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Production Risk Management[1]

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Risk is very prevalent in Florida agriculture. Risk is often defined as the possibility that an outcome will not meet expectation. Some of the major sources of risk in agriculture are production and yield risks, market and price risks, business and financial risks, technology, casualty loss risk, legal risk, and human resource risk. How we deal with these types of risk is called "management". Evaluating the possible "what if" will help producers determine the economic impacts of adverse events. A producer's response depends on his willingness to bear risk. Risk management involves bringing together goals with economic expectations and business survival with financial risks.

The term "risk" is often used in a broad way to refer to any sort of uncertainty that is viewed as an unfavorable event. Risk has both downside and upside characteristics. Managing risk means that you weigh the downside effects against the upside. Both will occur with some degree of probability. If the manager believes the upside outweighs the downside, the event or action may be considered.

Risk changes the nature of our decisions and how we make decisions. Risk often forces us to make different and difficult decisions.

Determining the risks to be faced and planning responses to risks will help you meet your cash flow and profit goals. Short-term risks include market prices and higher input costs. Longer-term considerations include the impact of government programs, more strict environmental regulations, and the need to replace farm machinery.

Managing risk is an important aspect of any business enterprise. Planning with respect to risk involves decisions with a multitude of outcomes, each having some probability of occurrence. Producers must consider the various sources of risk in their planning actions and compare the possible outcomes of each strategy. Decisions will depend on how you look at the world and your willingness to assume risk.

These outcomes must then be weighed against the goals you would like to attain. Many farmers may be in a position to take on risks. It depends on your willingness to assume risk, financial situation, and retirement goals. Many citrus producers are in a position to "self-insure" against risk. Financially they are able to survive an adverse event. However, one adverse event may have the possibility of financially affecting future plans, goals, and retirement expectations.

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Managing risk is a very personal thing. Individuals vary with respect to their perception of risk and their willingness to take risk. Many variables enter into the decision making process. How these risks are managed can vary from taking no risk to outright gambling on a hunch. Even if two individuals' perceptions to a risk situation were identical, there is a good chance that their financial situations may dictate different strategies.

To assist in managing risk and to attempt to improve profits, Florida citrus producers have certain management options that may help. Some examples are discussed in the section that follows. With the new rules, stakes, and risks involved in agriculture production, management and planning are essential. Ideas and concepts on risk management include budgeting, marketing alternatives, outlook, asking price, decision analysis, and financing.

Importance of Budgeting

Developing budgets is an important part of the overall farm planning process. An estimate of production costs is important in deciding what types of fruit to produce, borrowing needs, and when and how to sell. Budgets are most easily developed from producers' historic records and dealers' costs estimates. Most universities develop enterprise budgets as guides in estimating production costs. In most cases, these budgets are a combination of prescribed production practices from extension recommendations, research results, and intensively managed farms. Each individual farm is different and budgets should be adjusted to reflect each producer's operation.

Budgets can be useful in giving a clear picture of costs; projecting cash flow needs; and providing help in determining financial needs, break-even prices, asking price, rental rates, land buying decisions, and expansion planning.

Management Ideas and Options

Market situations constantly change. Profit margins still remain tight enough that careful planning remains very important. All facets of producing and selling a citrus crop should be analyzed. Additional management considerations include the following:

- Evaluating types of citrus being produced, production requirements, potential problems, costs, yields, and markets.
- Having knowledge of costs (to a narrow range) and break-even yields at various yields.
- Determining asking price for commodities considered.
- Analyzing various sources of outlook to determine if price is available in a particular year. (Forces growers to assess markets.)
- Attempting to stabilize or reduce costs without sacrificing yield.
- Using extension-recommended practices if more economical.
- Searching constantly for improved marketing schemes.

Deciding If Changes Are Needed This Year

From a financial and management standpoint there are certain financial statements and management exercises that producers should consider. The following is a list of steps to include in deciding what to do this year:

- Pull a net worth statement. This will tell you what financial resources are available.
- Project needed incomes for debt commitments, family living expenses, and operating needs.
- Analyze last year for lessons to be learned from that crop. (Field and financial records are best, budgets are an acceptable substitute.)
- Become familiar with the outlook for commodities that may be produced.
- Estimate all costs of production.
- Develop an asking price for the types of citrus that are being produced.

- Develop a cash flow plan.
- Determine if the current plan will likely provide enough money to cover needs.

If the plan looks workable, concentrate on lining up inputs cheaply; honing the marketing plan; and doing the important things well and, above all, doing them at the right time.

