

**A BELTWISE RATING
OF BENEFICIAL INSECTS**

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Abstract

There are three steps in using beneficial insects in integrated pest management (IPM): first, determining what species, or groups of species are important, next establishing sampling methods for these beneficials, and advising farmers how to use this information in making pest control decisions. Cotton IPM is only at step one now.

Introduction

The success of the boll weevil eradication program, the widespread use of Bt cotton, the development of insecticides that are less toxic to beneficial insects and integrated pest management are the major factors contributing to a greater reliance on beneficial insects and a diminished use on pesticides. Entomologists are also concerned that regulatory pressure may cause the loss of many organophosphate insecticides upon which farmers now depend. Integrated pest management, including use of beneficial insects, may help extend the life of these pesticides.

Discussion

Twenty-one Extension and research entomologists across the U. S. cotton belt ranked the most important beneficial insects, dividing them into two categories--predators and parasites/pathogens. Predators attack and feed on multiple prey while parasites live in or on their hosts during immature development. Pathogens are organisms that cause disease, primarily fungi and viruses. The results of the survey are presented in Tables 1 and 2 below. Each entomologist assigned a ranking to the various natural enemies in their respective regions. A first place ranking got ten points, second place- 9 points, third place- 8 points, etc. Rankings were summed by region and totaled for the entire Cotton Belt (Tables 1 and 2).

The following entomologists participated:

Jeffery Slosser, Texas A&M University
Allen Knutson, Texas A&M University
Clyde Sorensen, North Carolina State University
Peter Ellsworth, University of Arizona

S. E. Naranjo, USDA-Arizona
Peter Goodell, University of California
R. K. Sprenkel, University of Florida
Blake Layton, Mississippi State University
R. G. Luttrell, Mississippi State University
Charles T. Allen, University of Arkansas
Ralph Bagwell, Louisiana State University
Jerry B. Graves, Louisiana State University
Jeffrey Willers, USDA-Mississippi
Phillip Roberts, University of Georgia
Gary Herzog, University of Georgia
John R. Ruberson, University of Georgia
Barry L. Freeman, Auburn University
Ron H. Smith, Auburn University
Michael Williams, Mississippi State University
Ames Herbert, Virginia Polytechnic Institute & State University
Gloria McCutcheon, Clemson University

Summary

Table 1. Rankings of parasites/pathogens

Parasites/Pathogens	MS	W	SW	SE	T
Lysiphlebus testaceipes	42	28	17	37	124
Trichogramma wasps	39	8	25	41	113
Cotesia marginiventris	54	-	-	57	111
Cardiochiles nigriceps	57	-	-	32	89
Tachinid Flies	44	12	8	20	84
Microplitis croceipes	37	-	10	25	72
Cotton Aphid Fungus	24	-	8	20	52
Whitefly parasites	2	15	-	19	36
Hyposoter parasite	4	25	-	7	36
Looper parasite (Copidosoma)	8	-	-	21	29
Stink Bug Egg Parasite	14	-	-	11	25
Meteorus parasite	5	-	-	20	25
Nomuraea	7	-	7	9	23
Bracon mellitor	10	-	9	-	19
Chelonus insularis	15	-	-	3	18
Mymarid Wasps	3	10	-	-	13
NPV disease	1	8	-	-	9
Cotton leaf perforator parasitoids	-	6	-	-	6
Macrocentrus grandii	4	-	-	-	4
Beauveria Fungus	2	-	-	-	2

Table 2. Rankings of predators

Predators	SE	MS	SW	W	T
Minute Pirate Bugs	72	58	25	29	184
Big-eyed Bugs	71	62	23	28	184
Lady Beetles	53	47	25	17	142
Lacewings	40	43	22	20	125
Spiders	42	47	15	11	115
Nabids	22	38	13	14	87
Fire Ants	42	31	11	0	84
Ground Beetles	24	20	3	0	47
Syrphid Flies	10	14	11	5	40
Assassin Bugs	11	10	1	9	31
Collops Beetle	0	0	2	17	19
Spined Soldier Bugs	5	11	1	0	17
Hooded Beetles	10	0	3	3	16
Six-Spotted Thrips	0	2	4	2	8
Long-legged Fly(Dance Fly)	0	0	0	7	7
Earwigs	5	1	0	1	7
Drappetis spp.	0	0	0	7	7
Predatory Mites	0	1	4	0	5
Rove Beetles	0	0	0	3	3
Fleahoppers	0	0	0	1	1

SE- Southeast

MS- Mid-South

SW- Southwest

W- West

T- Total