



Vegetable production is quickly becoming the major source of income for limited-resource growers in the Mississippi Delta. Limited-resource growers are shifting from producing conventional crops such as cotton, soybean and rice to producing vegetable crops. The shift is based on a notion that small-scale farmers can no longer compete with large-scale farmers in producing conventional crops because of the high capital outlay and economies of scale required for profitability.

Management of Vegetable Insects in Organic Production System

Who cares and why?

As a result of high levels of returns and increased demand for organic foods, growers are converting to organic production. Organic products are among the fastest growing products in the United States and worldwide. Organic markets are profitable, and ecologically and economically sustainable.

Biological control agents such as predaceous ladybird beetles, parasitic wasps and insect-killing

nematodes are commercially available for many agricultural pests. Given the pests' importance and the rising popularity of organic agriculture, more research is needed on the management of vegetable insects by using environmentally friendly methods such as biological control and replacing synthetic chemical insecticides with reduced-risk, host specific biopesticides.

What has the project done so far?

Alcorn State University (Alcorn) researchers have conducted field evaluations on commercial organic pepper varieties. Several of Alcorn's pepper lines have revealed the potential role of crop resistance against insect herbivore in achieving higher yields; thus, minimizing the need for insecticide applications. A consistent presence of insect pests on pepper crops was confirmed through a combination of methods, including visual counts, sampling with a sweep net, and using colored, sticky card samples to attract insects.

Tobacco thrips feeding can cause discoloration and distortion of the leaf tissue of seedling cowpea. Research findings from this project has demonstrated little impact on cowpea yield when

tobacco thrips were fed on caged cowpea seedlings, but feeding damage to foliage was substantial.

Limited organic insecticides have provided effective management of vegetable insect pests such as the eggplant flea beetle. Research findings further demonstrate that Entrust, an organic approved formulation of spinosad, can effectively manage the eggplant flea beetle.



The green peach aphid has developed resistance to many conventional insecticides and is a pest to many agronomic and horticultural crops.

Research findings demonstrate that alkaloids in venom isolated from the red imported fire ant are an effective control of green peach aphids. Project findings have been shared with ARS/USDA

scientists, as well as with two other land-grant universities have enabled ASU scientists to initiate research in organic vegetable production by



evaluating potential biopesticides to enhance the income potential of small limited resource farmers.



Impact Statement

Research findings from this project have:

Offered effective alternate biopesticides to replace conventional insecticides and manage insect pests.

Demonstrated that crop yield is not affected by using resistant varieties despite the presence of insect pests throughout the growing season which results in minimal insecticide applications.

Demonstrated that foliar damage to seedling cowpea can be tolerated with negligible effect on yield.

What research is needed?

Research is needed to compare the effects of conventional insecticides with new biopesticides on natural enemies of insect pests of vegetables.

Want to know more?

Tahir Rashid, Ph.D.

trashid@alcorn.edu

Strategic Priority: Plant health/Production/Products

Additional links: <http://www.umes.edu/ard/Default.aspx?id=46285>

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