Preventing Cotton Disease

There are many decisions growers make when planning next year's cotton crop. Taking time to consider preventative management practices can help protect yield potential throughout the growing season.

Cotton diseases occur across the Cotton Belt and in any environment, but there are ways to help reduce disease spread and intensity.

Protect overall plant health. Managing a crop works toward maintaining plant health. Minimizing disease inoculum, applying adequate fertility according to soil test results, and protecting plants from insect injury can help the overall health of the plant. Healthy plants are not as susceptible to disease and can withstand disease pressure better than stressed plants.

Rotation. Establishing a long-term crop rotation can help create an overall balance for soil and crop health. Non-host crops interrupt disease lifecycles and help reduce inoculum. Nutrient drains (eg. the high calcium requirement for peanuts) can be alleviated, and insect and weed populations reduced with proper crop rotations. Overall, the health of the crop improves, lowering disease susceptibility. Crop rotations should be well thought out and based on field history (Table 1). Growers can set aside a percentage of their acreage to take advantage of market prices, but long-term rotations can help lower costs associated with pesticide application.[1]

Table 1. Rotational crops for cotton for reducing the incidence of cotton diseases.

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	Seedling Diseases				Mid to Late Season Diseases				
	Rhizoctonia	Pythium	Fusarium	Thielaviopsis	Bacterial Blight	Verticillium Wilt	Phytophthora Boll Rot	Alternaria Leaf Spot	Fusarium Wilt
Corn	Average	Good	Average	Good	Good	Good	Good	Good	Poor
Soybean	Poor	Poor	Poor	Poor	Good	Poor	Good	Good	Poor
Grain Sorghum	Good	Good	Average	Good	Good	Good	Good	Good	Poor
Peanut	Poor	Poor	Average	Poor	Good	Poor	Good	Poor	Poor
Canola	Poor	Poor	Poor	Good	Good	Good	Good	Good	Poor

Sources: How to manage pests. 2013. University of California. UC Pest Management Guidelines. http://ipm.ucanr.edu/PMG/r114900611.html. Comparative advantages / disadvantages of rotation crops with cotton (in relation to the following cotton crop). Cotton Research and Development Corporation. https://www.cottoninfo.com.au/sites/default/files/tools/CottonRotation/Rotation_chart_Page_1small.pdf.

Develop a plant growth regulator (PGR) plan. Understanding the growth habit of a cotton variety is important for managing vegetative growth and airflow within the canopy. Some varieties have a more aggressive growth pattern and should be managed more aggressively with PGR rates and timing.[2] Rank growth is prone to many leaf diseases and boll rots. Preventing rank growth helps reduce the spread of disease by lowering humidity and increasing light penetration. Plant growth should continue to be monitored throughout the season as field conditions change and adjusted accordingly.

Product selection. Select cotton varieties with higher resistance to diseases like Fusarium, Verticillium, and bacterial blight. Include seed treatments to help provide cotton seedlings with adequate broad-spectrum protection from early-season diseases. Seed treatment fungicides may be either protectants or systemics. Protectant fungicides protect the seed from possible diseases carried on the seed or soil diseases that may be in direct contact with the seed. Systemic fungicides are taken up by the seedling to provide protection from certain types of pre- and post-emergence damping-off. Most commercial cotton seed sold is pre-treated with both protectant and systemic fungicides. Premium seed treatment packages with higher use rates are available to help provide more complete and consistent protection in high disease pressure situations. In-furrow fungicides can also be applied in fields with heavy seedling disease pressure, or fields with clay soils, poor drainage, or that may be planted early.[3]

Plant according to soil temperature. Early-season diseases occur more often in wet and poorly-drained soil conditions. Plant when soil temperature is above 65°F at a 4-inch depth with a favorable 5-day weather forecast.[4] Planting into raised beds may increase soil temperature and drainage. For more information about cotton planting, refer to the Spotlight, **3004_S1 Cotton Planting (NEED LINK)**.

Scout. In-season prevention of cotton diseases begins with scouting. Fields should be scouted from emergence and at the same time as insect scouting.[3] For more information about identifying and managing cotton diseases, refer to the Guide, **1009_G1 Cotton Disease Identification (NEED LINK)..**

Manage residue. Stalks should be destroyed after harvest to reduce overwintering of insects and diseases. Cotton regrowth can sustain insects like aphids, which can vector diseases, and root rot can overwinter on undestroyed stalks.[5] Many weeds and rotational crops for cotton are hosts for cotton diseases, so it is important to manage any crop residue and keep fields clean, especially in fields with known disease outbreaks.

Sources

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