approximates soil texture. The higher the number, the greater the amount of clay present in the soil. With sand, lower EC numbers represents a higher level. Although the numbers may vary from field to field and especially from different regions based on soil formation, EC still provides an excellent method of determining soil texture within a field. A field can be divided into a number of zones (anywhere from 3-7 would be average) based on the ranges of EC detected within that field. Nematode samples can be collected from the different zones to obtain some idea of nematode types and populations. If similar zones are widely separated within a field, you may need to collect soil samples from each area. Grid sampling doesn't take into consideration soil texture but could at least give you some idea of nematode presence and levels within a field.

Usually, the zones with the lowest EC reading are the most likely to be damaged by Southern root-knot nematode. Producers are likely to already be aware of these areas in a field since they have likely seen damage occur in the past. Depending on the field, this may be only the first zone or may even several zones. The lightest texture zones are likely to require the addition of an extra nematicide or even a fumigant. Most of our producers are currently using only seed treatment nematicides which may not be very effective if nematode populations are very high. In fields which have additional problems with reniform nematode, damage may extend into additional zones that have more clay or even are so heavy that root-knot doesn't occur there. The problem is to determine where damage is occurring in a field. Yield monitors can be a great indicator of where the problems are occurring in a field. Simply look at yield maps of the field from previous years to determine where high and low yielding areas occur. In this heavier soils that seem to be yielding well (field average or better), nematicides may not pay off. The use of verification strips (nematicide-treated and untreated rows running through the various soil zones) can be used to verify that you have determined the best zones.

You may need to consider your crop rotation scheme when determining zones to treat. Cotton after cotton will likely give you the greatest number of zones to treat since it will build up both types of nematodes. Rotation behind corn will help against reniform and may give you considerable benefits especially in zones that may be slightly heavier in soil texture. Two years in corn are the best for reducing reniform nematode but even one year seems to help considerably. Soybeans can either help or hurt you depending on the variety that you select. There are some resistant varieties against Southern root-knot that would reduce levels of this nematode. Very few varieties have any resistance against reniform. Soybean can be an excellent host for reniform nematode and leave extremely high levels after even one year.

Program 7C-2

▸ Are Multi-Cropping Systems Less Risky Than Mono-Cropping Systems?

Presented by Dr. Kenneth W. Paxton

Professor, LSU AgCenter

Shrinking margins in farming during recent years have heightened the need for farmers to not only increase net returns, but to seek ways to minimize the variation in those returns. The LSU AgCenter has conducted a number of experiments that evaluate alternative production systems. These systems were designed to not only protect and enhance the environment, but also to potentially increase returns to the producer. The studies reported on here include an evaluation of various double-cropping combinations of cotton, corn, soybeans, and wheat along with mono-cropping of those crops. The basic objective of the study was to compare the performance of the various double-crop systems with mono-crop systems for the same crops. While previous studies have evaluated the average returns from the various experiments, this report evaluated how the systems perform from a perspective of risk.

Double-crop systems have some appeal because they offer an opportunity to obtain revenue from two crops during a single year. This may help spread risk because if one crop falters (either production or price) the other may help offset those losses. While the year-long double cropping system has been around for a long time, adoption has been modest. Recent changes in crop varieties and production technologies make double-cropping a more viable alternative. There are some drawbacks to double-cropping. Primary among these is the inability in some years to plant and harvest the main crop in a timely fashion. This, in turn, may result in decreased yield compared to the mono-crop system. One of the primary risk factors associated with double-cropping is the lack of moisture at planting time. Data for this analysis was obtained from an irrigated experiment. Therefore, the ability to irrigate is one critical assumption of this analysis. Double-cropping systems also offer some benefit to the environment because year-long cropping practices with winter cover or grain crops increase surface residue, reduce erosion, and help improve surface water quality. Combining these year-long cropping systems with no-till production practices helps build organic matter in southern soils.

The basic approach used here is to take results of the agronomic experiments and apply standardized budgeting techniques to generate a series of enterprise budgets representing each of the production systems. Commercial scale production technology is assumed in developing the budgets. Enterprise budgets provide the basic information for comparing the cropping systems within a risk framework. Gross margins from the enterprise budgets are analyzed using stochastic dominance techniques. This technique considers both the expected value and the variance in gross margins from each of the production systems. Data for the analysis includes results over the life of the experiment (2001-2009).

Data from the experiments were converted to rotational acre basis, so that this analysis is based on the productivity of an acre of land. For example, if we are considering a soybean and wheat double crop, each acre devoted to that cropping pattern would have costs and returns associated with those two crops. Alternatively, if we are considering a rotational cropping pattern, such as cotton one year and corn the next, each acre would be divided so that one half would be cotton and the other half corn with the associated costs and returns. This would represent a whole farm, half of which would be in cotton and the other half in corn annually. More complicated rotations are similarly represented.

The original experimental design for this experiment included 15 different cropping systems including double-crops, rotations, and mono-cropping. For purposes of this paper, only a sub-set of those experiments is included in the analysis. This sub-set is composed of those tests that had the highest average return per rotational acre over the life of the experiment. A set of double-cropping and/or rotational cropping systems are compared to the mono-crop alternatives.

Alternative cropping systems are compared within a framework that considers not only profitability but risk. This study utilizes stochastic dominance techniques to evaluate the alternative systems. Previous studies based on these experiments indicated that, for the data considered, the wheat-cotton double-cropping system was, on average, most profitable. The current study evaluated data over the life of the experiment within a stochastic dominance framework. Results of this analysis indicated that the wheat-cotton double-crop was also the preferred cropping system considering risk.

14th Annual National Conservation Systems Cotton & Rice Conference

RICE PRESENTATIONS

Program 15R-2

Rice Blast Management Methods

Presented by Dr. Don Groth
Professor, Research Coordinator, LSU AgCenter

Blast, caused by the fungus Pyricularia oryzae, is the most important rice disease in the world. In the United States, it is only second to sheath blight in importance due to its errat-