Chapter 3

Crop Management in Cotton

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A cotton cropping system includes cultural practices, harvest management, economics, and marketing which interact and cannot be considered independently. All parts of the system combine to impact each other and profit. By merging components of decision making, producers can better "manage" their cotton crop. Management is the utilization of components in a systematic fashion with the ultimate goal of profit. Such factors should be examined for their short- and long-term effects.

Producers who manage their cropping enterprises have an intuitive "feel" for the risks involved with any given situation. Field, crop, and variety selection are done in a planned manner weighing potential pest problems, yields, and net returns. Producers who maintain good records of their management problems, decisions, yields, costs, and profits can make more sound decisions over time.

One of the most important decisions a producer must make is the "yield goal" for each field. The goal determined should give the producer an idea what level of fertilizers (particularly nitrogen), pesticides, and other inputs are required to reach that goal. Budgets allow the producer to determine the likelihood of achieving a profit. They also allow the producer to reexamine his situation and change inputs to improve his net income.

The most important keys to profitable management are field monitoring, maintaining good records, and using those two factors to make better decisions. Without cropping histories and up-to-date field information, critical and profitable decisions are less likely. The best way to obtain this information is check the fields on a periodic basis and keep records of short- and long-term situations. Making effective economic, crop, and market management decisions should be each producer's goal.

Soil Sampling

Critical components of any crop management program include soil sampling and the calculation of soil nitrogen requirements based on projected yield goals. Soil samples should be obtained from each field and from different soil types within a field. A standard recommendation is to take at least one soil test from each 40- to 80-acre homogeneous field. Separate soil samples should be taken for the 0- to 6-inch (surface) and 6- to 24-inch (subsoil) layers. For the surface sample, at least 20 cores should be taken randomly throughout the field, mixed together, and a pint of soil withdrawn from the mixture. Subsoil samples are more difficult to take; but at least 10 cores should be taken, mixed together, and a pint withdrawn to be forwarded to the soil lab. Soil probes and more detailed information on soil sampling are available at your local county extension office.

Crop Monitoring

Crop monitoring is the process of walking through a field and stopping at certain places to look for potential crop or pest problems. The number and pattern of stops and samples taken depend on the field size and pests that are sampled. Monitoring (or scouting) has been used for several decades to carefully check plant growth, fruit set, potential problems (especially for pests), and what action is needed. To improve efficiency, the cotton crop must be monitored closely at least once per week during the growing season.

When observing symptoms of stress or pest damage, take note of any patterns that occur; note whether symptoms appear only on scattered plants in certain areas or are generally distributed throughout the field. Weather and soil conditions should always be taken into consideration. Moisture is particularly important because most pathogens are spread by water or require moisture for infection and because insect, disease, and weed problems are greater with higher moisture levels.

Sampling locations should be chosen to represent the field and should be selected using a predetermined random pattern. The following is an example of a suggested scouting routine.

1) Know the field history, soil fertility levels, and pH of the soil.
2) Walk a random pattern through the field, but ensure that the field is thoroughly covered.
3) Sample without 50 feet of each border as weed and insect pests often enter a field along its margins.
4) Randomly select the sampling areas.
5) Carefully observe the plants you are sampling. In the early season, obtain a stand estimate in plants per acre. If row spacing is 40 inches, this can be accomplished by counting plants per 13 feet of row and multiplying by 1000. When the plant is squaring, estimate squaring rate by counting the number of squares present per 13 row feet and again multiplying by 1000. Four (3.33 feet) subsamples from different parts of the field should be taken and totaled to give a more realistic estimate for the field as a whole, rather than one 13-foot section of row.
6) As you sample for pests, carefully note the condition of plants for water stress, nutrient deficiencies, and fruit set.
7) After obtaining counts, refer to appropriate sources to determine what treatments are economically justified, if any.
8) Any pest or symptom encountered that you do not recognize should be identified by taking samples to your county extension office.

Crop management with short- and long-term planning as well as periodic monitoring will help ensure profitable, environmentally sound cotton production. Producers who do not utilize such a system suffer an increase risk of a catastrophe that would greatly reduce or eliminate their profit.