

Cover Crop Advantages

Cover crops provide many benefits to soil health and overall profitability within farming systems. Significant benefits vary by location and season, but many occur with the use of any cover crop. The list of the following benefits is not all inclusive or final:

- 1) Reduces soil erosion
- 2) Enhances soil organic matter
- 3) Reduces fertilizer input
- 4) Conserves soil moisture
- 5) Protects water quality
- 6) Reduces weed competition

On September 25, 2012, the Manhattan Plant Materials Center (PMC) planted a replicated Conservation Innovation Grant (CIG) cover crop study cooperatively with Kansas State University (KSU). The cover crop plot species consisted of rye sown at two different seeding rates (1X and 2X), with hairy vetch, Austrian winter pea, and radish as components within the lower rate rye plots (1X) and finally control plots that were not seeded. An evaluation of canopy cover and species composition, 45 days after planting (11/8/12), revealed that the rye plots at both rates were doing well despite the lack of precipitation. The broadleaf components planted within the lower-seeding-rate rye plots were present, but in relatively low numbers. The most obvious finding was the huge reduction in weed species numbers between the unseeded control plots and the rye-seeded plots at both rates. Average canopy cover and species composition findings indicated that the 3 control plots had a 48% cover



Comparison of individual plots 45 days after planting: (Left) rye (1X) 60%, 20% weeds, and 20% bare ground; (Right) control 56% weeds and 44% bare ground

of volunteer weed species. The lower planting rate of rye plots (1X) had an average canopy cover of 68% with 15% being composed of weed species. The higher planting rate of rye plots (2X) exhibited an 84% average canopy cover with 7% being weed species. Thus, even at the lower planting rate of rye, there was a 33% reduction in weed cover and at the higher rye rate there was a 41% reduction in weed cover compared to the control plots. In less than 2 months after planting there was significantly less weed competition in the cover crop plots.

Butterfly Count 2012

Earth Team Volunteers met once again at the PMC, July 12, for the 3rd Annual Manhattan Summer Butterfly Count sponsored by the PMC. The count was conducted as part of the 38th North American Butterfly Association (NABA) Butterfly Count. After receiving instructions for the count and briefly reviewing of specimens in the PMCs collection, the volunteers headed for the Konza Prairie.



Great spangled fritillary on common buttonbush flower

Volunteers in 3 parties visited a number of locations in the Manhattan area. They identified 28 butterfly species represented by 165 individual butterflies. The number of butterflies counted was down approximately 4% and the number of species observed was down about 25% from last year probably because of the extreme drought conditions experienced this year. The Manhattan count was just one of many counts conducted across North America in association with the NABA. Volunteers converge on 15-mile diameter count circles and conduct a one-day census of all butterflies observed within these predetermined areas. Additional areas of observation within the Manhattan count circle include Sunset Zoo, Kansas State University Gardens, and city parks. Fifty-eight butterfly species have made an appearance on the Manhattan count over the three-year period since the counts began.

Milkweed Seed and Plant Production

Across North America, as monarch butterflies are leaving their summer breeding grounds and making their epic journey to spend the winter in Mexico, we at the PMC are busy harvesting seeds of swamp milkweed (SMW). This is a joint effort with Monarch Watch and Westar Energy to improve habitat for the monarchs and other insect species that depend on milkweed plants for survival.

Establishing Monarch Waystations

(<http://monarchwatch.org/>) provides resources necessary for monarchs to produce successive generations and sustain their migration. According to Chip Taylor, Director of Monarch Watch, "Without milkweeds throughout their spring and summer breeding areas in North America, monarchs would not be able to produce the successive generations that culminate in the migration each fall. Similarly, without nectar from flowers these fall migratory monarch butterflies would be unable to make their long journey to overwintering grounds in Mexico. The need for host plants for larvae and energy sources for adults applies to all monarch and butterfly populations around the world."



Monarchs benefit from swamp milkweed seed production plots evidenced by this feeding caterpillar

Westar Energy entered into an agreement with Monarch Watch to have volunteers plant SMW and green antelopehorn milkweed (GAHMW) plants under Westar's transmission lines. The PMC will produce the seed that nurseries will use to grow out milkweed plants for this effort. The SMW was selected because it grows on wetter sites, and GAHMW grows on drier upland sites. "Both of these plants are excellent native sources of nectar that are heavily used by bees and other pollinators," Taylor said. The PMC will produce seed of both species. This offers the opportunities to not only learn how to reproduce these species, but also to fulfill the need to generate seeds for conservation-based pollinator initiatives.

The GAHMW would be suitable for such efforts throughout eastern Kansas. This year the PMC set out 780 SMW and 300 GAHMW plants. The SMW managed to flower the establishment year and produce seed. It will be next year before the GAHMW will produce seed since it matures earlier in the season and did not have enough time to produce flowers this year.



Summer crew planting swamp milkweed into weed barrier covered bed

This is just a small part of the larger campaign: Bring Back the Monarchs. "The goals of this program are to restore 20 milkweed species, used as food by monarch caterpillars, to their native ranges throughout the United States and to encourage the planting of nectar-producing native flowers that support adult monarchs and other pollinators," Taylor said. The GAHMW seed could also be added to the seed mixes the Kansas Department of Transportation uses for restoration of landscapes at interchanges and other sites that have been disturbed.



Swamp milkweed seed production plot with plants in full bloom