

USING COVER CROPS IN SOYBEAN PRODUCTION SYSTEMS FACT SHEET

This is one in a series of fact sheets from the Mississippi Soybean Promotion Board and the soybean checkoff. Each sheet presents a brief overview of a topic important to Mississippi soybean production. More information on each topic can be accessed through the link at the bottom of the sheet. To see other fact sheets, click [here](#).

Much attention is now being paid to the inclusion of cover crops in the off-season between summer cash crops in the Midsouth. The following tenets pertain to the inclusion of cover crops in crop production systems:

- Producers should define their goals from using cover crops so that selected single or multiple species mixes will in fact accomplish those goals. For any cover crop system to be effective, the makeup of the cover crop—i.e., the species component(s) of the cover crop—must address the issue(s) that is most pressing to a producer—e.g., weed suppression, increased soil carbon/organic matter, erosion prevention, nitrogen scavenging. To do this, the cover crop species or species mix must contain those species that have the capability to address the priority issue(s) that have been established.
- Cereal species (e.g., cereal rye, wheat, triticale) vs. legume species are more likely to suppress weeds and scavenge nitrogen, and legume vs. cereal species will likely result in more N added to the soil following their destruction. Rule of thumb: cereals before soybeans, legumes before corn if enough time for adequate growth.
- Planting a cover crop as early as practical in relation to the summer crop's maturity is essential to maximize cover crop biomass production.
- If cover crops are to be planted following soybean harvest in monocropped soybean fields, do not include legume species in the cover crop mix if the fields have a history of redbanded stink bug (RBSB) presence. In a biennial corn-soybean rotation system, plant a cover crop that contains a legume species only after the soybean crop since corn is a non-host for RBSB.
- Cover crops will reduce weed biomass by reducing the availability of resources for weeds. Thus, it is important to consider the competitiveness (canopy development, root proliferation) of individual cover crop species when designing a cover crop plan to suppress problem weeds. In general, the more biomass/residue the cover crop produces, the more likely it is to negatively affect weeds.
- Both total biomass production and the proportion of cereal biomass are associated with reduced weed biomass.
- Terminating a cover crop preceding an early-planted crop such as corn may result in a level of biomass that fails to meet the standard for high-residue production to aid in weed suppression.
- Termination of the cover crop ahead of summer crop planting should consider whether or not the cover crops are predominately legumes or cereals. In essence, termination of legume cover crops can occur later than termination of cereal cover crops in relation to an intended planting date of the summer crop.
- Delaying termination of legume cover crops as long as possible will result in their maximum biomass production, and will improve the likelihood that cover crop N release and uptake of N by the summer crop will coincide.
- Residues from cereal cover crops that have a high carbon:nitrogen (C:N) ratio will persist longer than residues from legumes that have a low C:N ratio, and thus surface residue benefits will be enhanced.
- Delaying termination of cereal cover crops will result in increased biomass production, and increase the likelihood that resulting residues will be sufficient to provide the benefits from their persistence. However, the immobilization of N during cereal cover crop decomposition may necessitate that additional early-season N be applied to a following non-legume summer crop.
- Cover crop termination should occur sufficiently ahead of planting the summer crop to allow for the residue to become completely dry and brittle. This will allow planting equipment to cut through the residue and prevent "hairpinning" that can result in insufficient seed-soil contact for optimum emergence of the summer crop.
- Cover crop mixes may present an unwanted challenge for their termination. That is, if the species in the mix are not all at a proper stage for termination at the same time, then some will be terminated too early and some too late. For instance, some species in the mix may not have reached peak biomass production if terminated too early. Thus, it is important to ensure that a multi-species cover crop mix contains species that will be as close as possible to their optimum termination stage at the same time.
- No matter what cover crop mix a producer chooses for any reason or goal, they all will add an additional cost to the producer's production system that may or may not be recouped in the short or even long term. So not only should a cover crop mix be chosen with a goal in mind, but the cost of achieving that goal by using cover crops must be taken into consideration to ensure that the intended result(s) will be achieved to offset the cost of the cover crop system.

Click [here](#) and [here](#) for a detailed discussion of this topic.

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