

Cover Crops

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Winter cover crops can provide many benefits for soil and water quality and crop production, but their use in modern corn-soybean systems in the Corn Belt over the past four decades has been minimal. Cover crops may increase the resilience of corn-based cropping systems to climate variations as well as reduce the carbon (C) and nitrogen (N) footprints of these systems through a variety of mechanisms. Cover crops grow during portions of the year when the corn system is normally fallow, thus providing an actively growing crop to take up nutrients (especially N) that would otherwise be subject to loss by leaching and runoff. This reduces nitrate loads to drainage waters, thereby improving water quality and reducing the potential for off-site production of nitrous oxide (a greenhouse gas). The nutrients are recycled within the system and help build soil organic matter and provide nutrients to subsequent crops. Cover crops improve soil quality by increasing soil aggregation, water infiltration, organic carbon, and soil biological activity, which in turn can lead to improved crop yields over time as well as less year-to-year variability in crop yields. Carbon is sequestered as the soil organic carbon increases over time. Cover crops left on the soil surface after termination in spring will conserve soil moisture by the mulch effect, which can increase crop yields in dry years and reduce year-to-year variability in yields. Cover crops also reduce soil erosion and help maintain the long-term productivity of the soil resource base. Although the general benefits are well known, challenges exist to widespread adoption of cover crops in the Corn Belt, including lack of short-term economic benefits and the practical issues of getting cover crops established on a timely basis in typical corn-soybean cropping systems.



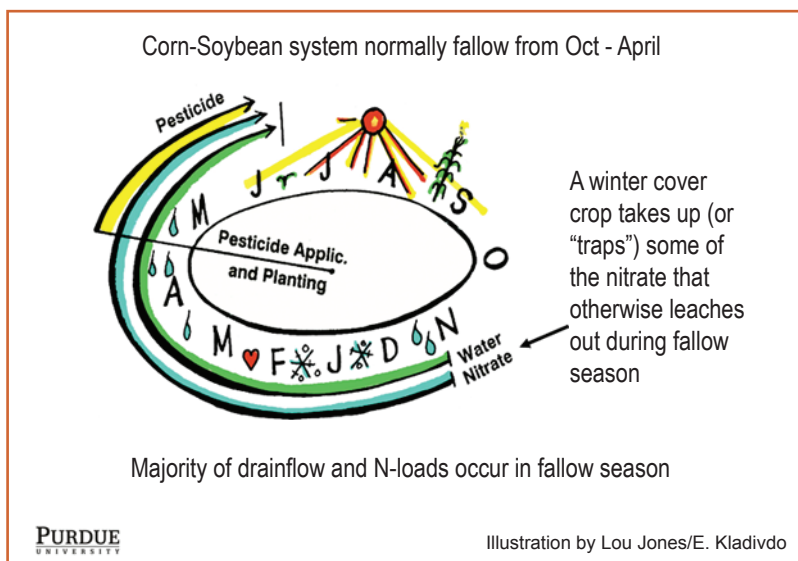
Hand harvesting an area of cover crop for biomass determination



Various cover crop plots, fall 2011

References

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