What's It Take?

Getting Started in Farming Today

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Before the Farm Credit Administration Board
Kansas City, Missouri
November 13, 2002

Introduction

While still on the phone with Farm Credit staff inviting me to speak to the board the flip answer to the "What does someone need to get started in farming" question came immediately to mind. Both answers involved something to do with lotteries. One was the lottery of inheritance; the other was the lottery lottery.

Clearly agriculture is a capital-intensive industry. The core of agriculture is obviously land, something that has widely been viewed as the basis for wealth since almost the dawn of civilization. If not land, agricultural production systems have also reached the stage where the size of equipment needed to produce adequate cash flow is very expensive new -- and used equipment ain't all that cheap either.

For someone coming to farming or ranching without having hit the jackpot, agriculture is in many ways very much like any startup business. The idea is to turn sweat equity into a financial base. Like any other business this is done with hard work, careful planning and more than a little luck. Frankly, many will fail, just as many non-ag businesses fail.

Unlike non-ag businesses, farming is at its root a biological process. Things have to grow. The rain has to fall. The sun has to shine and the animals have to eat in order for the product to be produced and for the farmer to have something to sell. Because of this biological foundation, farming is different than say construction, running a restaurant or opening a hardware store.

These biologics create a considerable delay between the time that a producer makes a decision and when a product actually comes to market. This time delay adds risk to the system. Risk also comes into the equation just from the biologics alone. The weather and disease are some, but price risk also needs to occupy a place on the list.

My testimony today will move down these three paths.

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- How much money does it take for a successful farming operation?
- What does a start-up operation need to survive?
- And what kind of risk do these producers face?

Be very clear that these are but a few examples of startup operations. My mathematician friends get very upset with me when I say anything is 'near infinite'. But there are numerous specific approaches a specific individual may choose to try to get into farming. We will only look at a few to get some rules of thumb.

The Food and Agricultural Policy Research Institute

Just a short commercial, the Food and Agricultural Policy Research Institute is a joint institute between the University of Missouri and Iowa State University. In addition, there are linkages with Texas A&M University and Arizona State University. The Institute is charged to provide Congress and other decision makers with objective quantitative analysis of agricultural policy options. This is supported by a large-scale economic model of the global agricultural sector that has been in continuous operation for more than 20 years. The majority of the financial support received by the Institute comes from Congressional sources, but both universities also provide resources as well.

To conduct policy analysis, the Institute develops a constant policy, long-term projection for the sector, driven by macro-economic projections received from Global Insight (formerly Wharton Econometrics). This long-term projection only becomes final after being subjected to extensive peer review.

This long-term projection becomes the yardstick against which all policy options are evaluated. The unit does not self-initiate the options that are evaluated, but rather looks at options suggested by Congress or other decision makers. Any policy analysis developed by the unit is also usually subjected to review by analysts from USDA or other outside organizations.

The unit first received funding from Congress in 1983 and has been involved in the development of every farm bill since, as well as budget reconciliation bills, trade agreements and disaster assistance proposals.

One of the keys to the FAPRI approach is the long-term projection. This allows for policy options to be evaluated in the future, when the laws would actually take effect, rather than being evaluated in the past. In addition, the unit recently received the Group Honor Award for Excellence from USDA for implementing a stochastic approach to policy analysis. Essentially what this means is that rather than assuming ‘normal’ weather and trend macro-economic variables, historical variability is applied to all terms that are outside of the system and 500 possible futures are projected. From these projections, the likely range of prices, production, trade, government costs and farm income are developed.

The Representative Farm System

The basis for much of my discussion today will come from the representative farm

program we operate at the University of Missouri in conjunction with Texas A&M University. The input data for these farms come from panels of producers selected by local facilitators. These facilitators are given the instructions to find producers who make their living from farming and who are likely to remain in farming for the foreseeable future. Information is collected from these producers with respect to production costs, price differences, yields, farm structure etc. This is done in order for us to be able to be able to recreate the financial behavior of a farm that would look like this panel. Be clear, there are no statistical properties associated with these farms. There is no intent for them to represent the 'average' or 'the top 25%' or anything else. Instead, they are 'representative' of this panel. It is also important to understand that these panel farms are not associated with any particular piece of land.

