

Table 1. Annual cash returns needed over direct farm operating costs

	Dairy farms				Farrow-to-finish hog farms		Cash grain and beef farms	
	Low debt		High debt		Low debt	High debt	Low debt	High debt
	15 cwt.	11 cwt.	15 cwt.	11 cwt.				
Debt level ¹	\$100,000	\$100,000	\$230,000	\$230,000	\$100,000	\$230,000	\$150,000	\$250,000
Living needs	15,000	15,000	12,000	12,000	15,000	12,000	15,000	12,000
Real estate (P & I)	6,300	6,300	12,600	12,600	6,300	12,600	8,400	12,600
Chattel debt (P & I) ²	6,400	6,400	19,700	19,700	6,400	19,700	12,900	25,700
Down payments on machinery replacement ²	4,100	6,000	0	3,000	4,100	0	6,100	5,800
Cash rent	—	4,300	—	6,000	—	3,400	5,000	12,100
Overhead expenses ³	5,000	5,000	5,000	6,000	5,000	5,000	5,000	6,000
Total cash needs	\$ 36,800	\$ 43,000	\$ 49,300	\$ 59,300	\$ 36,800	\$ 52,700	\$ 52,400	\$ 74,200

¹Real estate and chattel debt only. Operating debt is repaid annually as part of operating expenses.

²If the principal portion of the chattel debt repayment is not sufficient to cover needed annual machinery replacement, the difference is shown as down payment.

³Includes hired labor, real estate taxes, and miscellaneous overhead costs.

Table 2A. Returns over direct livestock costs using production and price levels expected in the 1980's

	Dairy cow	Dairy cow	Beef cow	Cow yearling	Growing steers	Calf feeding	Feeder pigs	Farrow-finish
Production	11,000#	15,000#	93%	93%	325#	600#	8 pigs/L	7.6 pigs/L
Value produced	\$1,615	\$2,125	\$330	\$432	\$194	\$381	\$385	\$856
Purchase feed	220	230	15	17	4	40	102	190
Variable costs	260	280	50	75	63	95	73	158
Direct livestock costs	480	510	65	92	67	135	175	348
Returns over direct livestock costs	\$1,135	\$1,615	\$265	\$340	\$127	\$246	\$210	\$508

more than doubled to 964, and farm size increased to 378 acres.

Future Requirements for Full-Time Farming

The previous section traced the increasing size of livestock operations required to make a living in southern Minnesota over the past 40 years. Dairy herd size has grown at a rate of one cow per year—from 20 in the early 1940's to 60 cows in the early 1980's. What about the future? How many resources will be needed to make a living from farming in the 1980's? To answer this question, we will use expected long-term price-cost relationships to estimate business size and resource requirements needed with different enterprises under two different debt levels.

To determine the size of business needed, three variables have to be specified: (1) living needs, (2) debt repayment, machinery replacement, and overhead costs, and (3) average return over direct operating costs expected from each unit of the enterprise.

Living "needs" may be an improper term, since family spending is a function not only of family size but of income itself. High earning families usually spend more for family living. Some small farm families still are getting by on less than \$10,000 per year. Others are spending more than \$25,000. A suggested minimum in 1983 dollars is \$15,000 for an established family, whereas a beginning couple with low earnings and low taxes may be able to get by with \$10,000 to \$12,000 if necessary.

Debt repayment and machinery replacement must be covered from the returns over direct operating costs. These items vary greatly among farmers. The debt-free farmer with no immediate needs for machinery replacement can use most of the returns over direct costs on family living for a number of years. A high debt farmer, however, will need a larger

Table 2B. Returns over direct crop costs expected in the 1980's

	Corn	Soybeans
Production	120 bu.	40 bu.
Value produced	\$318	\$250
Purchase feed	—	—
Variable costs	148	80
Direct crop costs	148	80
Returns over direct crop costs	\$170/A	\$170/A

business volume to meet annual debt repayments before he can enjoy the same level of living as the financially established farmer.

Overhead expense of hired labor, farm taxes, insurance, farm business share of automobile, organization dues, etc., also must be covered. Taxes vary with farm valuation. Other overhead is partly under the manager's control. All overhead costs vary greatly among farms, but can be expected to total from \$5,000 to \$7,000 on full-time livestock farms if about \$2,000 is allowed for miscellaneous hired help.

Total cash returns needed over direct crop and livestock operating costs can be estimated as shown in table 1. Those interested in developing a farm business of adequate size to make a living (or part of a living) from farming are encouraged to make their own annual cash need estimates based on their own financial situation and the opportunities they face relative to resource acquisition.

