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AG FACTS

The Cost of Producing Celery, West Central Michigan, 1990

by

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Michigan ranks third in the nation in the production of celery, a position it has held for over 20 years. Michigan's percentage of total U.S. production grew slowly until the mid 1980s. Since then it has declined slightly. In 1964, Michigan produced 5.8% of the nation's celery, and by 1982 this figure was 8.1% or 1,551,000 cwt. and by 1987 it was 6.4% or 1,147,000 cwt.

Michigan's climate is favorable for producing very high quality celery for both fresh and processed markets. However, diseases, pests and local extremes in weather make celery a high risk crop that requires a high level of horticultural skills. High input prices relative to produce price also demand high levels of skill in, and information for, practicing farm business management if growing celery is to be profitable. This report attempts to provide some of that needed information.

Data Gathering Procedure

Information was gathered from West Central Michigan celery growers, Michigan Celery Promotion Cooperative staff, farm input suppliers and Cooperative Extension Service personnel. Most data were gathered through small group discussions with growers reaching consensus on the items discussed. A "typical-sized" celery operation for the area was agreed upon, and investment and cost data were estimated for that size farm. Other data were reviewed by growers for accuracy and relevance before being included.

Uses of the Study

This report should be valuable in a number of situations. For the grower producing celery plus other crops, it may help decide whether to expand, reduce or hold constant the celery enterprise. Celery growers can compare their costs with those given here, and get an idea of how efficiently they produce celery relative to a "typical" grower. Growers, sellers, processors and buyers may find the information useful in marketing decisions. Finally, growers not growing celery, but considering adding celery to their business, can compare information in this report with similar information from their other enterprises to determine the relative profitability of one to the other.

CAUTION: Figures given here are consensus estimates for a "typical" farm and will vary from those found on any particular farm. For example, since no two farms would have the identical line of machinery with identical age, this report presents a representative line of machinery at average value. In this way, the figures used are a best estimate and should be used accordingly.

Structuring the Costs

The various costs included in this study are divided into two categories — fixed and variable. Fixed costs include those that vary little, if any, with the amount produced on the farm (such as property taxes and interest on invest-

ment). Variable costs include those that vary more directly with production, including hired labor, fuel, fertilizer, pesticides, etc.

On farms with more than one enterprise, allocating the fixed costs to the various enterprises can involve difficult and somewhat arbitrary decisions. This was not a serious problem here, since much of the data came from farms that produce and package celery only, so our typical farm is a one-enterprise operation. Therefore, all fixed costs in this study were charged directly to that one enterprise.

Underlying Assumptions

There were several assumptions made in developing this study:

- The typical farm is located in West Central Michigan and consists of 105 acres (of which 75 are muck soil) devoted to celery production each year, with the remaining acres in roads, buildings and wasteland.
- A practice of 10% double cropping is followed, resulting in 82.5 acres of celery grown each year.
- The farm carries sufficient greenhouse space, packing facility and machinery to grow, harvest and pack 82.5 acres of celery.
- The "plug" system is used for growing plants in the greenhouse.
- The values used for buildings and equipment reflect, as near as possible, the average value (new price + salvage value/2) of each item.
- The first 7.5 acres planted are provided with frost protection.

Farm Investment Costs

Tables 1 and 2 present the investment items for the typical celery farm and the annual depreciation costs for those items. Table 3 presents all the fixed costs, including depreciation, associated with the investment items. These fixed costs, sometimes referred to as ownership costs, are incurred whether or not a crop is produced. The one exception is the machinery maintenance cost, which is affected by both amount of use and ownership. It was a variable in this study.

When fixed or ownership costs are calculated, some costs are often forgotten, especially noncash items. To help remember what costs should be included, list the first letter of each category in Table 3 — Depreciation, Interest, Repairs, Taxes, Insurance. Then it is only a matter of remembering what the letters stand for in the DIRTI 5.

Certain costs in Table 3 are noncash in that the farm business must cover them if it is to remain competitive and viable, but they are not cash expenses. These include depreciation and interest on owner's equity.

