TOTAL COSTS -includes growing, harvest, and freight</b>						<b>1114.23</b>	
<b>PROJECTED INCOME ABOVE COSTS (PER ACRE)</b>							
tons/acre							
		20	23	26	29	32	35
Price	25	-555	-510	-464	-419	-373	-328
per	30	-455	-395	-334	-274	-213	-153
ton	35	-355	-280	-204	-129	-53	22
	40	-255	-165	-74	16	107	197
	45	-155	-50	56	161	267	372
Breakeven		\$52.76	47.16	42.85	39.44	36.66	34.36

SUGAR BEETS CULTURE

1987-1988

<u>YEAR</u>	<u>ACRES</u>	<u>YIELD/ACRE (TONS)</u>	<u>VALUE/TON</u>
1986	33,200	25	\$37
1985	41,300	21	36
1984	38,100	25	39
1983	36,260	22	41
1982	33,200	22	36

LAND PREPARATION: Pre-irrigation on flat ground rather than beds is less expensive, produces lower salinity and better soil condition in the planting bed. Most growers will plow and some will subsoil.

SEEDING RATE: Early plantings during extremely hot weather will require a higher seeding rate to achieve the proper stand.

PLANTING DATES: The planting season begins August 20 or September 20 and continues through October.

VARIETIES: The varieties resistant to infectious yellows virus should be planted. New varieties with a higher degree of resistance to some diseases in the Imperial Valley are available. New varieties are being tested annually.

FERTILIZATION: Phosphate--broadcast before listing. Nitrogen--apply 1/3 of required amount with phosphate preplant, 1/3 at thinning and final 1/3 before mid-December. Late applications of nitrogen will reduce sugar percentage and purity. Ammonium nitrate is a good source for sugar beets.

IRRIGATION: Irrigation is by furrows. The crop is "irrigated up" initially and may require "watering back" within 4 or 5 days to get a stand. Never allow the crop to wilt or suffer from shortage of water. Ten to 20 irrigations may be required. Last irrigation should be applied at least 30 days prior to harvest.

PEST CONTROL: Pest populations vary from year to year and costs vary accordingly. A number of insects and diseases may be a problem during the growing season. Growers planting extremely early should exercise all caution against damage by inspecting fields often and carefully. Crickets, flea beetles and armyworms occur as seedling pests and are especially damaging in early plantings. From January to March the green peach aphid is a primary pest. Spider mites and leafhoppers occur as late season pests. Sweetpotato whitefly can be an occasional pest spreading a virus disease, infectious yellows, but little can be done to control the problem. Avoid planting sugar beets near fall melons or cotton to escape the effects of these insects as they migrate. Nematodes can be a problem. Growers should carefully clean all nematode infested machinery moving into beet fields. Crop rotation is the best control. Consult farm advisor for list of registered and adapted chemicals.

Several weed control options exist, consult weed control farm advisor for current recommendations.

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To simplify our information, it is sometimes necessary to use trade names of products or equipment. No endorsement of named products is intended nor is criticism implied of similar products which are not mentioned.  
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