Information from these panel members is combined with the long-term projections for the agricultural sector that are developed by FAPRI. Production costs, crop and animal prices, interest rates and all other factors are taken from the FAPRI baseline and then used to project the likely financial performance of the farm. The variable of particular interest to us today is net cash farm income. Leading up to this variable, the farm has paid all operating costs, the interest costs associated with any outstanding loans. Out of the net cash income the producer must pay all family living expenses, principal payments, income taxes, self-employment taxes and machinery replacement costs. This system provides an indication of the expected financial viability of the farm for several years in the future, with probability statements associated with declining real net worth, cash flow deficit and other financial measures.

These farms are also used for policy analysis purposes. As the FAPRI modeling system generates analyses associated with new policy proposals, the results of the sector-wide analysis are fed through the representative farms and an indication of the effect of the proposal as the farm level is then provided. This has been found to be a very effective communication tool when discussing policy alternatives with decision makers.

We at Missouri are currently involved in two representative farm programs. The first, both in terms of timing and size, is the national program operated by Texas A&M University and ourselves. This system includes 95 farms, spread across the country. These include 53 crop operations, 27 dairies, 8 cattle and 7 hog operations. For a complete description of the farms and an example of how this system interacts with the overall FAPRI projection system it is suggested that the board and their staff go to www.afpc.tamu.edu.

In addition, there is a specific Missouri program that now includes 41 panels, with 17 exclusive crop producers, 14 mixed livestock/crop operations, and 5 beef only, 5 dairy only and 2 broiler operations for a total of 43 farms. Studies using these farms can be found at www.fapri.missouri.edu. The testimony today will focus on some of the characteristics of these Missouri farms to give a guide on farm performance and financial needs. The time limit placed on us for developing this testimony precluded working with the staff at Texas A&M and utilizing the national program farms.

What Does A Successful Farm Look Like

Before going into the beginning farming operations, it is important to understand what some of the characteristics are of farming operations that would be considered successful today. The definition of success used here is that they are expected to remain financially viable over the next several years and are able to generate at least some contribution to family living.

In order to provide a range both in terms of geography as well as operation type, eight example farms will be examined. These range from typical grain/soy cropping operations in the Northeast corner of the state to rice/soy operations in the Southeast, from hog/corn operations in the west central portion of the state to dairy and broiler operations in the southwest. Table 1 indicates the characteristics of these 8 farms.

Table 1. Characteristics of Example Farms

Farm Number	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Region	Northeast	West central	Southeast	West central	South central	Southwest	Southwest	Southwest
Category	Grain-soy	Grain-soy	Rice-soy	Crop-Pork	Beef	Dairy	Dairy	Broiler-beef
Acres of cropland (incl. hay)	1150	800	400	550	50	260		40
Acres of pastureland				285	775	110	260	160
Share of land owned	32%	53%	51%	54%	83%	86%	100%	100%
Cows				70	150	85	130	50
Hogs				2 nurseries				
Broilers								4 houses

The size of the operation both in terms of land worked and owned as well as the livestock complement is also shown. The amount of land owned versus rented on these farms were again suggested by the panel members as being 'representative' of these types of farms in these regions. For example, the Northeast corn/soybean operation owns less than a third of the total land farmed, while the Southwest diary operation owns all 260 acres of pastureland used on the farm.

Consider the Northeast grain/soy operation. The producer farms on 1,150 acres of land with 368 acres owned and 782 acres rented. The crop mix associated with this farm is assumed (based on panel input) to be 208 acres of corn, 185 acres of sorghum, 75 acres of wheat and 764 acres of soybeans. A quick eye will note that this totals more than 1,150 acres as the producer does double crop some of the wheat area.

Given FAPRI's projections of market price, government program benefits, input costs and the panels yield inputs. In 2001 this farm produced total cash receipts of $291,000. Over the 2002-2006-time period, the combination of market returns and government payments are expected to average $259,600, with government payments making up $53,600 of that total. On the land this farm rents, half is on a 50/50 crop share basis and half is cash rented at $80 per acre. Subtracting rental, other operating costs and any interest payments on outstanding debt leaves net cash farm income for this farm is expected to average $93,200. From this, the producer must pay any taxes (including federal and Missouri income taxes as well as employment taxes), pay off any carryover debt, make principal payments for debt reduction and cash down payments for scheduled

capital replacements. This figure however, does not include any carryover cash from prior years.