On our typical farm, the fixed costs total $98,525 or $1,194 per acre of celery produced.

Variable Costs

The costs that vary with production are presented in Table 4. The per acre figures were arrived at in various ways. For some items, such as labor cost for cultivating, farmers knew the time required per acre, and that figure was multiplied by an average hourly wage. For other items, such as fuel, the annual amount used on each farm was recorded; it was then divided by acres grown on that farm, and an average fuel per acre was calculated. Other items were determined by comparing university recommendations with farmers' records. The total variable costs on the typical farm amounted to $3,823 per acre.

Table 4 can be used to decide whether to produce a crop. Unless the grower can be certain that crop revenues will at least cover the

variable costs, it would be better to leave the land idle. Once the crop is planted and grown, the grower's decision of whether to harvest would logically be based not on total variable costs but instead only on those variable costs associated with harvesting and marketing.

Total Costs: Per Acre and Per Crate

Table 5 presents the variable and fixed costs for the typical farm on a per acre and per carton basis. Note that the total cost of $6.69 per carton was made up of $1.64 for growing the crop, $3.46 for harvesting, packing and marketing the product and $1.59 to cover fixed cost. Using an average price of $7.00 per carton, all costs were covered plus $0.31 net above all costs.

In itemizing the costs of producing the 82.5 acres of celery, no charge is included for management. The growers who provided raw data for the study felt that since they were so involved in the labor aspect of the business, they could not place a price on their management input. Therefore, any returns above total costs can be viewed as a return to management.

TABLE 1. MACHINERY AND EQUIPMENT COST FOR A TYPICAL FARM PRODUCING CELERY, WEST CENTRAL MICHIGAN, 1990 1/

Item	New Price	Salvage Value 2/	Average Value 3/	Annual Deprec. 4/	Your Farm
TRACTORS					
80hp diesel (FW assist)	$ 32,000	$ 15,000	$ 23,500	$ 2,429	$
60hp diesel	24,000	12,000	18,000	1,714	
40hp diesel	18,000	9,000	13,500	1,286	
75hp diesel with backhoe & bucket loader (old)			7,500	0	
40hp gas (old)			5,000	0	
30hp gas (old)			3,000	0	
A.C. Model G (old)			2,000	0	
Small crawler (old)			5,000	0	
Garden tractor	5,000	1,000	3,000	571	
I.H. Model BN forklift	8,000	5,000	6,500	429	
Forklift for inside (old)			10,000	0	
TILLAGE					
4-18" Plow	$ 9,000	$ 1,000	$ 5,000	$ 1,143	$
12' Disk	5,000	500	2,750	643	
Spring tooth drag (old)			1,000	0	
Cultipacker (old)			2,500	0	
Subsoiler	3,200	800	2,000	343	
6' Rototiller	4,000	1,000	2,500	429	
12' Land leveler	5,000	1,000	3,000	571	
PLANTING					
4-row Transplanter	$ 20,000	$ 10,000	$ 15,000	$ 1,429	$
3 pt. Fertilizer Spreader	1,500	500	1,000	143	
4-row Side Dresser (old)			1,000	0	
CROP MAINTENANCE					
4-row Cultivator	$ 3,000	$ 1,000	$ 2,000	$ 286	$
Small Cultivator (old)			200	0	
300-gal. Sprayer	4,000	1,000	2,500	429	
3 pt. Sprayer	3,000	500	1,750	357	
Wire hoop setter & wire	4,600	600	2,600	571	
Irrigation System	30,000	5,000	17,500	3,571	
Irrigation Trailer	1,400	500	950	129	
Drainage Pump (3 @ $2,500)	7,500	1,500	4,500	857	
HARVEST					
Harvester	$ 20,000	$ 8,000	$ 14,000	$ 1,714	$
Wagons (6 @ $2,000)	12,000	2,400	7,200	1,371	
GREENHOUSE					
Tray Filler & Seeder	$ 5,000	$ 1,000	$ 3,000	$ 571	$
PACKING					
Packing line	$ 10,000	$ 2,000	$ 6,000	$ 1,143	$
Waste Disposal	7,500	1,500	4,500	857	
Strapping Mach.	7,500	2,500	5,000	714	
Waste Chopper	1,500	500	1,000	143	
200 bu. Spreader	6,500	500	3,500	857	
MISCELLANEOUS					
4 WD Pick-up Truck	$ 15,000	$ 1,000	$ 8,000	$ 2,000	$
Pick-up Truck (old)			500	0	
2 T. Stake Truck (old)			5,000	0	
ATV					
Wagons (2 old)			1,000	0	
Trailer	3,500	1,500	2,500	286	
Power Shop Tools	7,500	1,500	4,500	857	
20 kw Generator	3,000	2,000	2,500	143	
5' Ditch Mower	3,500	1,500	2,500	286	
6' 3 pt. Blade	700	300	500	57	
Fuel Tank/Pump (2 @ $1,000)	2,000	1,000	1,500	143	
Tools, Parts			5,000	0	
Office Equipment			3,000	0	
TOTALS			$245,450	$ 28,472	$

