

U.C. COOPERATIVE EXTENSION

SAMPLE COST TO ESTABLISH AND PRODUCE

SUDANGRASS



IMPERIAL COUNTY – 2002

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For an explanation of calculations used for the study refer to the attached General Assumptions or call the author, Keith S. Mayberry, at the Imperial County Cooperative Extension office, (619)352-9474 or e-mail at ksmayberry@ucdavis.edu.

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FOREWORD

We wish to thank growers, pest control advisors, chemical applicators and dealers, custom farm operators, fertilizer dealers, seed companies, contract harvesters, equipment companies, and the Imperial County Agricultural Commissioners office for providing us with the data necessary to compile this circular. Without them we could not have achieved the accuracy needed for evaluating the cost of production for the field crop industry in Imperial County.

The information presented herein allows one to get a "ballpark" idea of field crop production costs and practices in the Imperial County. They do not reflect the exact values or practices of any one grower, but are rather an average of countywide prevailing costs and practices. Exact costs incurred by individual growers depend upon many variables such as weather, land rent, seed, choice of agrichemicals, location, time of planting, etc. No exact comparison with individual grower practice is possible or intended. The budgets do reflect, however, the prevailing industry trends within the region.

Overhead usually includes secretarial and office expenses, general farm supplies, communications, utilities, farm shop, transportation, moving farm equipment, accountants, insurance, safety training, permits, etc. In most of the crop guidelines contained in this circular we used 13 % of the total of land preparation, growing costs and land rent to estimate overhead.

Since all of the inputs used to figure production costs are impossible to document in a single page, we have included extra expense in man-hours or overhead to account for such items as pipe setting, motor grader, water truck, shovel work, bird and rodent control, etc. Whenever possible we have given the costs of these operations per hour listed on the cultural operations page.

Not included in these production costs are expenses resulting from management fees, loans, providing supervision, or return on investments. The crop budgets also do not contain expenses encumbered for road and ditch maintenance, and perimeter weed control. If all the above items were taken into account, the budget may need to be increased by 7-15%.

Where applicable we have used terminology that is commonly used in the agricultural industry. These terms are compiled in a glossary at the end of the circular. We feel that an understanding of these terms will be useful to entry-level growers, bankers, students and visitors.

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**2002-2003 Field/Vegetable Prevailing Rate for Field Operations
IMPERIAL COUNTY**

**HEAVY TRACTOR WORK & LAND
PREPARATION**

<u>OPERATION</u>	<u>\$/ACRE</u>
Plow.....	30.50
Subsoil, 2 nd gear.....	39.00
Landplane	12.75
Triplane	11.25
Chisel 15".....	25.00
Wil-Rich chisel.....	16.00
Big Ox	24.00
Slip plow.....	41.00
Pull/disc borders	6.75
Make cross checks (taps).....	6.25
Break border	6.00
Disc, stubble	21.00
Disc, regular.....	12.50
Corrugate	11.00
Disc, regular with ring roller.....	13.50
List 30" beds 12-row	15.00
List 40" beds 8-row	15.00
Float.....	10.00
Disc, borders.....	7.00
Dump (scraper) borders	14.50

LIGHT TRACTOR WORK

Power mulch dry.....	25.00
Power mulch with herbicide	28.00
Shape 30" 6 row	10.75
Shape 40" 4 row	10.75
Plant 30" beds nonprecision	20.00
Plant 40" beds nonprecision	18.00
Precision plant 30" beds	22.00
Precision plant 40" beds	20.00
Mulch plant wheat	19.50
Plant alfalfa (corrugated).....	17.50
Plant bermudagrass (flat).....	13.75
Plant sudangrass.....	14.75
Cultivate 30" beds 4-row	16.00
Cultivate 40" beds 4-row	14.00
Spike 30" beds 4-row.....	13.25
Spike 40" beds 4-row.....	11.25
Spike and furrow out 30" 4-row	14.00
Spike and furrow out 40" 4-row	12.00
Furrow out 30" beds 4-row.....	13.25
Furrow out 40" beds 4-row.....	11.25
Lilliston 30" beds 6-row	13.00
Lilliston 40" beds 4-row	13.00
Lilliston 30" beds with/herbicides 6-row.....	15.00