Returns over direct operating costs will vary by years and among farms as production levels and prices vary. The returns in tables 2A and 2B are calculated using average productivity and the price levels expected during the mid-80's. Superior

Table 3. Direct crop costs per unit produced (excluding land and machinery costs)

	Dairy cow	Dairy cow	Beef cow	Cow yearling	Growing steers	Calf feeding	Feeder pigs	Farrow- finish
Hay (tons)	4	4	3	4.1	.75	.8	—	—
Corn silage (tons)	10.5	9	—	—	2.25	2	—	—
Corn equivalent (bu.) ¹	90	120	5	10.8	8	50	30	105
Pasture acres ²	.25	.25	.5	.5	.2	—	—	—
Direct crop costs	\$262	\$286	\$81	\$108	\$47	\$90	\$36	\$126
Return over all direct costs	\$873	\$1,329	\$184	\$232	\$80	\$156	\$174	\$382

¹Oats is equal to one-half bushel of corn equivalent.

²This is cropland pasture. Some permanent pasture is available in acres of southern Minnesota farms.

managers will do better than shown because of higher production levels (e.g. 18,000 pounds of milk per cow), better cost control, or both. But others will fall short of obtaining the returns shown per livestock unit.

Additional direct livestock operating costs will be incurred in the production of forages and feedgrains. These costs will average about \$19 per ton of hay equivalent (1 ton of hay or 3 tons of silage), \$1.25 per bushel of corn equivalent (1 bushel of corn or 2 bushels of oats), and about \$35 per acre of cropland pasture. Feed requirements per unit of livestock and expected crop operating costs to produce the needed feed are shown in table 3.

Resource Requirements for Full-time Farming

The numbers developed in the previous section were used to estimate the resource requirements listed in table 4. The approximate land, labor, and herd size needed by an established farmer and a beginning higher debt farmer under typical efficiency levels are shown. The established dairy or hog farmer (low debt) is assumed to require cash inflows of less than \$45,000 over direct operating costs, compared with over \$52,000 for crops or beef farmers, since the latter requires significantly larger acreages with more machinery. Higher debt farmers require greater cash flows to pay more interest, rent

more acres, and maintain larger machinery lines in order to handle the extra acreage. The high debt farmers will need net worth positions of about \$100,000 on the dairy-hog farms and significantly more than that on the beef or cash crop farms. The lower debt farmers will, of course, have higher net worths.

Other Farm Types

The poultry enterprises—either laying flocks or turkey production—are not included in the table since they are based on purchased concentrate feeds. Where such feeds are readily available and where markets exist, these are viable alternatives. Unless a special local market is available, marketing costs can be excessive.

Growing and selling fresh fruits and vegetables is a unique, labor-intensive farming operation that can become full-time on a small acreage. A marketing plan must be developed prior to starting such a venture. Production and handling costs will run from \$500 to \$1,500 per acre, depending on the crop. Returns per acre and per hour vary among crops and marketing strategies. Usually, pick-your-own operations have the greatest return per hour, but not all crops fit this marketing procedure. Start small the first year before expanding to full production. A vegetable production alternative that fits well on some farms is growing vegetables for canning companies. Explore this

Table 4. The minimum level of resources needed for full-time farming

	Unit	Debt level	At these production levels	Number of livestock units	Acres of cropland ¹	Hours of labor
Good dairy	cow	low	15,000 lbs. milk	28	75	3,000
		high	per cow	37	100	3,500
Average dairy	cow	low	11,000 lbs. milk	50	130	4,500
		high	per cow	68	175	5,500
Feeder pigs	litter	low	8 pigs per litter	212	50	2,700
		high		303	75	4,000
Farrow-finish	litter	low	7.6 pigs per litter	96	80	2,600
		high		138	115	3,500
Beef cow*	cow	low	93% calf crop	285	355	4,500
		high		400	500	6,000
Cow-yearling*	cow	low	93% calf crop	225	320	4,500
		high		320	470	6,000
Growing steers*	head	low	325 lb. gain	655	370	4,500
		high		930	520	6,000
Calf feeding*	head	low	600 lb. gain	335	265	4,000
		high		475	380	5,500
Cash crops	acre	low	120 bu. corn 40 bu. soybeans	—	320	2,000
		high	120 bu. corn 40 bu. soybeans	—	450	2,500

*Note that beef operations are not very feasible for high debt/low equity operators. Not only does average business size become prohibitively large, but beef prices and income vary much more than dairy income, resulting in greater risk of business loss.

¹Assumes yields per acre of 4.25 tons alfalfa hay, 19 tons corn silage, 120 bushels corn, 70 bushels oats, ¼ to ½ acre of pasture per cow, and 40 bushels soybeans.

alternative with representatives at local canning companies since most all crops are grown under a contract.