If, however, there probably will not be enough money to cover needs, then

- Review managerial abilities, preferences, recent performance and goals.
- Review the available resources.
- Explore possibilities for concentrating on profitable citrus varieties, being careful to preserve the ability to perform well with what has already been planned.
- Decide of a plan of action and implementation.
- Make time each week for marketing decisions. Know what price you need, and constantly watch the market.

Developing An Asking Price

A useful planning exercise that all producers should complete is to develop an asking price for each commodity being considered. A work sheet is included for this exercise (Table 1). To develop an asking price, a producer must estimate growing costs, consider yield prospects, analyze the markets, decide on a management fee (salary), and determine profit objectives. Once the manager has determined his asking price, he needs to decide if that particular price is available this year. If the price does not appear to be attainable, the producer needs to make some critical decisions. Decision options include reducing production costs, increasing yields, lowering management fees, decreasing profits, and evaluating alternative varieties.

Profitability and Risk

In most agricultural enterprises, there can be great risks without great wealth to be gained. Decision trees can help sort the possibly profitable from the purely risky.

Suppose a grower wanted to analyze his income potential for citrus. What yields could he expect to make? He thinks he can expect about 400 boxes per acre, but is worried that his yields might be as low as 320 boxes per acre, and figures that 480 boxes is as good as he is likely to do.

What about prices? Beforehand, by looking at outlook information, a reasonable range appears to be between $4.50 and $6.50 per box with a most likely price of $5.50 per box.

So far, so good. We have yield and price projections, but we need an estimate of how likely these different yields and prices are. We can use probabilities (historical probabilities on yields if the information has been available in the area for any length of time) and adjustments from other areas history (if local information is not available). The common sense approach is to be conservative on yield expectations, and maybe weigh the lower-yield possibilities a little heavier.

For illustrative purposes, a grower believes he could produce 400 boxes seven years out of ten, 320 boxes two years out of ten, and maybe as high as 480 boxes at least one year out of ten. These probabilities are based on as much information as possible but, in many cases, even yield probabilities will involve a good deal of subjectivity.

Prices are more subjective yet, but the producers can get an estimate of the consequences of some “what if” situations without a great deal of extra work by utilizing outlook information and intuition that seems to guide a good many of the better managers' decisions. In the example shown, the producer expects a price of $5.50 per box, and gives this a 60% confidence level. He feels there is a 20% chance of the price being $4.50 and a 20% chance of the $6.50 price.

If the estimated cost for growing citrus is $1,800 per acre, we can estimate the chances of making a return above these costs. Placing this information into a decision tree, there is an overall expected value of $410 and an 82% chance of positive return. In most agriculture ventures, this would have a very high likelihood of making a profit.

Working through a decision tree forces the decision maker to ask: What will it cost to grow this crop? What are the yield possibilities and the likely price ranges? Simple arithmetic can be used to summarize the consequences of things being better or worse than planned. The really important thing is that the production and marketing parts of the planting decision are tied together before some production decisions are made.

Yields

Estimating yields is important in production planning. Yields are very important in determining break-even prices and profit potential. Producers need to be realistic about their potential yields. Perhaps a range of yields should be used in planning to evaluate best and worse situations.

Yields to be considered include the following:

- Historic yields (from a particular farm or grove).
- County yields.
- Neighbor yields.
- Yields from a particular soil type.
- State averages.

Field Records

Keeping records on all fields should be a normal practice in the farming operation. These records will pinpoint problems, enhance decision-making, and possibly provide information on lowering costs.

Keep records for each field showing:

- Type of citrus crop.
- Variety.
- Tree population.
- Disease problems.
- Type of herbicide(s).
- Weed problems and kinds of weeds.
- Type and amount of fertilizer.
- Date and amount of fertilizer.
- Date and amount of lime applications.
- Date and amount of water application.
- Harvest date.
- Citrus yield.

Table 1. Developing the Asking Price.

CITRUS	EXAMPLE FARM
EXPECTED YIELD PER ACRE: 400	
VARIABLE COSTS PER BOX ($700 ÷ 400)	$1.75
plus	
FIXED COSTS PER BOX ($300 ÷ 400)	$ .75
plus	
HARVEST COSTS PER BOX ($800 ÷ 400)	$2.00
equals	
TOTAL COSTS PER BOX	$4.50
plus	
DESIRED RETURN TO MANAGEMENT PER BUSHEL (10%)	$ .45
equals	
TOTAL PRODUCTION COSTS PER BOX	$4.95
plus	
TARGET PROFIT PER BOX (10%)	$ .45
equals	
ASKING PRICE PER BOX	$5.40