

ANNUAL IPM REPORT¹ FOR COLORADO

July 8, 2014

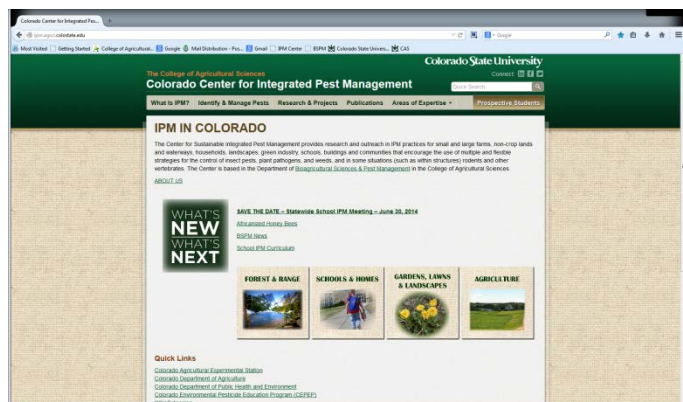
Bozeman, Montana

Submitted by Deborah Young, CSU

The **Colorado Center for Sustainable Integrated Pest Management** focuses on pests that damage or interfere with desirable plants in agricultural fields, orchards, landscapes and natural areas; damage homes or other structures; or pose an environmental health risk.

ADMINISTRATION

In cooperation with the College of Agricultural Sciences, the Center has a new website



<http://ipm.agsci.colostate.edu/>. Two-minute videos of CSU IPM faculty are being developed and posted on the website. Other websites include the Plant Diagnostic Clinic Facebook page, YouTube channels for school IPM and the Plant Diagnostic Clinic, Colorado Environmental Pesticide Education Program (CEPEP), the Healthy Communities website, and eXtension Urban IPM. The Department of Bioagricultural Sciences and Pest

Management at Colorado State University conducts two advisory committee meetings annually.

AGRICULTURE (Schwartz, Cranshaw, Nissen, Peairs, Westra, Ode)

Research:

- White mold (*Sclerotinia sclerotiorum*) resistance in dry bean
- Epidemiology of Iris yellow spot virus (IYSV) and onion thrips
- Thrips-resistant vegetable cultivars
- Herbicide resistance in weed species
- *Drosophila suzukii* (a new pest affecting state food crops)
- Brown wheat mite growth rates on 14 noncultivated grasses
 - No development occurred on the warm season grasses tested, while intrinsic rates of increase on several cool season species were similar to those observed on winter wheat.

¹ WERA-1017: Coordination of IPM Research and Extension/Educational Programs in the Western States & Pacific Basin Territories

- Ecological interactions involved in the competitive displacement of *Cotesia glomerata* by *C. rubecula*, two imported biological control agents of the imported cabbageworm *Pieris rapae*, a serious pest of cruciferous crops worldwide
- Incidence and expansion of wheat stem sawfly damage to winter wheat
 - Fields infested with larvae, out of 100 surveyed, increased from 14 to 36% from 2012 to 2013.
- Biological control of Russian wheat aphid
 - Exclusion cage studies in the early 1990s indicated little biological control; these studies were repeated from 2009 to 2011. Reductions in Russian wheat abundance at Zadoks 45 growth stage average 67%, over seven site-years, with a range of 0 to 97%. Observed predator and parasitoids were predominantly native species.
- Seasonal life history and habits of a newly established population of apple maggot
- *Phyllotreta cruciferae*, an invasive flea beetle affecting crucifers, and displacement of the native *P. pusilla*



Extension/Outreach:

- “Onion Health Management and Production”, a capstone resource for the IPM PIPE (pest identification platform for extension and education <http://www.ipmpipe.org/>)
- Four new fact sheets on insects affecting fruit/vegetable crops
- Field days, workshops, collaborations with grower organizations, and timely information on new and emerging pests, such as potato/tomato psyllids



FORESTS & RANGE (Nissen, Norton, Brown, Jacobi, Beck, Gaines)

Research:

- Invasive species management and development of successional weed management systems for key invasive weed species (yellow toadflax, cheatgrass, leafy spurge, white top, diffuse knapweed)
- Plant invasions and restoration in prairie, steppe and montane system
- Forest issues, including exotic pest movement on firewood, mountain pine beetle and wildfires, the effect of magnesium chloride and trees, and dwarf mistletoe and fire fuels