Lilliston 40" beds with/herbicides 4 -row.....	15.00
Inject fertilizer & furrow out 30" beds 4-row	15.00
Inject fertilizer & furrow out 40" beds 4-row	13.00
Fertilize dry & furrow out 30" beds.....	17.00
Fertilize dry & furrow out 40" beds.....	15.00
Flat inject fertilizer NH ₃	15.00
Broadcast dry fertilizer	7.00
Ground spray 40" 8-row	12.00
Ground spray 30" 8-row	14.00
Chop cotton stalks.....	13.75

HARVEST COSTS Field Crops

	<u>BY UNIT</u>
Combine alfalfa seed	41.75/acre
Windrow alfalfa seed	17.50/acre
Rake bermudagrass	5.00/acre
Swath bermudagrass	13.50/acre
Swath sudangrass.....	11.25/acre
Rake sudangrass.....	5.25/acre
Swath alfalfa	8.00/acre
Rake alfalfa.....	4.50/acre
Bale (all types of hay- small bale)	0.65/bale
Haul & stack hay – small bale	0.25/bale
Bale (large bale 4X4).....	10.00/bale
Bale (large bale Jr. 3X4).....	9.00/bale
Stack & load large bale.....	6.00/bale
Dig sugar beets	2.60/clean ton
Haul sugar beets.....	2.45/clean ton
Combine wheat	15 per acre + 0.55 /cwt over 1 ton
Haul wheat.....	5.50/ton
Combine bermudagrass seed 1 st time	40.00/acre
Combine bermudagrass seed 2 st time	25.00/acre
Haul bermudagrass seed (local).....	175/load
Haul bermudagrass seed (Yuma).....	300/load

MISCELLANEOUS OPERATIONS BY THE HOUR

Motor grader.....	48.00
Backhoe	45.00
Water truck	40.00
Wheel tractor	35.00
Scraper.....	36.00
Versatile.....	56.00
D-6.....	56.00
D-8.....	70.00
Buck ends of field.....	28.00
Pipe setting (2 men)	37.00
Laser	88.00
Work ends (disc out rotobucks).....	35.00

IMPERIAL COUNTY SUDANGRASS CULTURE 2002-2003

Annual acreage, yields, and value of sudangrass in
Imperial County, CA for five consecutive years

Year	Acres	Yield/Acre (tons)	Value/Acre
2001	51,319	5.3	\$486
2000	55,045	4.9	\$451
1999	65,786	4.87	\$393
1998	70,068	4.94	\$491
1997	87,562	5.56	\$549

(Source: I.C. Agricultural Commissioner's Reports).

YIELD: Sudangrass yield on two cuttings is usually 5 to 5.5 tons per acre. Three sudangrass cuttings should yield between 6-8 tons per acre.

SOIL PREPARATION: A uniform seedbed is necessary to obtain a good stand of sudangrass. High spots in the field cause uneven irrigation and the stand will not be uniform. Low spots in the field will scald; decreasing the stand and reducing yield.

PLANTING RATES: Sudangrass should be planted at a rate of 120 to 150 pounds of seed per acre. This high seeding rate produces finer-stemmed hay that is desirable for export to Japan.

PLANTING DATES: Sudangrass may be planted from March to June with a drill or broadcaster. Planting should begin after soils have started to warm. A temperature of 65°F or above is desirable. Temperatures above 104°F reduce seed germination. Research has shown that Sudan grass (var. Piper) had a 95 percent germination in 6 days at 68°F constant temperature.

VARIETIES: Certified "Piper" is the most common variety. It is high yielding and has the quality characteristics desired for the export market.

FERTILIZATION: The fertilizer requirements of sudangrass depend upon the residual soil nitrogen. Many growers take soil samples and determine the quantity of nitrogen fertilizer to use based upon laboratory results. If the soil is deficient, then 100 pounds of actual nitrogen as NH₃ is a normal rate applied preplant. Fifty pounds of nitrogen are usually applied to the crop after each cutting.

IRRIGATION: Sudangrass requires ample soil moisture. However, care must be taken not to over-irrigate or the sudangrass will scald if standing water is left on a field several hours during period of high heat. The first crop will require 4-5 irrigations to harvest. Subsequent crops will require 3-4 depending on regrowth potential.

