

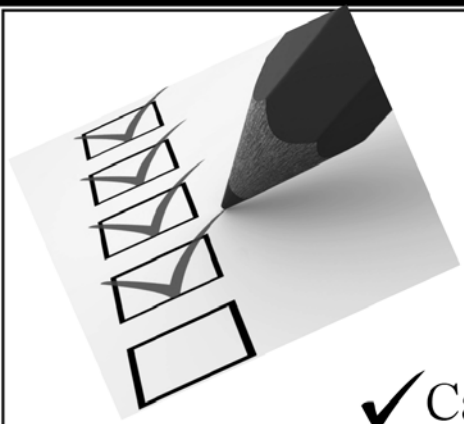


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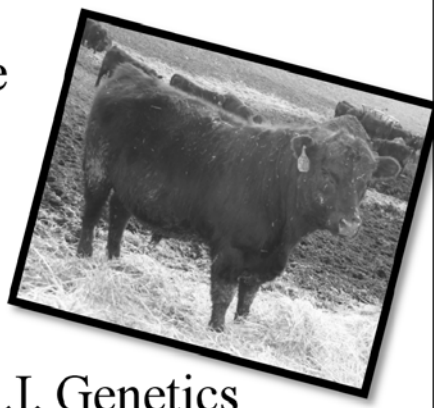
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# Trap and cover cropping role in pest management

By Gadi V.P. Reddy, Govinda Shrestha and Anamika Sharma, Montana State University-Bozeman, Department of Research Centers, Western Triangle Agricultural Research Center, Conrad, MT

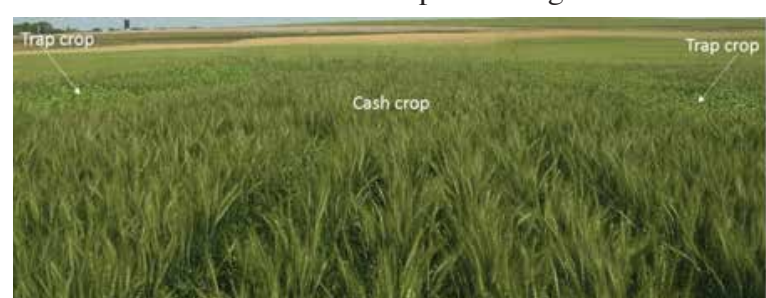
Insect pests pose a major concern in crop production around the globe. To manage these insect pests, we often rely on use of intensive synthetic chemical insecticides which are detrimental for human health as well as environment. Lately, to combat this issue and to establish a sustainable environment, we are considering various cultural and biological tactics for insect pests' management. Trap and cover crops are among the most important cultural tactics. Both crop systems work on the foundation of increasing plant diversity and managing the habitat for crop improvement. Trap cropping mainly focuses on planting a small area with selected trap plants closer to the main crop to attract, divert or retain the insect pests away from the main crop. While cover cropping is associated with multiple benefits including improving agroecosystems, reducing soil erosion, increasing soil quality, suppressing weeds, and improving natural enemies populations. Lately at Western Triangle Agricultural Research Center (WTARC), we have been concentrating on research and extension activities on these two cultural tactics for managing small grains insect pests in Montana.

In March 2018, WTARC Entomology team members organized a symposium at the 9<sup>th</sup> International Integrated Pest Management Symposium in Baltimore, Maryland. To increase the understanding and awareness about trap and cover crops, we have gathered the excellent research, Forum and review articles on these topics, and compiled them as a special issue of *Annals of the Entomological Society of America Journal*. Two forums, four review, and three research articles are included in this special issue, which encompasses various aspects of the continuously evolving trap crop and cover crop.

Wright's (2019) forum article concludes that several important aspects such as natural enemy host searching ability, competition between target and cover crops, while combining a cover crop for improving natural enemy populations. Trap crops must be planned judiciously under high insect pest pressure and drought conditions along with an insecticidal applications with successful examples of multiple cultivar in vegetable crops (Majumdar & Price 2019). Three review articles provide information and future strategies on habitat manipulation (Tiwari et al. 2019a), use of Brassicaceae plants as trap and insectary plants to manage Brassicaceae crops insect pests (Badenes-Pérez 2019), and use of trap crops to manage small grains crops insect pests (Sharma et al. 2019). Another review article by Tiwari et al. (2019b) synthesis the concepts, limitations and future strategy of trap crops in South Asia.

Further, three research articles include recent research data on the use of trap and cover crops. Article by Chen et al. (2019) demonstrated with experimental data that abundance and species richness of predators was greater in tea plantations intercropped with *Chamaecrista rotundifolia*, *Indigofera hendecaphylla*. Authors highlighted that intercropping has the potential to enhance arthropod biodiversity and to provide an option for sustainable pest control in tea plantations. Another research article by Kahl et al. (2019) demonstrate that red clover living mulch impacts arthropod herbivores and natural enemies' communities in cucumber crop and greater habitat complexity can reduce herbivore densities and can improve crop yield. Ichinose et al. (2019) indicate the possibility of using the intra-crop inter-planting for the management of oligophagous sweet potato weevils. All the articles offer the much needed information on trap crop and cover crop and provide an insightful material to the readers.

The authors of the papers herein have contributed greatly for this special issue. All the manuscripts submitted were processed through the peer-reviewed system of the *Annals of the Entomological Society of America*. Perfectly, this special collection can provide insight, guidance and reference materials for the entomologists, agronomists, ecologists and other scientists involved in pest management research.



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