Wheat Cultivar & Harvest Date
- An early wheat cultivar allows soybean to be planted about 5 d earlier.
- Wheat reaches maximum yield potential, grade, and acceptable milling quality at ~30% moisture.
- Early wheat harvest increases wheat yield due to high test weight and less shatter loss and helps increase soybean yield by allowing early soybean planting.

Crop Residues
- Allophagy: Small-grain crop residues reduce soybean seed germination, seedling vigor, and crop growth through allelopathy.
- Herbicide Activity: Crop residues prevent herbicides to reach soil surface and thereby reduce herbicide efficiency.

Residue Decomposition: Wheat residue decomposes slowly due to its high C:N ratio, suggesting that additional N application may help decompose straw slowly and enhance early soybean growth.

Wheat Stubble Height: A storable height of 30 cm (12 inch) is ideal for optimum double cropping even under tillage systems that delay soybean emergence.

Wheat Straw Burning: Decreases water infiltration, hydraulic conductivity, and soil aggregate stability resulting in poor soil structure.

Wheat Stubble: An alternative option to overcome the negative effects of shading, allelopathy, or straw burning. But, nutrients content of wheat straw and other soil health benefits might need to be considered.

Tillage: Tillage may increases soybean yield; but, no-till improves soil fertility and health.

Planting Date
- Planting date is more important than any single cultural practice and late planting is the main reason of reduced double-crop yield due to early flowering induced by short photoperiod and high temperature, short time to develop optimum LAI of 3.5 to 4.0 at the R2 to R4 stages, and shorter reproductive periods.
- Each day delay planting after mid-Jun, reduces soybean yield by approx. 34 kg ha⁻¹ (½ bu acre⁻¹)

Row Spacing
- Narrow row spacing increases soybean yield when planted later than optimum dates due to equidistant plant spacing, rapid leaf area development with faster canopy closure, increased radiation interception and crop growth rate, and high plant survival rates.
- Drought stress may overshadow soybean yield benefits from narrow row spacing.

Maturity Group & Growth Habit
- Soybean yield at late planting can be increased from 29-276% through proper cultivar selection.
- But, it is difficult task to choose a MG for double-cropping system due to lack of research and variable environmental conditions.
- Late maturing cultivars are often recommended for late planting or double-crop soybean to avoid summer drought stress under rainfed condition and to lengthen the growing season.
- Indeterminate soybean may be benefited more from narrow row than determinate soybean.

Seedling Growth & Plant Population
- Soybean yield is a positive linear-plauteau or quadratic function of seedling rate or plant population.
- Double-crop soybean requires more plants for quick attainment of optimum LAI that can capture maximum solar radiation.
- Excessive plant population can decrease soybean yield by reducing individual plant leaf area and hence decrease light interception efficiency.

Soybean Production System in the USA - Literature Review

INTRODUCTION
- Double cropping is the growing and harvesting of two successive crops on the same land in one year.
- Soybean (Glycine max (L.) Merr.) following winter wheat (Triticum aestivum L.) is the most prevalent double cropping system in the United States.
- Double cropping increases cash flow and profits and ensures global food security by increasing total food production.

OBJECTIVES
- Provide a comprehensive review of environmental and crop management factors affecting soybean yield in double-crop system.
- Summarize the best management practices that may increase double-crop soybean yield and profitability in the United States.

IMPORTANCE
- Soybean double-crop systems provide greater net return than full-season soybean even though double-crop soybean yields 10 to 40% less than full-season soybean.
- Improves soil water quality by reducing soil erosion and nutrient runoff and leaching.
- Improves soil physical, chemical, and biological properties by adding more crop residue.
- Increases the total productivity per unit land area, which can help meet the global food demand for the growing population.

Soybean Production System in the USA - Literature Review

REFERENCES