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Farm Management — UNIVERSITY OF IDAHO Risk and Uncertainty

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While every business endeavor faces some risk and uncertainty, the farm manager's decision-making environment is associated with more risk and uncertainty than most types of business.

The farm manager must contend with incomplete knowledge about future yields, market prices, technological innovations and government actions, including farm programs. The manager must deal as well with the uncertainties of weather, insects and disease. Some of these factors — weather and variable prices caused by international market conditions, for example — are beyond the manager's control.

Nevertheless, despite the risk and uncertainties involved, the farm manager must make decisions about production and marketing. Decisions are made based on expectations. This implies an acceptance of the risk (probability of an unfavorable outcome) associated with making the decisions. Profit is considered a return to this risk. Thus, the objective of decision-making should be to manage risk in such a way that profit is achieved.

Generally, risks can be managed by developing management strategies to counteract uncertainty. The appropriateness of any strategy depends on the farmer's resources, objectives, attitudes about risk-taking and type of farm and farming environment. While a number of strategies can be used to reduce risk, they may also reduce the potential for profit in some years. Here are examples of strategies that may be used to reduce risk and uncertainty:

- **Insurance**, including both liability and crop insurance, substitutes a certain small cost for the possibility of a large uncertain cost.

- **Diversification** reduces variability of net farm income by producing multiple products. This strategy may sacrifice higher net farm earnings in the long run, however, and works only if products are not affected by the same market factors.
- **Resource reserves** protect managers from being caught short of particular resources. For example, invest in excess machine capacity to ensure that production practices will be done on time.
- **Resource flexibility** involves selecting tools, equipment and facilities that can be used for more than one purpose, thus allowing flexibility in total resource use and enterprise selection.
- **Contractual agreements** establish a price for a specified product for a particular time period. Thus, the risk of price decline is reduced and market access is assured in advance of production. By reducing risk of a price decline, however, managers lose the opportunity to benefit from a price increase. They continue to bear the yield risk associated with production.
- **Production management** involves the selection of appropriate technology and production practices to protect against yield risk, i.e., the selection of plant varieties that are resistant to certain diseases or planting techniques that allow for weed control.
- **Hedging** protects against price changes. The manager makes a transaction in the futures market opposite to a cash market position. This establishes in advance an approximate net price for a farm product. Successful hedges not only protect farmers against price loss but also prevent them from sharing in a price gain.

- **Options** provide protection against downside price risk with the underlying futures contract but leave the potential open to participate in price increases.

Risk and uncertainty are associated with nearly all management decisions whether they are production decisions (how much to produce, how to produce and what to produce) or marketing decisions (how to market, when to market and where to market). How a manager deals with risk and uncertainty can be the difference between profit and loss and, in many cases, between survival and nonsurvival. Successful farm management requires the ability not only to make decisions, but to make the right decisions.

“Right” decisions are not made in an unorganized, unplanned environment. By performing certain functions, management creates the environment within which “right” decisions can be made. The essence of good management, then, is complete and thorough performance of the basic management functions. These basic or primary functions of management may be defined as **planning, implementation and control.**

Planning

Planning is essentially the management function that decides today what will happen in the future. This function has four basic components:

1. Identifying and defining the problem.
2. Acquiring the necessary information to evaluate the problem.
3. Identifying the alternative solutions to the problem.
4. Identifying the possible outcomes of alternative solutions.

One of the major decisions a manager must make in the planning function, particularly when he/she is beginning to operate a farming enterprise, is to determine the appropriate cropping system that will maximize profit for the specific operation. To determine this cropping system, the manager must identify the problems associated with initiating and carrying out a cropping system on the specific farming operation. For example:

- What disease and pest problems might one expect to encounter with different crops? What is the best way to control these problems? Should a crop rotation plan be established? Should chemical application be used? What varieties are most resistant?
- How will climate limit the farm operation? Does the length of growing season limit the types of crops that can be grown? What varieties are best suited? When must crops be planted so they will mature before frost? When should harvest be completed to avoid weather problems?
- What are the limitations caused by topography? Is erosion a problem? If so, should sod crops be included in a rotation or should strip cropping, contour cul-

tivation, diversion ditches, etc., be used to reduce erosion? Does topography restrict the type of irrigation system to be used? Are certain types of specialized equipment needed to till, plant and harvest crops?

- What are the weed problems, if any? Should special row spacing be considered so weeds can be controlled by cultivation? Should a certain crop rotation be used? Will chemical application solve the problem?
- What are the potential problems associated with soil structure and soil tilth, particularly as related to water-holding capacity or absorption rate, if irrigation is to be used? Will this restrict the type of irrigation system that can be used? Will it be necessary to use a green manure crop in a rotation? Will it be necessary to use specific types of tilling methods such as deep till?
- What are the potential harvesting problems related to specific crops? How are these to be solved? Is special harvesting equipment required? Should custom harvesting be considered?
- Do markets exist for the crops under consideration? How should marketing be handled? Should crops be marketed at harvest? If not, how will storage be provided? Should the crop be forward-contracted or hedged?

