Twenty-seven MSU Extension Agriculture & Natural Resource on-campus faculty members serve the agricultural industry, while providing support for homeowners and small acreage landowners, on topics including: ranching systems, livestock and the environment, forages, urban and agricultural Integrated Pest Management (IPM), ag-economics, potatoes, sheep, pesticides, forestry, cropping systems, water quality and soil fertility.

Diagnosing Pests Properly with the Schutter Diagnostics Laboratory

The Schutter Diagnostic Laboratory at MSU provides plant pest identification and integrated pest management education, and in 2019 and 2020, conducted 5,283 plant, plant disease, arthropod, mushroom, and abiotic diagnoses in 55 of 56 Montana counties and seven additional states.

Schutter Diagnostic Lab recommendations saved an estimated $7.4 million, and affected over 1.3 million acres during 2019 and 2020.

The Montana IPM Program

The Montana IPM program combines the talents of 12 MSU Extension Agricultural & Natural Resource faculty in Agronomic crops, Communities, Diagnostics, and Pesticide Education. In 2019 this team published 104 publications, gave 122 presentations to 5,000 participants and made 21 appearances on Montana Ag Live on Montana PBS (20,000 viewers/episode). In 2020, five videos were made on managing and identifying pests and weeds in crops and rangeland.

The 2020 Pest Management Tour from the Montana IPM program served 226 individuals who supervise an estimated...
637,805 acres vulnerable to various pests. Participants recognize savings and maintaining pesticide applicator licensure through this effective pest management education.

**MSU Extension Pesticide Education Program**

The MSU Extension Pesticide Education Program (PEP) serves to certify and train 5,500 private (farm) pesticide applicators. This program integrates 56 MSU county agents appointed as Private Pesticide Training (PAT) coordinators, one statewide MSU Pesticide Education Specialist, and multiple MSU Extension faculty to deliver information on weeds, insects, rodents, plant diseases, and a variety of pesticide topics (i.e. safety, calibration and pesticide fate). During 2020, nearly 200 applicator events (both supervised by MSU Extension and non-MSU sponsored) delivered pesticide applicator credit information to 5,082 attendees. By offering in-state credit opportunities, thousands of private applicators retain access to highly effective chemistries, saving the agricultural industry millions of dollars through proper management of pests.

**Other Agricultural Areas**

**Managing Cropland Weeds**

Palmer amaranth and water hemp are both herbicide-resistant weeds common in the Midwest. The cropland weeds MSU Extension team has been educating ag professionals about the threat of encroaching weeds through in-person meetings, field visits, publications, news media, and virtual presentations. Our leadership helped add Palmer amaranth to restricted seeds in Montana, and increasing awareness helped divert Palmer amaranth-contaminated millet seed from being planted in southeastern Montana. Weed prevention efforts help save potentially large sums of money by addressing the problem before weeds become established.

**Educating on Soil Fertility**

Soil acidification is causing large yield losses for many farms in Montana, affecting at least 24 counties on an estimated 500,000 acres. The Soil Fertility MSU Extension program has educated Montana farmers, MSU Extension agents and crop advisers through more than 35 talks to over 1000 participants, three field days, radio interviews and television appearances, an award-winning video in 2020, and several press releases, articles and fact sheets. Increases in knowledge and a significant change in management practices will aid in preventing or fixing soil acidification yield loss and soil health.

**MSU Extension Agricultural & Natural Resource Faculty National Awards**

Clain Jones, PhD, MSU Extension Soil Fertility Specialist, received two national awards in 2020 including the American Society of Agronomy Excellence Award for his video “Acidification of Cropland Soil: Impact, Causes, Solutions” (https://youtu.be/cjWneDQVvV8), and was also awarded the “Soil Education and Extension Award” from the Soil Science Society of America which recognizes outstanding teaching in the soil sciences.

Jane Mangold, PhD, MSU Invasive Plant Specialist, is being nationally recognized for 2020 education/outreach and will receive the “Outstanding Outreach Award” from the Weed Science Society of America.

An example of pesticide drift. Photo by Bernhard Klug