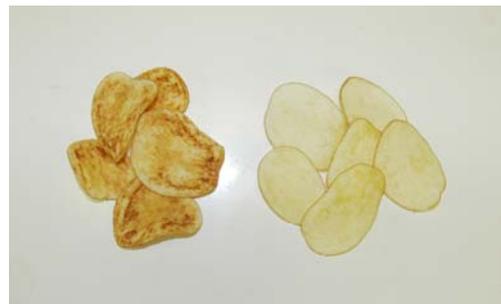


Zebra Chip: A New Disease of Potatoes

Don Henne, Fekede Workneh, Charlie Rush – Texas AgriLife Research/Amarillo

BACKGROUND

Zebra chip (ZC) is the latest disease to plague the potato industry. ZC first appeared in Mexico and Guatemala around 1995 and was later found in Texas in 2000. It now occurs throughout Texas and as far north as Kansas and Nebraska. ZC not only kills the plant, but also alters the sugar levels in the potato tuber. When tubers are sliced and fried, the sugar caramelizes and turns the chip brown, giving it an off taste and burnt appearance. The chipping industry was initially affected but all varieties of potatoes are susceptible to ZC. Although eating a ZC-affected chip is not harmful, the disease does alter taste and appearance and therefore is a concern to both consumers and processors. A major problem the potato industry currently faces is controlling the insect that causes ZC, called the potato psyllid. There is no adequate control for this insect or the disease at this time. In some instances, the disease has been so bad that growers have had to abandon entire fields, resulting in losses exceeding \$2 million per year.



Potato chips with, left, and without, right, symptoms of zebra chip.

OBJECTIVES

Currently, some researchers are studying aspects of the potato psyllid that transmits the bacterial pathogen which causes ZC, while others are studying the pathogen itself. Amarillo researchers are focusing on understanding the epidemiology of ZC; how it progresses within fields over space and time, how the psyllid transmits the pathogen and the role of infected seed tubers as sources of disease. Researchers know very little about how ZC is distributed in fields and how this changes over time. Such information is useful for development of disease-sampling plans and disease-management strategies for use not only in Texas, but other states as well. Ultimately, this research could help reduce pesticide applications and losses to this disease.



Dr. Don Henne checks a trap for psyllids in a potato field.

RESEARCH

Dr. Charlie Rush, Texas AgriLife Research plant pathologist and leader of the plant pathology program in Amarillo, began working on the project at the request of High Plains producers in early 2007. His work later became a part of the Zebra Chip State Initiative through the Texas Department of Agriculture. The initiative brought together researchers from throughout the state and country to try to find answers for ZC. Dr. Don Henne, AgriLife Research assistant research scientist, was brought into the program to help understand the factors that impact disease onset and spread by the potato psyllid. Texas studies are being conducted in grower fields from Weslaco to Pearsall and Olton to Dalhart. Henne and Dr. Fekede Workneh, an AgriLife Research quantitative plant disease epidemiologist, are working with commercial growers to monitor disease appearance, spatial patterns and movement of the insect. The focus in the Amarillo research effort is on trying to understand how the disease progresses in a potato field over time by looking at canopy structure, edge effects and how the insects are landing in fields and distributing the disease. The team has planted potato plots at the Bushland station and is experimenting with planting dates to see if there is a relation between insect movement and disease severity, as well as effects on potato yields. Sampling strategies are being developed to help growers assess psyllid pressure and disease loss. Collaborative efforts are under way with other Texas AgriLife Research scientists.

Texas AgriLife Research and Extension Center at Amarillo
6500 Amarillo Blvd. West, Amarillo, Texas 79106
Phone: (806) 677-5600, Fax: (806) 677-5644
www.amarillo.tamu.edu


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