1/ The typical farm consists of 105 acres total with 75 acres tillable muck.
2/ A 7-year life was assigned to all machinery and equipment.
3/ Determined by adding new price and salvage value, then dividing by 2.
4/ Annual depreciation = (new price - salvage value)/7 years.

TABLE 2. LAND, BUILDINGS AND IMPROVEMENT COST FOR A TYPICAL FARM PRODUCING CELERY, WEST CENTRAL MICHIGAN, 1990

Item	New Price	Salvage Value	Average Value	Annual Deprec. 1/	Your Farm
Land (105 A) 2/	$217,500	$ 0	$217,500	$ 0	$_____
Tile (75 A)	75,000	0	37,500	3,000	_____
Greenhouses equipped (4) (30' X 144' @ $10,000)	40,000	2,000	21,000	1,900	_____
Shop & Storage (48' X 100')	25,000	5,000	15,000	800	_____
Packing Shed (48' X 100')	25,000	5,000	15,000	800	_____
(4) Water Wells 3/	28,000	0	14,000	1,120	_____
TOTALS			**$320,000**	**$ 7,620**	$_____
Totals (Buildings & Improvements Only)			**$102,500**	**$ 7,620**	$_____

1/ Assume equipped greenhouses have 20-year life, all other items have 25-year life.
2/ Price reflects 75 A tillable at $2,500 and 30 A nontillable at $1,000.
3/ Water wells are 6" x 200' to supply greenhouse, packing shed and irrigation system.

tions are well advanced, fungicides will be of little benefit. Fungicide spray trials have not been done in Michigan, but benomyl and thiophanate methyl reportedly control angular leaf spot. Fungicides should be used only when the disease is positively identified as angular leaf spot, and only when it is detected early.

Table 1. Reactions of Commercial Dry Bean Cultivars to Angular Leaf Spot caused by *Isariopsis griseola.*

Cultivar	*Reaction*	*Cultivar*	*Reaction*
WHITE NAVY		**RED KIDNEY**	
Fleetwood	R	Charlevoix	S
Neptune	R	Isabella	S
Nep-2	R	Montcalm	S
Seafarer	R	Red Kloud	S
Swan Valley	R	Sacramento	S
Tuscola	R		
C-15	I		
C-20	R	**PINTO**	
BLACK		Olathe	R
		UI-III	R
B-190	R		
Black Beauty	R		
Black Magic	R		
Black Turtle Soup	R	**OTHER**	
Domino	R	Mich. Improved	
Midnight	R	Cranberry	S

R = Resistant
I = Intermediate
S = Susceptible

Figure 4. Stem lesions on defoliated branch.

Figure 5. Comparison from top to bottom of severely infected, mildly infected, and healthy pods.

Figure 6. Upper and lower leaf surfaces with angular lesions. Spore-bearing synnemata occur throughout the necrotic tissue.

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