DOUBLECROPPING IN THE MIDSOUTH

Doublecropping refers to the practice of growing two crops in one year. In the midsouthern US, this production system generally involves growing winter wheat and soybeans in rotation.

The perceived general and subjective advantages of doublecropping are:

- Increased cash flow that results from having income from two crops in one 12-month period;
- Reduced soil and water losses by having the soil covered with a plant canopy most of the year;
- More intensive use of land, machinery, labor, and capital investments; and
- Harvesting more of the solar radiation available in a given year by deploying two crop canopies.

Some general principles that apply to a doublecropping system are:

- Doublecropped soybean planted from late May through early July following wheat will yield significantly less than full-season soybeans that are planted before mid-May.
- A soybean–wheat doublecrop system should be used only with irrigation of soybean for profitable soybean production on the clayey soils in the midsouthern USA because of the usual summer drought that results in greatly reduced yields from late soybean plantings on these soils. This of course will be tempered by soybean price.
- With the early planting in the ESPS and subsequent higher yields from continuous soybean, producers should compare the economics of continuous soybean using the ESPS to that of doublecropping when determining which system to use.
- Prices of both wheat and soybeans should be assessed each year to ensure that doublecropping will in fact be more profitable than either crop grown alone, especially with no irrigation for soybeans grown on clayey soils.

The decision to plant soybeans following wheat is influenced by both agronomic and economic factors.

- Agronomic factors include harvest date of the wheat crop (which dictates soybean planting date following wheat harvest), soil moisture status (with no irrigation) for soybean planting and emergence, and availability of seed of desired soybean varieties.
- Economic factors that influence planting soybeans following wheat are the return realized from the wheat crop, expected soybean price, and the expected yield of soybeans following wheat compared to the known cost of production. Refer to the Planning Budgets for Soybeans (Tables 4F, 7F, 11F, 14F, 18F, and 21F) from MSU Ag. Econ. to find yield and commodity price combinations for soybeans that will assist in deciding whether or not to doublecrop.

Wheat Production Practices

Use shallow tillage to prepare a seedbed (number of seedbed preparation tillage trips depends on preceding crop and rutting from harvest).

Plant in 6- to 10-in.-wide rows using a seeding rate of 90 to 120 lb/acre.

Apply 20 to 30 lb/acre of N if wheat follows a

summer cereal crop such as corn or grain sorghum, or fallow. Fall-applied N is not recommended if wheat is planted following soybeans.

If ryegrass infestations are present after wheat emergence, make fall applications of herbicide before ryegrass reaches the five-leaf stage. Apply appropriate herbicides in late winter to control winter weeds such as wild garlic, curly dock, and annual broadleaf weeds, if needed. See the MSU Weed Control Guidelines for small grains.

Details about using pyroxasulfone (Zidua and Anthem Flex) herbicide preemergence to control Italian ryegrass are presented in the Oct. 9, 2015 Arkansas Row Crops blog entitled "Arkansas Wheat". (Click here for access to labels). This should prevent its competing with the wheat crop, and also prevent its being an uncontrollable weed when soybean is planted following wheat harvest.

Click here for the 2018 Arkansas Wheat Quick Facts publication that provides a summary of wheat production guidelines. Consult the Arkansas Plant Disease Control Products Guide for fungicide seed treatment products, foliar fungicide products, and disease thresholds.

Apply a foliar fungicide that will control diseases that affect developing seed (e.g. *Fusarium* head blight or head scab). This is necessary to prevent low test weights that are severely penalized at the elevator. Check the Arkansas Plant Disease Control Products Guide for foliar fungicides that can be used to suppress this disease.

Apply 90 to 120 lb/acre of N in late February or early March, using split applications on soils with poor internal drainage. Applying the amount of N needed to maximize wheat yield will not affect the following soybean crop.

Harvest wheat with a combine that has a straw shredder/spreader. If soybean is to be planted no-till, cut wheat at 9 to12 in. above the ground to minimize both horizontal (cut straw that interferes with planter) and vertical (shades emerging soybean seedlings) residue effects.

Soybean Production Practices

Soybean varieties selected for superior performance in conventional environments (early planting) can be expected to be among the superior varieties in doublecrop or later-planted environments. Results from recent research indicate that MG IV soybean varieties provide the best opportunity for maximum yields from soybeans that are necessarily planted late following wheat harvest.

P and K fertilization rates for full-season (non-doublecropped) soybeans should be optimal for doublecropped soybeans (Slaton et. al., 2012).

A seed treatment that contains both fungicide and insecticide components should be used to ensure the quickest germination and emergence of the most soybean plants, and to provide early-season protection against insects that may reduce stand and/or seedling vigor.

Soybeans that are doublecropped should be planted in narrow rows (< 20 in.) as soon as possible after wheat harvest.

The least planting delay occurs when soybean is planted into standing or burned wheat stubble.

Burning wheat residue prior to soybean planting is a matter of convenience and is of no agronomic benefit; i.e., there is no advantage from burning

wheat residue. The combination of no-till planting of soybeans into non-burned wheat residue is the best management practice from both a soybean yield and environmental perspective according to results from Univ. of Ark. research (Brye et. al., 2004; Cordell and Brye, J. Sust. Agric., 2007).

Conventional recommendations in the midsouthern USA promote a seeding rate to achieve a final stand that is about 10% to 30% higher than that for conventional earlier plantings (LSU, 2008). This may result in additional cost for soybean seed in doublecrop plantings with no offsetting gain in returns. Also, there is no irrefutable evidence to support a higher seeding rate for doublecropped later plantings of soybean varieties with a sufficiently long vegetative period.

Ensure that late-planted soybeans in a doublecrop system have no competition from emerged or emerging weeds at planting and following soybean emergence. Application of preplant, non-selective, burndown herbicides to kill weeds in standing wheat stubble is recommended at time of soybean planting, as is the application of preemergent herbicides (LSU, 2008).

Irrigation where available will ensure maximum emergence, growth, and yield on droughty soils. Production of soybeans after wheat on clayey soils in the midsouthern USA without irrigation may not be profitable due to the effects of normal summer drought. Again, potential/expected soybean yield and commodity price will determine this.

Frequent scouting of soybeans planted behind wheat is critical to detect late-season insect infestations that will be more prevalent in these later plantings (MSU Insect Control Guide, Soybeans) and that will reduce yield if not treated when thresholds are reached.

The ESPS and a soybean-wheat doublecropping system are mutually exclusive. The lower yields from soybeans that are grown following wheat must be considered when deciding which system to use.

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