Cover Crop Advances in Michigan in 2016

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Introduction

Michigan produces more than 300 agricultural commodities, making it the 2nd most diverse agricultural industry in the nation. This diversity is also reflected in the range of uses for cover crops. Michigan growers are integrating cover crops into:

- Field crop rotations
- Vegetable rotation
- Orchards (Fruits and nuts)
- Vineyards
- Grazing rotations

As a result of this demand, Michigan produced a variety of cover crop related research projects, extension events, publications, society presentations, and MSU course work in 2016.

New Website

covercrops.msu.edu

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Cover Crop Research

- Over 25 research projects examining cover crops were conducted by MSU researchers in 2016
- Objectives spanned multiple topic areas, including:
  - Commodity specific cover crops
  - Cover crop management
  - Cover crops as forages/feed
  - Pest/disease management
  - Soil fertility
  - Soil health/biology
- Funding for cover crop research in Michigan comes from a number of sources, including:
  - MI commodity groups (Corn, soybean, carrot, potato, cherry, etc.)
  - USDA- National Institute of Food and Agriculture (NIFA) programs such as the Organic Agriculture Research & Extension Initiative (OREI)
  - Michigan's Project GREEEN
  - CERES Trust

Figure 4 . Incubation chamber utilized by team for studying the effects of increasing cover crop diversity on microbial populations and weed seed decay (Tiemann and Renner).

Figure 1 (top). Examining the potential for herbicide carryover from common corn and soybean products. From left to right, oilseed radish, cereal rye, medium red clover (Sprague, Hill, Renner).

Figure 2 (middle). Planting green, soybeans into cereal rye. This 1st year study is looking at how rye termination times and methods impact soybean growth and yield and weed emergence (Hill).

Figure 3 (bottom). Biomass production of corn, pearl millet, sorghum-sudangrass, and teff (left to right) before 2017 potatoes (Long, Tiemann, Rosenzweig, Hill).

Featured Publications

EXTENSION PUBLICATIONS

- MSUE News (msue.anr.msu.edu)
  - 19 articles published in 2016, excluding field day announcements
  - 14 different authors writing about cover crops
- New Bulletin- Managing soil health for root and tuber crops (E-3343)- available for purchase at MSUE Bookstore (shop.msu.edu)

2016 REFEERED PUBLICATIONS

- Strip-intercropping of rye-vetch mixtures affects biomass, C:N ratio, and spatial distribution of cover crop residue. Agron J. 108: 2433-2443. Lowry & Brainard
- Integrating winter annual cereal rye or triticale into a corn forage biofuel production system. J Crop Improv. 30:526-530. Tumbalam et al.
- Cover crop impact on weed dynamics in an organic dry bean system. Weed Sci. 64:261-275. Hill et al.
- The effect of conservation tillage and cover crop residue on beneficial arthropods and weed seed predation in acorn squash. Environ Entomol. 45:1543-1551. Quinn et al.

Cover Crop Extension Meetings & Field Days

- MSUE and MSU faculty held over 37 meetings and field days addressing cover crop management
- Over 3,000 people attended the 2016 meetings
- Cover crops were prominently featured at 3 stops in the first ever MSU Agriculture Innovation Day in Frankenmuth, MI with over 430 people in attendance. The 2016 theme was "Focus on Soils."
  - Healthy soil- Dig a little, lean a lot (L. Tiemann and D. Baas)
  - Successful cover crops- From seed selection to planting techniques (E. Hill, K. Renner, A. Brooker)
  - How do your soils handle rain? (P. Gross and J. Marshall)

Figure 5 . Most of the MSUE/MSU team of cover crop presenters at the inaugural MSU Agriculture Innovation Day in Frankenmuth, MI on August 24th. Front, left to right: Lisa Tiemann, Erin Hill, Marilyn Thelen, Paul Gross, Christina Curell, Dean Baas. Back left to right: Aaron Brooker, James Sarah Hanks, Marshall (NRCS).

Figures 6-8 (below, left to right). Fig. 6- Dean Baas, Lisa Tiemann, and James DeDecker discussed how diversified crop rotations impact soil health using a root pit. Fig. 7- Cover crop options following wheat and corn interseeding research were showcased at the Successful Cover Crops wagon stop. Fig. 8- Paul Gross showed differences in aggregate stability using the rainfall simulator.

More information can be found in the full 2016 MI report @ covercrops.msu.edu