

U.C. COOPERATIVE EXTENSION

SAMPLE COST TO ESTABLISH AND PRODUCE

CABBAGE



IMPERIAL COUNTY – 2003

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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

CABBAGE CULTURE 2002-2003

Annual acreage, yield, and value of fresh market cabbage in
Imperial County, CA (1997-2001)

Year	Acres	Yield/Acre*	Value/Acre
2001	880	710	\$4,508
2000	908	689	\$4,369
1999	1,389	522	\$2,155
1998	1,126	716	\$4,226
1997	1,120	628	\$2,790

*50 lb carton equivalent

Source: Imperial County Agricultural Commissioner's Reports 1997-2001

PLANTING-HARVESTING DATES Cabbage is planted from mid-September through October. Harvesting begins in December and continues through February. The demand for local cabbage depends upon the availability of the cabbage harvested in coastal California and Texas.

The average yield varies according to market price, but may reach 1,000 cartons per acre. Normally, yields reflect market demand rather than actual yield. If prices are too low, much of the harvestable crop remains in the field. Oversupply from competing markets depresses price rapidly to the point where harvesting is impractical. A shortage in the cabbage supply, however, can create windfall profits. Cabbage is a very high-risk crop!

Some cabbage is grown under contract with fast food outlets and coleslaw manufacturers.

VARIETIES Headstart *Seminis*; Grenadier *Syngenta*; Fast Vantage *Sakata*; and Charmant *Sakata* are popular green varieties.

Commonly used red varieties include: Primero *Bejo*; Red Jewel *Sakata*; Sombrero *Bejo*; Cardinal *Harris Moran* and Red Rookie *Sakata*

PLANTING INFORMATION Double seed lines on 40-inch beds are used for cabbage production. The seed is normally planted with a precision planter at 2 to 3 inches down the row spacing, at a depth of ¼ inch or less. Seed lines are usually 13 inches apart.

When seed are placed 3 inches apart within rows, on 2 seed lines per 40-inch bed, roughly 104,000 seed are required per acre. When plants develop 2 to 3 true leaves, seedlings are thinned to 12 to 14 inches within rows.

IRRIGATION Sprinkler irrigation is used to germinate the crop. Once the seedlings have emerged, the field is then converted to furrow irrigation.. Cabbage grows well on loam to silty clay soil. Cabbage has intermediate salt tolerance.

FERTILIZERS Five hundred pounds of 11-52-0 broadcast prior to listing is standard practice. Sidedress applications of nitrogen (60-80 lb N/acre) are common. Ammonium nitrate or UAN32 solutions are often used for sidedress application.

PESTS AND DISEASES Insect pests of cabbage include crickets, cutworms, flea beetles, saltmarsh caterpillars, aphids, thrips, and cabbage looper. Once an insect burrows into cabbage heads, chemical control is nearly impossible.

Cabbage should not be planted following sugar beets due to possible cyst nematode infection (*Heterodera schachtii*). Downy mildew (*Peronospora parasitica*) may require control if moist, cool conditions persist.

Black rot (*Xanthomonas campestris* pv. *campestris*) occurs occasionally in Imperial County. Plant disease-free seed or transplants.

Oedema is a physiological disorder of cabbage that is manifested by pits and craters on the epidermis of the leaves. It is thought to be caused by excessive irrigation, especially during cloudy, humid weather. A similar condition may occur on the outer leaves of cabbage as a result of sand blasting.

Blind plants are created by mechanical damage or genetic defects. Bird and insect feeding are often the culprits.

HARVESTING Fields are harvested by hand. Cabbage is packed 24 heads per bulge-packed carton. A carton may weigh over 55 pounds. Head counts can vary from 18 to 24 heads per carton, however many sales are made on the basis of net weight. Cabbage is normally sold at retail stores by the pound.

Cone-shaped cabbage heads are not acceptable in markets on the West Coast and in the Pacific Northwest. Some cabbage is grown under contract with fast food outlets for coleslaw and salad mixes.

Cabbage may be either hydrovac or vacuum cooled. It should be stored under refrigeration after cooling.

POSTHARVEST Cabbage should be stored at 32°F and a 98 percent relative humidity. Storing cabbage at low humidity causes wilting and senescence. Cabbage is sensitive to ethylene and should not be stored near ethylene sources (i.e. ripening fruits), because loss of green color and abscission of the leaves will result.

For more information see “Cabbage Production in California”, DANR Publication 7208 available from the Imperial County Cooperative Extension Office or for a free download from the Internet go to <http://anrcatalog.ucdavis.edu/specials.ihtml>

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CABBAGE PROJECTED PRODUCTION COSTS 2002-2003

Hand labor at \$9.25 per hour (\$6.75 plus SS, unemployment insurance, transportation, supervision, workman's compensation, and fringe benefits).

Yield--500 cartons per acre 50 lbs. per carton. Hybrid variety

OPERATION	Cost	Materials		Hand Labor		Cost Per acre
		Type	Cost	Hours	Dollars	
LAND PREPARATION						
Stubble disc	21.00					21.00
Subsoil	39.00					39.00
Disc 2x	12.50					25.00
Triplane 1x	11.25					11.25
Border, cross check & break borders	19.00					19.00
Flood		Water 1 ac/ft.	16.00	1	9.25	25.25
Disc 1x	12.50					12.50
Triplane 1x	11.25					11.25
Fertilize, spread	7.00	500 lb. 11-52-0	58.75			65.75
List 40" beds	15.00					15.00
TOTAL LAND PREPARATION						245.00
GROWING PERIOD						
Power mulch beds 1x	28.00					28.00
Precision plant and whitefly control	25.00	Seed 104M Admire	260.00 75.00			285.00 75.00
Spray herbicide	12.50	Dacthal	65.00			77.50
Sprinkler irrigate	160.00					160.00
Apply insecticide in water Thin		Insecticide	20.00	10	92.50	20.00 92.50
Cultivate 2x	13.00					26.00
Spike 2x	11.25					22.50
Fertilize & furrow out 2x	13.00	120 lb. N @ .32	38.40			64.40
Water-run fertilizer		60 lb. N @ .32	19.20			19.20
Hand weed 1x				12	111.00	111.00
Irrigate 8x		Water 3 ac/ft.	48.00	7	64.75	112.75
Gated pipe (harvest)	20.00					20.00
Insect control 8x	10.00	Insecticides	125.00			205.00
Disease control 2x	10.00	Fungicides	50.00			70.00
Ring roller cleanup	10.00					10.00
TOTAL GROWING PERIOD						1398.85
GROWING PERIOD & LAND PREPARATION COSTS						
Land Rent (net acres)						1643.85
Cash Overhead-----		13 % of preharvest costs & land rent				200.00
TOTAL PREHARVEST COSTS						239.70
TOTAL PREHARVEST COSTS						2083.55
HARVEST COST						
Cut, pack, haul, cool and sell		500 cartons @	3.50	per carton		1750.00
TOTAL ALL COSTS						3833.55

PROJECTED PROFIT OR LOSS PER ACRE

		Price/ 50 lb. carton (dollars)					Break-even \$/carton
		5.00	6.00	7.00	8.00	9.00	
Cartons per acre	500	-1334	-834	-334	166	666	7.67
	600	-1184	-584	16	616	1216	6.97
	700	-1034	-334	366	1066	1766	6.48
	800	-884	-84	716	1516	2316	6.10
	900	-734	166	1066	1966	2866	5.82

* Harvest cost varies with the shipper, the field conditions and the market