U.C. COOPERATIVE EXTENSION

SAMPLE COST TO ESTABLISH AND PRODUCE

SUDANGRASS

IMPERIAL COUNTY – 2000

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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.

FOREWORD

We wish to thank growers, pest control advisors, seed companies, transplant producers, contract harvesters, fertilizer dealers, and equipment companies for providing us with the data necessary to compile this circular. Without them we could not have achieved the accuracy needed for evaluating the dynamic and important vegetable industry in Imperial County.

The information presented herein allows one to get a "ballpark" idea of field crops production costs and practices in the Imperial County. They do not reflect the exact values or practices of any grower or shipper, but are rather an amalgamation 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, 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, supplies, donations, utilities, transportation, accountants, insurance, safety training, permits, etc. The amount of overhead charged depends upon the crop and the size of the labor crew, payroll, supplies, and supervision needed for culture.

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, etc. Whenever possible we have given the costs of these operations per hour.

Not included in these production costs are expenses resulting from loans, supervision, or return on investments. If these items were taken into account, the budget may need to be increased by 7-15%.

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2000-2001 FIELD CROPS PREVAILING RATES
IMPERIAL COUNTY

HEAVY TRACTOR WORK & LAND PREPARATION

OPERATION	$/ACRE
Plow	27.75
Subsoil, 2nd gear	38.75
Subsoil, 3rd gear	32.75
Landplane	12.00
Triplane	11.00
Chisel ∀ 15"	24.75
Wil-Rich chisel	14.75
Big Ox	21.25
Slip plow	39.00
Pull/disc borders	6.00
Make cross checks (taps)	6.00
Break border	5.75
Disc, stubble	21.75
Disc, regular	11.50
List 40" beds	13.50
Float	10.00
Disc, borders	11.25
Laser (acre)	34.00-38.00
Dump (scraper) borders	14.00

PREVAILING RATES BY THE HOUR

	$/HR
Motor grader	50.00
Backhoe	42.50
Water truck	39.00
Wheel tractor	32.00
Scraper	27.00
Versatile	53.00
D-6	46.50
D-8	65.00
Burn ditches	28.00
Buck ends of field	30.00
Pipe setting (2 men)	33.00
Laser	70.00
Work ends	40.00

PLANTING, CULTIVATING & LIGHT TRACTOR WORK

Power mulch dry	23.00
Power mulch with herbicide	27.00
Shape 40" beds	9.50
Precision plant 40" beds	17.50
Plant and shape sugar beet beds	14.50
Mulch plant wheat	11.25
Plant alfalfa (corrorgated)	16.00

PLANTING, CULTIVATING & LIGHT TRACTOR WORK (continued)

OPERATION	$/ACRE
Plant bermudagrass (flat)	12.00
Plant sudangrass	10.50
Cultivate 4-row 40" beds	13.00
Spike 40" beds	9.75
Spike and furrow 4-rows 40-42" beds	10.25
Furrow out 40-42" beds	9.75
Lilliston 40" beds	10.75
Lilliston 40" beds with/herbicides	14.50
Inject fertilzer and furrow out 40" beds	13.50
Fertilize dry and furrow out 40" beds	13.50
Broadcast dry fertilizer >300lb/a	7.00
Broadcast dry fertilizer <300lb/a	6.00
Ground spray 4-row	10.00
Ground spray 8-row	9.00
Layby herbicide	22.00
Drill with cultipacker	15.00
Chop cotton stalks	12.00

HARVEST COSTS

	BY UNIT
Combine alfalfa seed	40.00/acre
Windrow alfalfa seed	15.00/acre
Rake bermudagrass (heavy)	7.00/acre
Rake bermudagrass (light)	4.00/acre
Swath bermudagrass (heavy)	15.00/acre
Swath bermudagrass (light)	10.00/acre
Swath sudangrass	10.00/acre
Rake sudangrass	5.00/acre
Crimp sudangrass	8.00/acre
Swath alfalfa	7.75/acre
Rake alfalfa	3.75/acre
Bale (all types of hay)	0.63/bale
Haul & stack hay	0.24/bale
Dig sugar beets	2.50/clean ton
Haul sugar beets	2.45/clean ton
Combine wheat	15/ton + 0.55/cwtover 1 ton
Haul wheat	5/ton

IRRIGATION

Sprinkler irrigate flat crops	$125-160.00/acre
Flood irrigate flat crops	variable
Irrigate bed-planted crops	variable
1ac-ft water	14.56

IMPERIAL COUNTY SUDANGRASS CULTURE 2000-2001

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

Year	Acres	Yield/Acre (tons)	Value/Acre
1999	65,786	4.87	$393
1998	70,068	4.94	$491
1997	87,562	5.56	$549
1996	85,896	6.36	$549
1995	77,365	6.50	$552

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

YIELD Three sudangrass cuttings should yield between 6-8 tons per acre. Sudangrass yield on two cuttings is usually 5 to 5.5 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 NH_3 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. Sudangrass will use roughly 4-5 acre feet of water to produce a 5-ton hay crop.

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. Consult your pest control advisor or Weed Science Farm Advisor for current recommendations.

PEST CONTROL Occasionally the armyworm (*Pseudoalecid unipuncta*) needs to be controlled using an insecticide.

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

HARVESTING Sudangrass may be harvested 2-5 times between May and October. Cuttings should be made when the field has 10 percent bloom. 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.

Lush sudangrass may require crimping to achieve better drying and curing as a crimper crushes the thick stems. Crimping costs $8.00 per acre.

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 2000-2001

Mechanical operations at prevailing rates. Labor at $7.75 /hr. ($5.75 plus SS, unemployment, and fringe benefits).
Yield--5.5 tons per acre cured hay

OPERATION	Prevailing Rate	MATERIALS Type/Amount	HAND LABOR Cost	Hours	Dollars	COST Per Acre
LAND PREPARATION						
Disc 2x	11.50					23.00
Fertilize (Injected)	13.50	100 lb N as NH3 @ .165	16.50			30.00
Disc borders	11.25					11.25
Float 2x	10.00					20.00
TOTAL LAND PREPARATION COSTS						**84.25**
GROWING PERIOD						
Plant	8.50	150 lb seed @ 0.28/lb	42.00			50.50
Irrigate 7x		5 ac-ft	72.80	4	31.00	103.80
Fertilize 2X (water-run)	160 lb N total	80 lb N per cutting @ .165	26.40			26.40
Work ends	5.00					5.00
TOTAL GROWING PERIOD COSTS						**185.70**
GROWING PERIOD & LAND PREPARATION COSTS						269.95
Land rent (net acres)						110.00
Cash overhead--		12 % of preharvest costs & land rent				45.59
TOTAL PREHARVEST COSTS						**425.54**
HARVEST COSTS (calculated at 5.5 tons/acre and 2 cuttings)						
Swather 2x	10.00					20.00
Rake 2x	5.00					10.00
Bale (5.5 tons)	0.63 /bale	20 bales/ton				69.30
Haul & Stack	0.24 /bale	20 bales/ton				26.40
TOTAL HARVEST COSTS						**125.70**
TOTAL ALL COSTS						**551.24**

PROJECTED NET GAIN (PER ACRE)

Yield (ton/acre)	Price/ton ($) 70	80	90	100	110	120	Break-even ($/ton)
4.5	-219	-174	-129	-84	-39	6	119
5.0	-169	-119	-69	-19	31	81	104
5.5	-166	-111	-56	-1	54	109	95
6.0	-133	-73	-13	47	107	167	89
6.5	-114	-49	16	81	146	211	83