In addition to this cash flow information, the asset base of the operation is also very important. In 1999 the panel indicated that land prices for agricultural purposes were going for $1,800 per acre. With land price inflation, the value of the land on the farm would now be expected to average just over $2,220 per acre. The machinery complement for the farm has been fairly stripped down, but even so totals $240,000. The total fixed operator assets then are $1,085,000, with the landlords owning another $1,449,000 in land. This implies that the total asset base associated with this farming operation is over $2.5 million.

Returning to the income stream, the farm's $93,210 average net cash farm income drops by $18,000 to pay taxes. Through discussions with the various farm panels and other work, withdraws for family living expenses are a function of the beginning cash reserves of the farm, the 5-year average cash flow from the farm and other factors. For a farm of this revenue level, the model suggests an average of a $37,000 withdraw from the farm for family living. This leaves $48,390 for debt service and/or depreciation expenses. At an annual interest rate of 7.5% for a ten-year loan, this farm could sustain a debt of $332,000. Subtracting this from the operator owned asset base suggests that the producer would need $753,000 in positive net worth to make this farm work.

In a similar fashion, net cash farm income, taxes, family living withdraws, debt coverage income and minimum investment needed for the farm for this and the seven other operations are examined in Table 2. Again, this is the amount of net worth needed, either in the form of cash, land or other assets, that would be needed to buy the operations indicated and to return the family living expenses suggested.

Note that these investments are highest for the example just discussed and are lowest for the dairy and broiler/beef operations. The dairy operation looks to be able to sustain a beginning debt ratio of 78%.

One option of course is for the family to bring income to the farm to cover family living expenses from outside sources and even live a little more frugally in order to establish the asset base for the farm. Several options on this theme could be examined, but for now consider an assumption that the farm brings in $25,000 in off farm income and that family living has been adjusted from the levels indicated in table 2 to $25,000 across the board. For some farms this is a reduction, in other cases an increase. The rise in income from the off farm sources is not free. It boosts tax costs associated with the operation. Table 3 provides an indication of the level of debt the farms would likely be able to sustain. Notice that the example farm discussed before now only needs $549,000 in investment, but must be willing to carry $536,000 in debt. The dairy operation has a negative minimum investment needed, thus this farm could get up theoretically with 100% financing.

Again, these are established farms and the dollar amounts indicated are what are needed to have an essentially turnkey operation. While it is unlikely that a beginning or young farmer would necessarily feel that they needed to start at this level, it does give a good indication of the capital needed for the various types of operations. As the tenure of the family on the farm extends and debt is paid down, even the Northeast grain/soy operation generates an asset base that would quickly approach more than a million dollars.

Doing It On The Cheap

Clearly finding a half-million dollars to invest in a farming operation may be a challenge. There are a number of other approaches to getting the farming operation started that may be taken. Consider the Northeast grain/soy operation once more. Rather than buy land and the associated costs that go with land purchase, the producer may elect to rent the entire crop area. Further, the producer may elect to operate with somewhat less equipment at startup than would be the case for a well-established farm.

A set of assumptions have been made around five of the panel operations in order to convert them to a start-up operation as opposed to the established operations shown in tables 2 and 3. Highlights of the changes made to convert the established operations to beginning farms are detailed below:

Northeast Grain/Soy Operation

From the $240,000 in machinery for the established farm, the complement was cut to $207,000 and the maintenance cost bumped slightly to account for older equipment. It is also assumed that the beginning farmer would pay a higher land rental rate as the landlords may feel a higher sense of risk. Rather than charge the $80 per acre rate in the established farm, a rate of $95 per acre was charged. Further, cash rent was assumed for the entire operation as opposed to a mix of shares and cash. Because the farm would be totally cash rented, all government payments would accrue to the producer.

West Central Grain/Soy Operation

Equipment compliment cut $35,000. Other assumptions in terms of increased land rents, equipment maintenance costs etc., similar to Northeast operation.