Conclusions

The calculated resource requirements shown in table 4 indicate that the low equity operator has few viable alternatives for full-time farming. Dairy or feeder pigs may be the only enterprises that will enable a person with limited capital to obtain enough resources to make a living without some off-farm income. Dairying fits best on forage production farms. Feeder pig production fits well on small farms that are suited for grain production.

Beef cows require more land and capital than the low equity individual can finance unless perpetual debt is assumed. The steer raising enterprise—buying calves at about 400 pounds and feeding them to slaughter weight—requires a large amount of operating capital and has highly variable returns. Therefore, it is not suitable to the low equity operator who may not be able to survive several loss years in succession.

The low debt feeder cattle producer will find that the cow-yearling program usually will give a higher return to a given set of resources than either the cow-calf or the steer growing program. This program carries calves through the winter at gains of near 1.5 pounds per day and sells them in the spring.

Sheep fall between dairy and beef in land and capital requirements. This enterprise—though not shown in table 4—has potential for the person entering it on a large scale using a management program that gets market lambs sold by July 15. Lamb production is now so low, however, that lack of satisfactory markets may result in even greater price and income problems for this enterprise in the future.

Cash crop production is a viable alternative for low debt farm operators in southern Minnesota. Beginning farmers, however, will find it very difficult to start crop farming on a full-time basis with limited capital or no outside source of family income. It can only be done on a rental basis. To minimize risk, the rental arrangement should be crop share rather than cash. Mechanical skills must be developed and employed to maintain used machinery, and cost effective crop production practices will be essential to survival.

Part-Time Farming

As capital requirements increased in farming and more off-farm opportunities opened up, more farmers shifted to part-time farming. More recently, as city traffic and pollution problems increased, more city dwellers moved to small farms and are now engaged in farm production to help pay for these farms.

To make part-time farming pay, the part-time farmer must keep two things in mind. First, the enterprise selected must provide high returns per hour even though operated on a small scale. The dairy enterprise usually does not qualify because high production requires timely management.

Second, ownership of expensive machines must be avoided, since small operations can't carry large overhead expenses. Harvest, for example, may best be done with custom hire. Or cropland may be rented out for a share of the crop or for cash.

Potential returns from 1,000 hours in a livestock enterprise and the number that can be handled are:

	Number	Returns over direct costs and equipment replacement
Beef cows-calves	65	\$5,000
Beef cows-yearlings	50	5,000
Growing steers	150	2,500
Feeder pigs (litter)	60	5,500
Hog farrow-to-finish (litter)	40	6,500

The labor required per head was assumed to be about 50 percent greater than for the full-time farmer. This is because smaller livestock enterprises have less labor-saving mechanization and relatively greater overhead labor requirements. Equipment replacement costs should be lower, however.

Considering taxes, steer raising becomes less desirable because the other enterprises all have some tax-sheltered capital gain sales in the form of breeding stock. This shelter is quite significant for beef cows but less so for hog production.

Thus, from an economic standpoint, beef cows and sows offer the most potential to the part-time farmer. The cow-calf operation fits best on the forage producing farm. The complete hog program fits well on the farm that produces feedgrains.

Another aspect of part-time farming is the production of meat and vegetables for the family. Gardening and a few ducks, geese, chickens, hogs, or a beef animal can help reduce cash outlay for food. The chores required to produce this food take a significant amount of time, however, so the family should undertake only those they enjoy doing.

Property Selection Suggestions

Land prices vary greatly in Minnesota. This is because of recreational and urban influences as well as agricultural productivity differences. The buyer interested in using land for agricultural purposes should be concerned with soil productivity and local markets.

Information on soils, crop yield potentials, and markets can be obtained from the County Extension Office or the Soil Conservation Service in most county seat communities. Agricultural Stabilization and Conservation Service offices have histories of cropland use and yields. The county tax assessor has a record of estimated market appraisals. These are updated about every two years. These public agencies should be contacted to help evaluate farms before buying.

The buyer who wants to retire or become a part-time farmer will put major emphasis on factors other than soil productivity. Small acreages for rural living vary greatly in price. The major price-determining factor is dwelling design and location. A large well built, modern, conveniently located house will greatly enhance the value of a small acreage. Accessibility to community services such as water, sewer, schools, and churches should be considered. The retiring couple may be especially concerned about snow removal service and the availability of medical care.

All property buyers should consider ownership and maintenance costs. What are current taxes? Will there be special tax assessments? How much will heating and upkeep cost? What about snow removal and transportation? Can these annual costs plus annual principal and interest payments be met?