



This research produced a novel, non-insecticidal and grower-friendly pest management approach that has benefited farmers through increased income and decreased pesticide use with expected concomitant environment and human health benefits.

Trap cropping: A simple, effective, and inexpensive pest management tool for small- and mid-scale farmers.

Who cares and why?

Managing pests is one of the biggest challenges faced by vegetable growers in Missouri and also in other areas of the US where cucurbits (plant group that comprises squash, pumpkin, cucumber, gourd, watermelon, and cantaloupe) are grown. Losses caused by insect pests such as cucumber beetles and squash bugs can lead to important economic losses to farmers. The therapeutic approach of killing pest organisms with toxic chemicals has been the prevailing pest control strategy for many years, and this in part due to lack of research-based information and IPM knowledge by farmers. An excellent alternative to the indiscriminate use of insecticides is the implementation of Integrated Pest Management (IPM), which is a comprehensive and environmentally friendly approach to solving pest problems that relies on a combination of common-sense preventive practices.

Lincoln University has served the needs of underserved Missourians since 1866, and its role in education and service to stakeholders throughout the state and the nation has long been recognized. Funding provided by NIFA Capacity Building Grant program allowed Lincoln University researchers to assess the extent to which trap cropping would be effective at managing three insect pest species in Missouri. This was followed by intensive extension activities aimed at disseminating, among farmers, the new information that was generated. Trap cropping is a behaviorally-based IPM method that has been investigated and successfully implemented in some African countries such as Kenya. Trap crops are plants that are planted next to a higher value crop so as to congregate the pest in trap crops where they can be easily attacked by natural enemies and/or killed by insecticides. By using trap crops farmers can: (1) lessen pesticide use and decrease costs, (2) preserve the pests' natural enemies, (3) improve crop quality, and (4) help conserve the soil and the environment.

What has the project done so far?

Lincoln University researchers developed and optimized a trap cropping system that can be implemented by small- and mid-scale farmers not only in Missouri but also across the US. Our combined findings have clearly demonstrated that by using Blue Hubbard and Red Kuri Hubbard squash as trap crop plants, farmers can effectively protect cucurbit crops against multiple insect pests of field-grown cucurbits. Trap cropping is an effective pest management tool that can congregate the insect pests on trap crop plants thereby suppressing pests in cucurbit crops and in many cases, farmers have substantially reduced or even eliminated insecticide application to the cash crop. This IPM approach has been successfully adopted by numerous small and mid-scale vegetable organic and conventional farmers, in Missouri.

As a result of our research and of the numerous educational activities that have been implemented, Missouri farmers have increased production of high-quality vegetable crops using sustainable / organic methods

through the implementation of trap cropping. As an example, Jose Fonseca, a vegetable farmer from St. Peters, MO, implementation of trap cropping in his farm has saved him about \$ 400 per acre per year in labor, pesticide, and fuel, per growing season. Thus, trap cropping has proven to be an effective way of managing pests and reducing inputs while balancing the ecological, social, and economic aspects of farming to move toward sustainability.

What research is needed?

The next step is to develop and evaluate trap cropping in other agro-ecosystems and to continue the promotion of trap cropping as a simple, effective and inexpensive IPM approach that can be used by small- and mid-scale farmers to control multiple pests on farms.

Impact Statement

Lincoln University researchers have successfully developed a pest management approach that is simple, effective and inexpensive and can be used by small- and mid-scale farmers. As a result of our research and of the numerous educational activities that have been implemented, Missouri farmers that have adopted trap cropping have increased production of high-quality vegetable crops using sustainable / organic methods leading to increased profits and environmental benefits while decreasing pesticide use, labor and other farm inputs, strongly supporting sustainable agriculture.

For more information:

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Additional link can be found at <http://www.umes.edu/ard/Default.aspx?id=46285>