West Central Crop/Pork Operation

Farm effectively gives up the cropping operation. All land not required for sighting the houses would be given up and thus equipment compliment stripped to bare minimum. Each house is assumed to cost $190,000 for a turnkey operation and further assumed that producer would have ability to spread manure on someone else's land.

Southwest Dairy

This continues to be a grazing based dairy operation and as such, it is assumed that the producer still needs to own the land given pasture improvement, watering facilities etc., required by a pasture based dairy system. Evidence in anecdotal,

but one of our panel members started their pasture based dairy operation with only a 4-wheeler as his entire equipment complement.

Southwest Broilers

Again, broiler houses assumed new at the start of the analysis period. Producer has minimal land and equipment to go with the operation and animal waste disposal dealt with off-site.

Here again, two options were evaluated. One assumes that the family wants to continue to pull higher levels of family living expenses out of the operation, another makes the assumption that off farm income will exactly offset family living expenses at $25,000 per year. Note that the Southwest broiler operation cannot afford family living withdraw. Tables 4 and 5 go through the same information as for the established operations.

Under the family living withdraw scenario, the Northeast grain/soy operation needs to come up with $135,000 for equipment purchase, given the equipment costs of $207,000 and their ability to carry a maximum debt load of $72,000. Similarly the West Central grain/soy operation basically needs to purchase the entire equipment complement with cash as the revenue stream the farm will generate would support less than $17,000 in debt. This would be a very risky operation as only a very small change in revenues through yields reductions, cost increases or market price/government support dips were to occur.

The pork operation here as discussed above is essentially just that, nothing but hogs. With the crop and beef operations stripped away the two nurseries on 50 acres of land leaves a very lean operation. The cost of buildings make up the majority of the debt associated with this farm, and until they are paid down, the producer is looking at a somewhat better situation than the crop producers. The net cash farm income would be sufficient to support over $200,000 of debt, but the cost of the houses are such that the producer would still need to be able to put over $250,000 cash into the operation to make the budget work.

The 130 cow southwest pasture based dairy operations has become one of the most interesting farms in our entire mix. With non-labor operating costs fairly low, due to the limited need for purchased feeds, the farm is able to generate the highest amount of net cash income for investment dollar of all the options examined. The ratio between the minimum investment needed for operation on the dairy operation is over 1, while as each of the other four operations the ratio is in the .2 to .4 range.

The broiler operation will be a significant risk. Putting up even just the 2 houses indicated here is very expensive and does not generate sufficient revenue for the family to make any withdraws for living expenses. Thus a broiler operation must have off farm income or other outside investment to show any feasibility.

With off farm income and thus no family living expenses to support the situation becomes much different. Both grain operations, where the capital outlays are only for equipment, are able to cash flow without outside investment, as is the case for the dairy operation. Starting cash needs for the pork operation dip to less than $50,000, but the broiler farm still need over $150,000 of investment to get started.

The lessons to be learned are no great surprise. The less investment required to get the farm operating, the greater the likelihood that it will be able to contribute to family living costs. The crop operations, with only minimal equipment needs to get started, show the possibility of being viable, if the producer does not have to contribute to family living costs to start with. Plowing the $30-$40,000 of revenue back into these grain farms would allow the operation to buy some land and additional equipment, but would take a long time. And again, for the gross revenue generated, the margin is very small.

The dairy operation is essentially translating sweat equity into income in fairly quick order. But don't forget that the labor involved in dairy operations is intense. It may not be a 24/7 job, but the denominator is certainly /7. Again, this farm uses minimal off farm inputs and as such, requires heavy management involvement in moving animals from one pasture to another on a regular basis. The fences must be maintained, water supplies must be in good shape, and yes, the cows have to be milked every day, at least twice a day.

How Risky Is This

Because of the timing involved, this study does not look at the risks associated with the beginning farms, but does go back to the established operations to look at the probability these operations may face cash flow deficit situations. The likelihood that the beginning farms will also face a cash flow problem will only be higher than those associated with the established operations.

The probability of a cash flow deficit is generated by operation of both the farm level simulation and sector wide models. The sector wide models are solved initially under an assumption of normal weather and trend economic growth. These assumptions are then relaxed so that yields, market prices and other input costs are also allowed to vary from trend in a fashion consistent with historical behavior. For example, when corn yields are down, soybean yields have historically followed suit. Conversely, there is little correlation between corn and cotton yields. The variability in these revenue and cost related variables are then passed through the farm level models. Cash flow performance of the operation is evaluated and the number of times out of a set of 500 simulations that the farm fails to meet all operating expense requirements in a particular year are counted, thus giving the probability of a cash flow deficit.