This listing is not exhaustive, but it illustrates the types of problems that need to be identified, the types of information required to evaluate the problems and the types of alternative solutions that need to be identified. Once these are identified the manager can develop alternative cropping systems adaptable to the specific operation.

The next step is to prepare an enterprise analysis that estimates yields that could be obtained under the various cropping systems and estimates production costs and prices expected for the products. With this analysis, the manager can evaluate the potential profitability of each crop and the overall cropping system.

A detailed cropping plan looking 10 to 20 years into the future is of value. This forces the planner to think through the implications of alternative lines of action even though farming conditions (prices, new technology, farm programs, etc.) are not likely to remain so static that rigid adherence to a long-range plan will be the most profitable situation. **Planning is a continual process** not a one-time action.

Implementation

Once the basic overall plan has been determined, it must be initiated and carried out. This involves:

1. Securing the necessary resources.
2. Organizing the use of these resources.
3. Staffing the labor and management requirements of the system.

4. Directing the use of resources for optimal performance.
5. Coordinating all activities to make optimal use of all resources.

The types of managerial actions required to do this include:

- Ensuring that proper and adequate equipment is on hand to perform the tilling, planting, cultivating and harvesting required by the cropping system selected. This includes determining the number, type and size of machinery to be used. In addition, a system of scheduling and recording maintenance and repair must be established. Preventive maintenance can reduce unnecessary breakdowns and reduce lifetime repair costs. Complete records of repairs on individual machines will help identify machines with higher-than-average repair costs. A scheduled maintenance program is particularly critical for an irrigated crop production system because of the additional equipment required (engines, pumps, water distribution equipment, etc.) and the need for this equipment to function properly so that water can be applied to the crop in the proper quantity and at the proper time.
- Ensuring that input items (fertilizer, seed, herbicides, insecticides, etc.) are available at the time needed and in the quantities required. This basically involves pre-season arrangements with suppliers.
- Ensuring that proper cultural practices are adhered to. For example, continual surveillance of growing crops is necessary to identify and correct problems before significant damage occurs. An uncorrected weed problem can severely affect the harvesting process or an insect or pest problem can severely reduce yields. If the cropping system includes irrigation, it also must be continuously monitored since a breakdown could critically affect the crop. If the manager gives proper attention to detecting and correcting problems as soon as they occur, damage can be minimized, if not eliminated entirely. Schedules must be established to ensure that preventive cultural practices — weed, pest and disease control — are carried out at the proper time.
- Ensuring that competent labor and management are employed, trained and supervised so the various tasks are performed in accordance with planned activities. Complete instructions and proper supervision must be given during the initial training period. In many cases, this initial training period may extend throughout the entire production process so that the new employee has had a chance to perform all of the tasks in a complete cycle of crop production. Even long-time employees need periodic training. The adoption of new technology (a new irrigation system, for example), new varieties, new crops or new chemicals

usually requires additional training of both labor and management. Employees may have to be certified to apply certain chemicals. Finally, establishing and supervising daily work schedules of employees is critical to the success of any farming operation.

- Ensure all production activities are coordinated so they are completed on schedule. Planting schedules of various crops must be set to eliminate conflicts during harvest operations. All activities associated with producing and harvesting a specific crop need to be coordinated. For example, a sequence must be established for harvesting an irrigated alfalfa crop so that the cut alfalfa is baled before quality deteriorates and the baled alfalfa is removed in time for the next cutting to be irrigated properly.
- Ensure that production and marketing are fully coordinated. Markets should be identified before a product is produced. Further, production must be designed to produce the type of product required by the market and to supply the product when demanded. For example, contracts call for delivery of a specific quality product at specific times. If production practices are not coordinated to meet specifications, a market may be lost.
- Ensure that the various steps in the marketing process are fully coordinated. Often a product is not marketed at harvest, but rather placed in storage for later sale. If this is the method of marketing, proper storage must be arranged for and the product must be harvested under conditions that will result in a storable product. Potatoes should be free from excessive bruising and be of proper temperature when placed in storage, for example.

Again, this listing is not exhaustive but it illustrates the type of activities that must be carried out to implement adequately the basic overall plan.

Control

The results of the implemented plan must be monitored to evaluate whether the plan has been effective. The control function sets up a continuous cycle of planning, implementing, monitoring and recording progress and evaluating. Comparisons of the plan to actual operations can show where changes may need to be made to ongoing operations or to the plan, or both. Critical to the success of the control function is an accurate record-keeping system and the ability of management to interpret the information developed by the system to make effective decisions for future operations.

In summary, farm managers must make production and marketing decisions in an environment of risk and uncertainty. And they must be willing to accept the risk associated with making these decisions. Successful managers adequately and completely perform all of the elements of the basic management functions — plan

ning, implementation and control. Developing management strategies for the production and marketing activities of the farm operation, within a framework of these functions, can reduce risks to counteract uncer-

tainly. How well the manager deals with the risk and uncertainty can be the difference between profit and loss. In many cases, this may mean the difference between survival and non-survival.

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