Improved understanding of hybrid performance by environment (hybrid x environment interaction) is helping Pioneer develop and advance, as well as position hybrids where they have the best likelihood for future success. Even though southern adapted hybrids are identified they need to be positioned locally for best success. Pioneer has developed an enabling technology to better understand the way hybrids differ in their response to environmental variability. The EnClass®(Environmental Classification) system uses several key environmental factors (rainfall, temperature, solar radiation, soil class, etc.) and combines them with a fundamental knowledge of plant growth to better define and understand the influence of environment on differential responses between hybrids. It categorizes conditions proven to impact variations in relative hybrid performance that one experiences locally from year to year or across wide geographies in the same year.All research and side-by-side strip plot locations have been assigned an environmental class, providing a database that contains hundreds of thousands of individual locations, which are grouped by the environment they experienced. Product comparisons are generated from similar and contrasting environments. This unique system has proven particularly valuable in looking at the impact on hybrid performance changes due to weather differences between years, and against the probability of those environmental conditions occurring over time. South sales dealers and growers know different hybrids perform differently each year, depending on environmental factors. Hybrid A may perform better than Hybrid B one year; Hybrid B may outperform Hybrid A the next, even in the same field. Using the EnClass system can help one understand what happened environmentally to cause those differences, and may give a glimpse of what the long-term performance might be.Pioneer has collected a robust weather and land attribute database down to the township level, with some information at the field level.Environment class frequencies have been calculated using more than 50 years of historical weather and yield records for all major corn-growing areas in the U.S. and validated with our vast product performance database.Currently there are five environmental classes in North America as follows:

- Temperate-Frequent in Iowa and Illinois
- Temperate Dry -Frequent in Nebraska, Kansas and South Da
- Temperate Humid -Frequent in Indiana, Ohio and Pennsylvania
- High Latitude -Frequent in North Dakota, Minnesota, Michigan and Wisconsin
- Subtropical-Frequent in Deep South of U.S.

In short, the EnClass system is about managing probabilities, to more reliably match the right hybrids to the right southern acres for maximum productivity and resulting in fewer performance disappointments.

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What Will Increasing Corn Acreage Do To Nematode Populations In The Mid-South: Implications For Future Nematode Management Strategies

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Historically, mid-South cropping systems generally fell into one of three broad categories: monoculture of cotton, rice, or soybean, a soybean-rice rotational system, or a soybean-wheat double-cropping system. In the last few years, however, the economic outlook for corn as a viable crop in the region has changedthe cropping patterns for many growers. As a "new" crop is added to our system, crop pest dynamics may be altered and pest management strategies may need to be adjusted. Plant-parasitic nematodes are resident in the soil in essentially every field. Although some nematode species have not been considered to be of

major economic significance, three species are of concern across the mid-South region: the southern root-knot nematode (RKN), the reniform nematode (RN), and the soybean cyst nematode (SCN).

These three nematodes account for about 90% of the nematode-induced yield suppression in cotton and soybean in the four-state region. A significant increase in corn acreage is likely to change the status quo of our current concepts of nematode management as our cropping patterns change. Two major questions that must be addressed are: 1) How will the introduction of corn into our cropping systems affect the population densities of these nematodes in relation to cotton and soybean, and 2) Will these (or other) nematodes be of economic concern in corn? While very little research has been conducted in the region to answer either of these questions, there is considerable useful basic information regarding the ecology and biology of nematodes in relation to corn production in other areas of the country. This information provides a platform for some general concepts and recommendations until research to address specific problems and questions can be conducted. Each nematode and host plant relationship is unique. For example, SCN has a narrow host range that includes soybean and a few leguminous weeds. Rotation of soybean with corn can dramatically lower SCN populations. Interestingly enough, our traditional soybean-rice cropping sequence has been much less effective in lowering SCN populations. Consequently, addition of corn as a regular component of a rotational sequence with soybean can be expected to aid in the management of SCN. Similarly, corn is not a host for RN. Inclusion of corn in rotation with either soybean or cotton can lower RN populations although rapid resurgence in the nematode population is likely once a susceptible crop is grown in the field (Figure 1). Once again, corn as a regular component of a cropping sequence that includes cotton and (or) soybean will likely be of benefit to the overall productivity of the cropping system. Unfortunately, growing corn in a field where RKN is present may exacerbate an existing problem or create a problem where one did not exist. Most currently popular corn hybrids that have been evaluated are susceptible to RKN. Production of corn in fields where RKN is present is likely to increase RKN population densities and may be particularly problematic for crops grown subsequently in the rotation sequence. Although it is relatively easy to predict the impact of corn on nematode population dynamics, there is little recent experimental data in the mid-South to indicate the actual importance of nematodes in corn yield performance. Several nematode species including RKN, the lesion nematode and the stubby-root nematode have been reported to suppress corn yields in other regions of the country. Records from the Arkansas Nematode Diagnostic Laboratory during the past five years indicate that all three of these nematode species are frequently encountered in samples from corn fields in the state that were submitted to the laboratory for nematode assay. It is likely that nematodes will be a factor in corn production for some growers, but research and grower experience will be required before their significance can be accurately quantified.

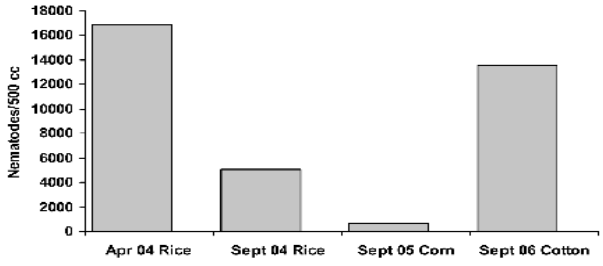

Figure 1. Reniform nematode population density in a rice-corn-cotton rotation program (2004-2006, Desha Co., AR).