Grant awarded to develop management strategies for pulse insect pest complex

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Dr. Gadi V.P. Reddy was awarded $106,662 by the Montana Specialty Crop Block Grant, U.S. Department of Agriculture (USDA)-National Institute of Food and Agriculture (NIFA), for developing sustainable management strategies for pulse crops insect pests in Montana. Montana growers’ interest to cultivate pulse crops has increased immensely in the recent years because of, less profitable income from cereal crops. In the past five years, pulse crop fields, such as lentil, pea and chickpea have increased in growing acreage from 600,209 to 1,209,039 in Montana. Currently, Montana ranks #1 in the production of field peas, producing 48% nationally.

On one hand, there is an increasing trend in pulse growing acreage across Montana and on the other, there is strong pressure from pulse growers on methods to manage several insect pests that cause yield losses. About a decade ago, when Montana growers began to raise pulse crops, there were only minor pest problems; but now, several insect pests are known to occur at economic damage levels in pulse crop fields. The insect pests that are present in pulse crops include pea leaf weevil, pea aphid, lygus bug, armyworm, cutworm, wireworms, grasshopper, pea weevil and leaf hoppers. However, the pea leaf weevil, pea aphid and lygus bug are currently causing the most economic damages to pulse crops across Montana. Pulse crops are especially susceptible in the seedling stage (two nodes) from pea leaf weevil damage and in the flowering and early pod formation stage, from pea aphid and lygus bug. Feeding of these pests on these critical growth stages have shown to reduce yield levels. In Canada, the pea leaf weevil can cause yield losses of nearly 60 bushels per acre in the absence of a management intervention.

In recent years, growers and extension agents have requested help on the following pertinent issues: 1) suitable pea varieties with higher yields potential and improved resistant towards pest damage; 2) appropriate synthetic and biopesticide products for use; and 3) develop economic threshold level for treatment application. Currently, Montana pea growers may spray insecticides at least once or twice during the spring growing season and in addition use neonicotinoid insecticide treated seeds to avoid leaf and root damages inflicted by pea leaf weevil adults and larvae, respectively. The complete reliance on insecticide-based pest management may, however, raise the risk of pea leaf weevil populations developing resistance as well as their potential negative impacts on the environment and non-target organisms. In UK, for instance, Rothamsted Researchers have recently reported the failure to control pea leaf weevil by insecticide (pyrethroid) sprays, and the weevil adults were found to develop resistance to this insecticide group. Similar situations may happen in Montana pulse production systems; and could influence the expanding Montana pulse industry. In this context, it is pivotal to explore other management options including the suitable pea varieties with high yields and resistance to pea leaf weevil damage. Also identifying environmentally friendly effective biopesticides in conjunction with synthetic pesticides is needed to help safe guarding the Montana Pulse Industry. To battle the pea leaf weevil problem, we have started to investigate on pheromones and biopesticide based control options.

To conduct the research, the Montana Specialty Crop Block Grant project will be structured to: 1) investigate the efficacy of commercially available pheromones and biopesticide based applications on pea leaf weevil adults; 2) develop broad spectrum biopesticide based products under field conditions. For more information about the management project. Please contact Dr. Reddy at 406-278-7707 or by reddy@montana.edu.

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