

SUGAR BEET PRODUCTION COST ANALYSIS WORK SHEETS

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The cost analysis work sheets attached are based on 22 ton yield per acre of clean beets. With good management practices, this level of production can be readily exceeded.

Taxes, land values, water costs, insects, disease and weed problems vary from one area of the county to that of another area. The actual cost to produce sugar beets will vary from the ones presented. Therefore, the usefulness of these cost analyses is limited. They can be useful as work sheets or guides when planning a cropping program to estimate needed cash and to make production cost comparisons between two or more crops. County taxes are based on agricultural reserve assessments as provided for by the provisions of the Williamson Act. Profitable sugar beet production is influenced by many factors such as:

Proper Field Selection: Soils that are well drained and adapted to cotton, alfalfa or for other deep rooted crop production are suitable for sugar beets. But avoid fields infested with perennial weeds such as bindweed and bermudagrass. Avoid fields that may contain small quantities of (residual) herbicides used on the previous crop that may injure the young beets. Also avoid fields that are heavily infested with nematodes.

Stand Establishment: In Fresno County beets are planted from October through May. Seeds spaced two inches apart will provide a good stand even under adverse conditions. Seeds spaced two inches apart will facilitate mechanical and/or electronic thinning. Under favorable growing conditions, in a well prepared seed bed with adequate moisture and soil temperature above 50° F, seed placement 4 inches apart has provided a good stand.

Sugar beet root yield changes vary little when plants are spaced between 6 and 12 inches apart in the row. With spacing wider than 12 inches, yield begins to fall off but only slightly up to 18 inches. Therefore, a final stand in the range of 100 to 200 beets per 100 feet of row is adequate to obtain excellent yields.

Land Preparation: A good seed bed free of large clods enhances the rapid uniform emergence of beets and it facilitates mechanical thinning. Herbicides used either preplant or preemergence will provide better weed control in a well prepared seed bed.

Weed Control: Sugar beet growers have an array of effective tools, mechanical and chemical, that can be used to economically control the unwanted vegetation infesting beet fields. In one of the two work sheets cost analysis is based on minimum use of herbicides whereas in the other with the minimum use of hand labor. The selection of an herbicide or herbicides should be governed by the weed population or in case of preemergence or preplant applications by the anticipated weed population. It should also be governed by the time of planting, the irrigation method used, and by the tools available for the application and incorporation of the herbicide.

Fertilization: Nitrogen in the range of 80 to 120 pounds per acre is adequate. An inadequate supply of nitrogen can result in reduced yield, but an excess amount of nitrogen will reduce the sugar content of the beets and consequently reduce net returns.

In some areas phosphorous may be beneficial. The need for phosphorous can be determined through soil analysis. If the analysis indicates less than 10 parts per million of bicarbonate extractable phosphorous in the soil 30 to 50 pounds of phosphorous should be applied.

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Irrigation: Timely application of irrigation water (whether by furrow or sprinkler) in the proper amounts is essential for best yields. Inadequate moisture can result in leaching of the nitrogen and it can increase the occurrence of root rot.

A deep pre-irrigation is desirable to assure the availability of deep moisture. A pre-irrigation will germinate weed seeds and enhances the final seed bed preparation. Beets planted from late February through March may not require a pre-irrigation. The number and frequency of crop irrigations will vary depending on the soil type, depth of water penetration and climatic conditions. During June, July and August irrigation every 7 to 10 days may be needed. The importance of the need for proper irrigation can not be over emphasized.

Diseases: Sugar beet seedlings are susceptible to certain fungus diseases but the seeds are treated with fungicides that generally provide adequate control.

Several virus diseases are prevalent in the central San Joaquin valley. Curly top virus, transmitted by the sugar beet leaf hopper, is the most serious especially when it is transmitted to young beets. Although varieties used in the valley have a tolerance to curly top it was found that a systemic insecticide (phorate) applied, prior to planting, 4 to 5 inches below the seed is desirable to minimize the disease.

Three aphid transmitted virus diseases namely beet yellows, beet western yellows and beet mosaic are prevalent. The best protection against these virus diseases has been the destruction of old beet roots "ground keepers," segments of roots or general good sanitation around or near beet fields.

Observance of the "beet free period" established by the growers in cooperation with processors can greatly minimize the spread or occurrence of these aphid borne virus diseases, often referred to as yellows.

Insects, Mites and Nematodes: Although insects, other than aphids, are not too troublesome the sugar beet fields should be monitored and control measures may have to be taken when sugar beet armyworm or other insects build up to harmful populations. Mites occasionally build up to population levels requiring treatment.