Table 6 gives these probabilities for the 2006 marketing year. A cash flow deficit implies that the farm did not generate enough revenue to cover all operating, interest, family living and tax liabilities and was forced to carryover debt into the coming year. Once a farm starts down this slope, as many on the board are familiar, it gets very slippery. It is

very rare that we have found that our representative farms are able to recover from a deficit situation, unless the markets make a sharp turn around, or government payments are available to play a much bigger role.

One example of where government payments are playing a large role shows up in the Southeast rice/soy operation. Notice that the probability there of a deficit situation is only 1%. Government payments on this farm make up 36% of cash receipts while on the two grain/soy operations, government payments account for only 20%. Given that 53% of the acreage on the rice/soy farm is devoted to rice production, the cash receipts on that farm are very stable.

Conversely, both dairy operations show an increased probability of a cash flow deficit in 2006. Examination of the time series leading up to 2006 shows that the farm is fairly profitable, and the smaller operation is consistently more vulnerable than the 135 cow operation. This is certainly shown in the financial information provided earlier. The reason for the bump in the likelihood of a deficit in 2006 is directly tied to government policy. The 2002 farm bill provides for Dairy Market Loss payments through 2005. For this farm, these payments will amount to nearly $21,000 per year. With the end of that program, the farm sees an immediate drop in cash receipts and thus the increased likelihood of having a problem.

Table 6. Probability of a Cash Flow Deficit on Established Farms With Family Living Withdraw

Farm Number	1	2	3	4	5	6	7
Region	Northeast	West central	Southeast	West central	South central	Southwest	Southwest
Category	Grain-soy	Grain-soy	Rice-soy	Crop-Pork	Beef	Dairy	Dairy
Probability of Cash Flow Deficit in 2006	30%	18%	1%	1%	39%	47%	13%

So What

What does all this mean about start-up farmers? As was said at the outset, it takes a considerable investment to make it in farming. It takes a considerable investment to make a restaurant work. The farm examples that were examined here should be considered anecdotal at best. They represent a few farms in one state. It would be a good idea for Administration staff to discuss a number of other cases or case studies in order to evaluate the kinds of minimal investment required to make an operation work.

It should be clear to all of us as well that the asset base discussed here doesn't always have to be cash. If a family member has equipment available for the beginning farmer to use, it may have the same effect as ownership for a few years. Again, the beginning farmer usually has a lot more labor than capital available to put into the business.

The examples discussed here are also for fairly conventional farming operation, corn/soybean/wheat production, hogs, dairy farms for example. It did not examine some of niche market operations that many have found attractive and profitable. A gentleman many involved in Missouri agriculture are familiar with is named Ray Evans. While Mr. Evans has been very active in the state Department of Conservation, he is known to many

others as the guy who sells edible flowers to restaurants. Any number of other examples could also be cited.

Government payments obviously play a role. The dairies for example operated with less than a 5% chance of a cash flow deficit through 2005, but the removal of the Market Loss payments bumped the likelihood of the smaller operation running into financial difficulties to nearly 50%.

The dairies also point out the importance of size. While the 80 head operation would likely have been in real trouble if the analysis had been run forward a few more years, the 135 head operation looks as though it may be able to survive. Those 55 additional cows are a lot more work, but may mean the difference between survival of a beginning operation and one that would be forced out of business.

The board faces some difficult issues with young, small and beginning farmers. While one wants to be supportive, without the capital to make the business side of the farm work, are we really helping the individual start, knowing that failure is a real possibility? Does that mean that only doctors and lawyers can get into farming? Not necessarily, but it does mean that without access to equipment from some very low-cost source, it will be very hard. And if the producer fails, the debt load that will stay with them will be of sufficient size to take a long time to pay off.

I mentioned the two lotteries, that of inheritance or luck at the outset. In preparing to appear before the board I visited with a producer friend over the weekend. He made sure to point out there is a third lottery when it comes to getting into farming – marry into it.