Extension/Outreach:

- Demonstration plot and workshops on integrated weed management of leafy spurge
- Workshops, YouTube videos and fact sheets on Emerald Ash Borer
- Invasive Weed Master program -- course curriculum and educational materials

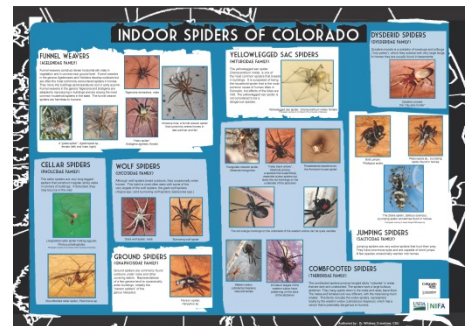
SCHOOLS & HOMES *(Young, Cranshaw, Camper, Blunt, Davis)*

Research:

- Interviews of participating school districts to identify accepted IPM practices
 - 90% of participating school districts are using snap traps instead of bait; 50% have replaced or installed new door sweeps; 70% have increased attention to sanitation; and 30% use sticky traps to monitor for pests.
- Key stakeholder interviews to determine community readiness for IPM adoption in schools in Colorado and Utah
 - 50, one-on-one phone interviews with key staff were analyzed based on job title and by school district to understand school personnel skills and knowledge of IPM.

Extension/Outreach:

- 4 posters of common arthropods in and around homes
- 12 new/updated fact sheets used for both school and housing (with Utah State University)
- Fact sheets in Spanish (10)
- Surveys of household infesting flies
- A guide for identifying and managing weeds in schoolyards & landscapes
- Quarterly meetings of the Colorado Coalition for School IPM
- Workshops to Colorado Pest Control Association, school grounds, retail staff in hardware/garden stores
- New videos, on the school IPM and Plant Clinic YouTube channels
- Monthly Healthy Schools newsletter (380 recipients)
- Presentations on school and housing IPM to more than 1000 individuals
 - Audiences included school districts, University of Colorado Hospital Asthma Foundation, Colorado Environmental Health Association, school nurses, City of Fort Collins, Entomology Society of America, and National Healthy Homes Conference.



GARDENS, LAWNS & LANDSCAPES *(Cranshaw, Blunt, Camper, Young, Jacobi)*

Extension/Outreach:

- Advanced ornamental pest diagnostics workshops -- in Colorado, Wyoming, New Mexico and Utah
 - External evaluations of training courses demonstrate a substantial increase in skills and knowledge.
- New educational materials and diagnostic training to address the discovery of emerald ash borer (EAB) in Boulder in September 2013

- how to identify the various wood boring insects of ash
- lilac/ash borer
- EAB management options
- a questions/answers sheet
- a map establishing EAB Risk Zones in Colorado
- Diagnoses of insect and disease problems
 - In 2013, the clinics (campus and Jefferson County) processed 1,468 samples.
- Training and support of Colorado Master Gardeners (CMG)
 - Annually, 1,600 CMG volunteers serving in 36 county/area based programs donate \$1.4 million in volunteer time.

COLORADO ENVIRONMENTAL PESTICIDE EDUCATION PROGRAM (*Walker*)

Research:

- Survey & Effectiveness of Pesticide Application Equipment Cleanout Methods, with the CSU Department of Chemistry, funded by the High Intermountain Center for Agricultural Health & Safety
 - The survey results (608 respondents) provided information on pesticide applicator practices and identified areas where behavioral interventions can be made to improve safety and protect the environment. The second phase of the study involved collecting samples from actual pesticide application equipment cleanouts (46 participants). Results provided information on how to improve cleanout efficiencies.

Extension/Outreach:

- Initial certification, through study guide manual sales and precertification workshops, to 1180 private applicators and 1559 commercial applicators
- Recertification training to 321 private pesticide applicators through Extension workshops and 1673 commercial applicators through organization meetings and Extension workshops
- Assistance to over 125 non-certified individuals (homeowners, parents, etc.) seeking information about pesticides through email and phone calls