WEED CONTROL: Weeds do not generally cause serious problems in sudangrass if it is planted at the appropriate time of year and the crop emerges and grows vigorously. Very few herbicides are registered for this crop. Low rates of atrazine have been used for watergrass and purslane control when heavy weeds are present. Consult your pest control advisor or Weed Science Farm Advisor for current recommendations.

PEST CONTROL: Occasionally the armyworm (*Pseudoalecid unipuncta*) will cause damage to leaves and may require insecticidal control.

Brown Leaf is caused by bacteria (*Pantoea ananas* and *Pantoea stewartii*) and is spread by the desert flea beetle. The disease is commonly found in Imperial County, especially during July and August. Currently there is no economic control.

HARVESTING: Sudangrass may be harvested 2-5 times between May and October. Cuttings should be made when the field has 10 percent bloom or earlier depending on market demand. While waiting longer to cut increases yield, overall quality of the sudangrass is decreased. Nitrate nitrogen accumulates at a higher level in the lower portion of the stalk. To avoid nitrate poisoning in the hay crop, cut sudangrass 6-8 inches above the ground. Another method of reducing high nitrate in the hay is to swath in the afternoon and early evening hours. Nitrate begins to store from 10 p.m. and peaks in the early morning hours.

PASTURING: Feeder lambs or cattle may be pastured in the early fall. Hay quality of sudangrass at this time diminishes rapidly. If sudangrass is to be used for pasturing, do not fertilize after the last hay cutting. Delay pasturing until the sudangrass is 3 feet tall or higher to avoid the chance of prussic acid poisoning. DO NOT graze animals on sudangrass that has been frosted, as the risk of prussic acid poisoning is very high.

Four hundred steers or 1,600 feeder lambs will consume a 35-acre sudangrass pasture in 12 to 20 days. Protein supplements will increase animal weight gains.

IMPERIAL COUNTY SUDANGRASS HAY PRODUCTION COSTS 2002-2003

80 acre field

Mechanical operations at prevailing rates. Labor at \$9.25 /hr. (\$6.75 plus SS, unemployment, workman's compensation, and fringe benefits.

Yield--5.5 tons per acre cured hay

OPERATION	Prevailing Rate	MATERIALS Type/Amount	HAND LABOR		COST Per Acre
			Cost	Hours Dollars	
<i>LAND PREPARATION</i>					
Disc 2x	12.50				25.00
Fertilize (Injected)	15.00	100 lb N (anhydrous)	14.50		29.50
Triplane	11.25				11.25
Dump borders	14.50				14.50
Shape borders	6.00				6.00
Float	10.00				10.00
TOTAL LAND PREPARATION COSTS					96.25
<i>GROWING PERIOD</i>					
Plant	14.75	150 lb seed @ 0.30/lb	45.00		59.75
Irrigate 10x		4.75 ac-ft	76.00	3 27.75	103.75
Fertilize 2X (water-run) 120 lb N total		60 lb N per cutting(UAN32)	17.40		17.40
TOTAL GROWING PERIOD COSTS					180.90
<i>GROWING PERIOD & LAND PREPARATION COSTS</i>					277.15
Land rent (net acres)					90.00
Cash overhead--	12 % of preharvest costs & land rent				44.06
TOTAL PREHARVEST COSTS					411.21
<i>HARVEST COSTS (calculated at 5.5 tons/acre and 2 cuttings)</i>					
Swather 2x	11.25				22.50
Rake 4x	5.25				21.00
Bale (5.5 tons)	0.65 /bale	20 bales/ton			71.50
Haul & Stack	0.25 /bale	20 bales/ton			27.50
TOTAL HARVEST COSTS					142.50
TOTAL ALL COSTS					553.71

PROJECTED NET GAIN (PER ACRE)

Yield (ton/acre)	Price/ton (\$)						Break-even (\$/ton)
	70	80	90	100	110	120	
4.5	-221	-176	-131	-86	-41	4	119
5.0	-170	-120	-70	-20	30	80	104
5.5	-169	-114	-59	-4	51	106	96
6.0	-135	-75	-15	45	105	165	89
6.5	-117	-52	13	78	143	208	83