Fields infested with root knot nematodes may have to be fumigated if the population cannot be controlled with crop rotation.

Harvest: Sugar beets are perishable, therefore, harvesting is scheduled carefully by field superintendents of the processors.

Regulations & Payments: To qualify for compliance payments, minimum wage rates as published by the ASCS office must be paid. Also, children under 14 years of age outside of ones immediate family may not be employed.

Compliance payments are computed on the basis of commercially recoverable sugar and based upon a sliding scale. The rates of payment and scales are published and distributed to growers by the California Beet Growers Association.

Compliance payments were not added to or used in the preparation of these cost analysis work sheets.

SUGAR BEET PRODUCTION WITH MINIMUM HAND LABOR
COST ANALYSIS WORK SHEET 1973

The cost to produce sugarbeets in Fresno County with minimum hand labor. Costs are based on a yield of 22 tons of clean beets per acre. Common labor \$2.60 per hour, equipment operator \$2.90 per hour, total costs. 80 h.p. crawler tractor per hour cash costs \$4.70, depreciation \$2.95 and interest \$1.75. Medium wheel tractor hourly costs \$21.0, \$1.65 and 75¢.

	<u>Sample Costs</u>		<u>My Costs</u>	
	<u>Per Acre</u>	<u>Per Ton.</u>	<u>Per Acre</u>	<u>Per Ton.</u>
<u>PRE-HARVEST CASH COSTS</u>				
Disc 1X: 1/2 hr crawler tractor	3.80			
Plow 1X: 1/2 hr crawler tractor	3.80			
Disc 2X: 1/2 hr crawler tractor	3.80			
Landplane: alternate years at 1/2 hr crawler tractor	1.90			
List beds and apply 20 lbs. N at 10¢ Material	2.00			
1/4 hr crawler tractor	1.90			
Shape beds and apply systemic insecticide Material	2.95			
1/4 hr wheel tractor	1.25			
Plant seed with pre-plant herbicide Material	6.00			
Seed: 2-1/2 lbs. at \$1.50	3.75			
1/4 hr wheel tractor	1.25			
Irrigate up: 12" water at \$8.00 ac. ft. Labor 1-1/2 hrs	8.00			
	3.90			
Roll beds 1/8 hr wheel tractor	.62			
Block (mechanical) 3/4 hr wheel tractor	3.75			
Cultivate and fertilize 60 lbs. N at 10¢	6.00			
1/3 hr wheel tractor	1.67			
Apply post-thinning herbicide Material	4.60			
1/6 hr wheel tractor	.83			
Incorporate herbicide 2X with sectioned rolling cultivator 1/2 hr wheel tractor	2.50			
Crop Irrigations 8 X Labor 8 hours	20.80			
3 ft water at \$8.00	24.00			
Cultivate 1X: 1/3 hr wheel tractor	1.67			
Pest control: Materials	8.00			
Application	3.00			
Misc. tractor work, ditches, borders, etc. 1 hr. crawler tractor	7.60			
County taxes	11.00			
Repairs to equipment except tractors	10.00			
Office and business costs: 6% of cash costs	12.36			
TOTAL PRE-HARVEST CASH COSTS	\$162.70	\$7.39		
<u>HARVESTING COSTS</u>				
Dig and load: \$1.25/ton for 24.2 tons	30.25			
Haul: \$1.05 per ton - grower's cost	25.41			
TOTAL HARVESTING COSTS	55.66	2.53		
TOTAL CASH COSTS	\$218.36	\$9.92		

Sugar Beet Production

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	<u>Sample Costs</u>		<u>My Costs</u>	
	<u>Per Acre</u>	<u>Per Ton</u>	<u>Per Acre</u>	<u>Per Ton</u>
<u>DEPRECIATION:</u>				
Irrigation System: \$220 cost 15 yrs	14.67			
Crawler tractor: 3 hrs at \$2.95	8.85			
Wheel tractor: 2.70 hrs. at \$1.65	4.45			
Other equipment: \$80, 10 yrs.	8.00			
TOTAL DEPRECIATION	35.97	1.63		
<u>INTEREST ON INVESTMENT AT 8%</u>				
Irrigation system: 1/2 cost at \$110	8.80			
Crawler tractor: 3 hrs at \$1.75	5.25			
Wheel tractor: 2.70 hrs at \$.75	2.02			
Other equipment: 1/2 cost \$40	3.20			
Land: \$800 per acre	64.00			
TOTAL INTEREST ON INVESTMENT	83.27	3.79		
TOTAL COST OF PRODUCTION	\$337.60	15.34		

VARYING YIELD TABLE

<u>CLEAN WEIGHTS</u>	<u>18</u>	<u>22</u>	<u>26</u>	<u>30</u>	<u>34</u>	<u>38</u>
Cash costs per ton	\$11.56	\$ 9.92	\$ 8.78	\$ 7.95	\$ 7.31	\$ 6.81
Total costs per ton	\$18.19	\$15.34	\$13.37	\$11.93	\$10.82	\$ 9.95

SUGAR BEET PRODUCTION WITH MINIMUM USE OF HERBICIDES

COST ANALYSIS WORK SHEET 1973

Sample costs to produce sugarbeets in Fresno County, with minimum use of chemicals and machines. Costs are based on a yield of 22 tons of clean beets per acre. Common labor \$2.60 per hour and equipment operator \$2.90 per hour, total costs. 80 h.p. crawler tractor per hour cash costs \$4.70. Depreciation \$2.95 and interest \$1.75. Medium wheel tractor hourly cost \$2.10, \$1.65 and \$.75.

	Sample Costs		My Costs	
	Per Acre	Per Ton	Per Acre	Per Ton
PRE-HARVEST CASH COSTS				
Disc 1X: 1/2 hr crawler tractor	3.80			
Plow 1X: 1/2 hr crawler tractor	3.80			
Disc 2X: 1/2 hr crawler tractor	3.80			
Landplane: alternate years at 1/2 hr crawler tractor	1.90			
List beds and apply 20 lbs. N at 10¢/lb.				
Materials	2.00			
1/4 hr crawler tractor	1.90			
Shape beds and apply systemic insecticide				
Material	2.95			
1/4 hr. wheel tractor	1.25			
Plant: seed 2-1/2 lbs. at \$1.50	3.75			
1/4 hr. wheel tractor	1.25			
Irrigate up: 12" water at \$8.00 ac. ft.	8.00			
Labor 1-1/2 hrs	3.90			
Roll beds: 1/8 hr wheel tractor	.62			
Block and thin: contract	27.60			
Cultivate and fertilize:				
60 lbs. N. at 10¢	6.00			
1/3 hr wheel tractor	1.67			
Hand weed 1X	10.40			
Crop irrigations: 8 X labor 8 hrs	20.80			
3 ft water at \$8.00	24.00			
Post-thinning herbicide				
Material	4.60			
1/6 hr wheel tractor	.83			
Incorporate herbicide 2X with sectioned rolling cultivator:				
1/2 hr wheel tractor	2.50			
Cultivated 1X: 1/2 hr wheel tractor	2.50			
Pest control: Materials	8.00			
Application	3.00			
Misc. Tractor Work: 1 hr crawler tractor	7.60			
County taxes	11.00			
Repairs to equipment except tractors	10.00			
Office and business costs - 6% of cash costs	14.10			
TOTAL PRE-HARVEST CASH COSTS	\$193.52	\$8.79		
HARVESTING COSTS				
Dig and load: \$1.25/ton for 24.2 tons	30.25			
Haul: \$1.05/ton - growers cost	25.41			
TOTAL HARVESTING COSTS	55.66	2.53		
TOTAL CASH COSTS	\$249.18	\$11.32		
DEPRECIATION:				
Irrigation system: \$220, 15 yrs	14.67			
Crawler tractor: 3 hrs at \$2.95	8.85			
Wheel tractor: 2.12 hrs at \$1.65	3.50			
Other equipment: \$80, 10 yrs.	8.00			
TOTAL DEPRECIATION	\$35.02	1.59		

	Sample Costs		My Costs	
	Per Acre	Per Ton	Per Acre	Per Ton
<u>INTEREST ON INVESTMENT AT 8%</u>				
Irrigation system: 1/2 cost \$110	8.80			
Crawler tractor: 3 hrs at \$1.75	5.25			
Wheel tractor: 2.12 hrs at \$.75	1.59			
Other equipment: 1/2 cost \$40	3.20			
Land: \$800 per acre	64.00			
TOTAL INTEREST ON INVESTMENT	82.84	3.77		
TOTAL COST OF PRODUCTION	\$367.04	\$16.68		

VARYING YIELD TABLE

CLEAN WEIGHTS	18	22	26	30	34	38
Cash costs per ton	\$13.28	\$11.32	\$ 9.97	\$ 8.98	\$ 8.22	\$ 7.62
Total costs per ton	\$19.83	\$16.68	\$14.51	\$12.91	\$11.69	\$10.72

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