Soybean Planting Date × Maturity Group: Historical Analysis & Current Research in Kansas

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Introduction

- Soybean (*Glycine max* L.) can be planted over a wide range of planting dates (PD) under adequate soil temperature and moisture conditions.
- Optimum PD x maturity group (MG) for soybean depends on the interaction between genotype, environment and management practices (G × E x M).

Objective

1. Synthesize-Analyze historical information on soybean yields across Kansas.
2. Explore the effect of PD x MD through current research.

Materials and Methods

A historical review of all Kansas Soybean Performance Test results was performed to select the optimal combinations of PD x MG (Figs. 1 & 2).

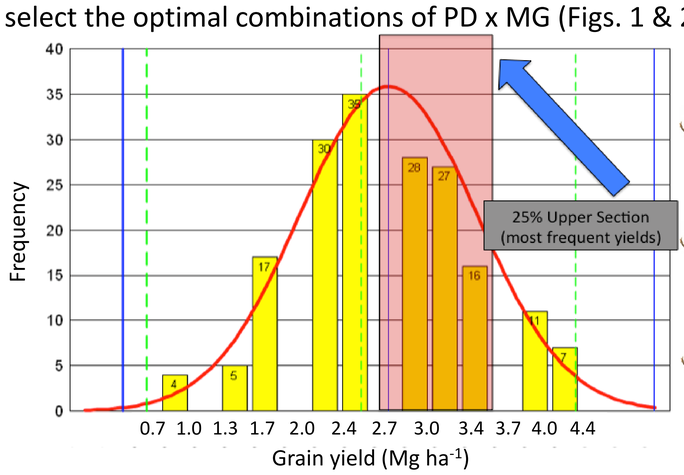


Figure 1. Historical frequency distribution of soybean yields for the synthesis-analysis.

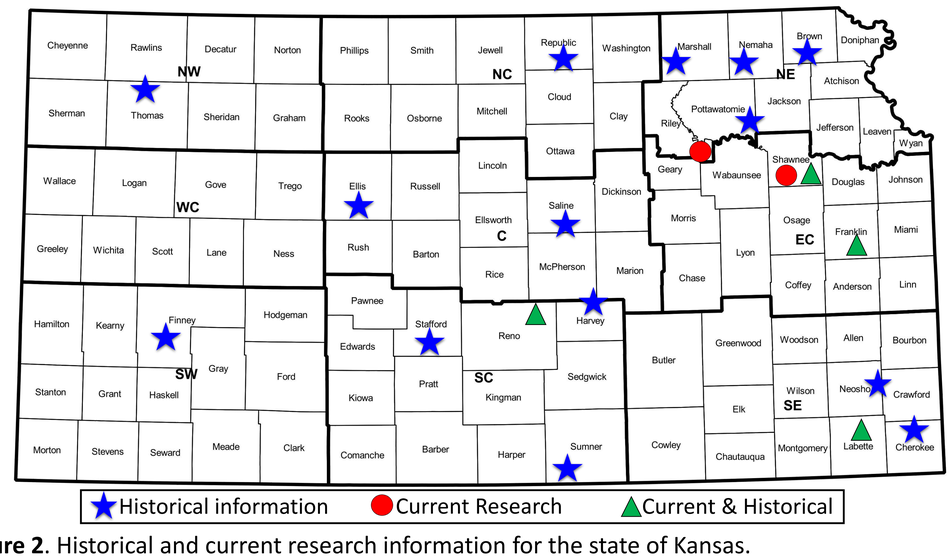
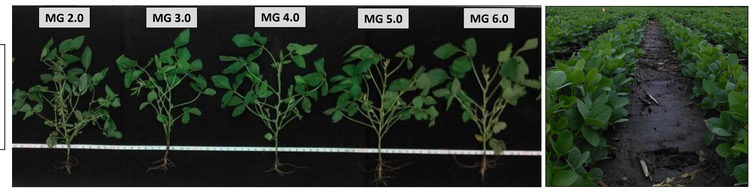


Figure 2. Historical and current research information for the state of Kansas.

Table 1. Treatments description for current research.

Location	Year	Planting Date (PD)	Maturity Group (MG): E, M and L	Water condition
Manhattan	2014	Apr 22, May 15 and Jun 3	2.0, 3.8 and 4.8	dryland
Topeka	2014	May 2, May 20 and Jun 18	2.0, 3.8 and 4.8	irrigated
Ottawa	2014	May 5, May 28 and Jun 26	3.7, 4.2 and 4.8	dryland
Parsons	2014	May 2, Jun 3 and Jun 26	3.9, 4.8 and 5.6	dryland
Hutchinson	2014	Jun 3 and Jul 2	3.7, 4.5 and 5.6	dryland
Manhattan	2015	Apr 14, May 12 and Jun 5	3.0, 3.7 and 4.5	dryland
Rossville	2015	Apr 30, May 13 and Jun 9	3.0, 3.7 and 4.5	irrigated
Ottawa	2015	May 4, Jun 10 and Jun 29	3.7, 4.2 and 4.8	dryland

Growth and Development for different Maturity Groups (MGs) in soybean



Results

A PD x MG map was developed as the main outcome of the synthesis-analysis of historical soybean yield information from the Kansas Soybean Performance Test (Fig. 3).

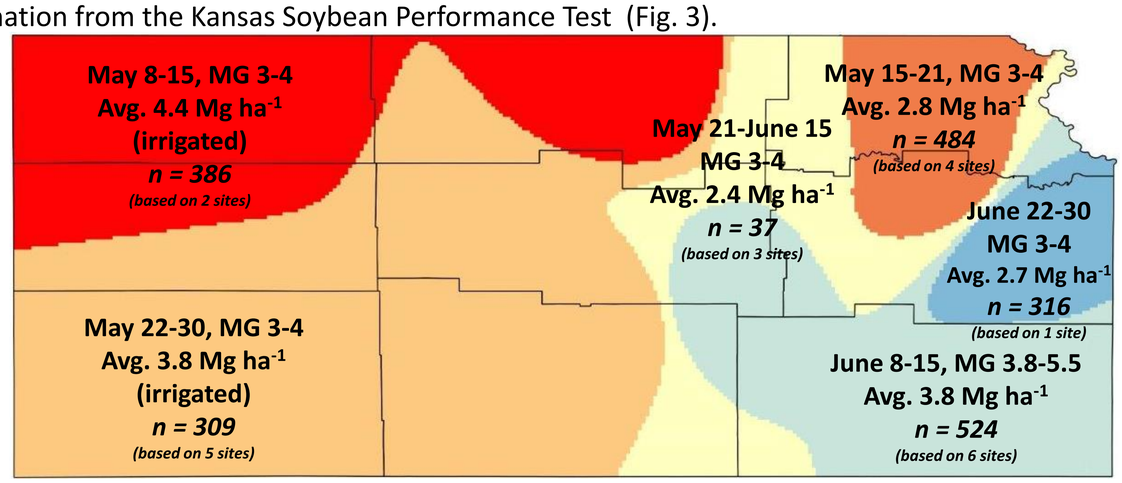


Figure 3. Optimum PD x MG combinations, average yield (Avg.), water condition (irrigated and dryland) and number of observations (n) for grain yield at varying site-years across the state of Kansas.

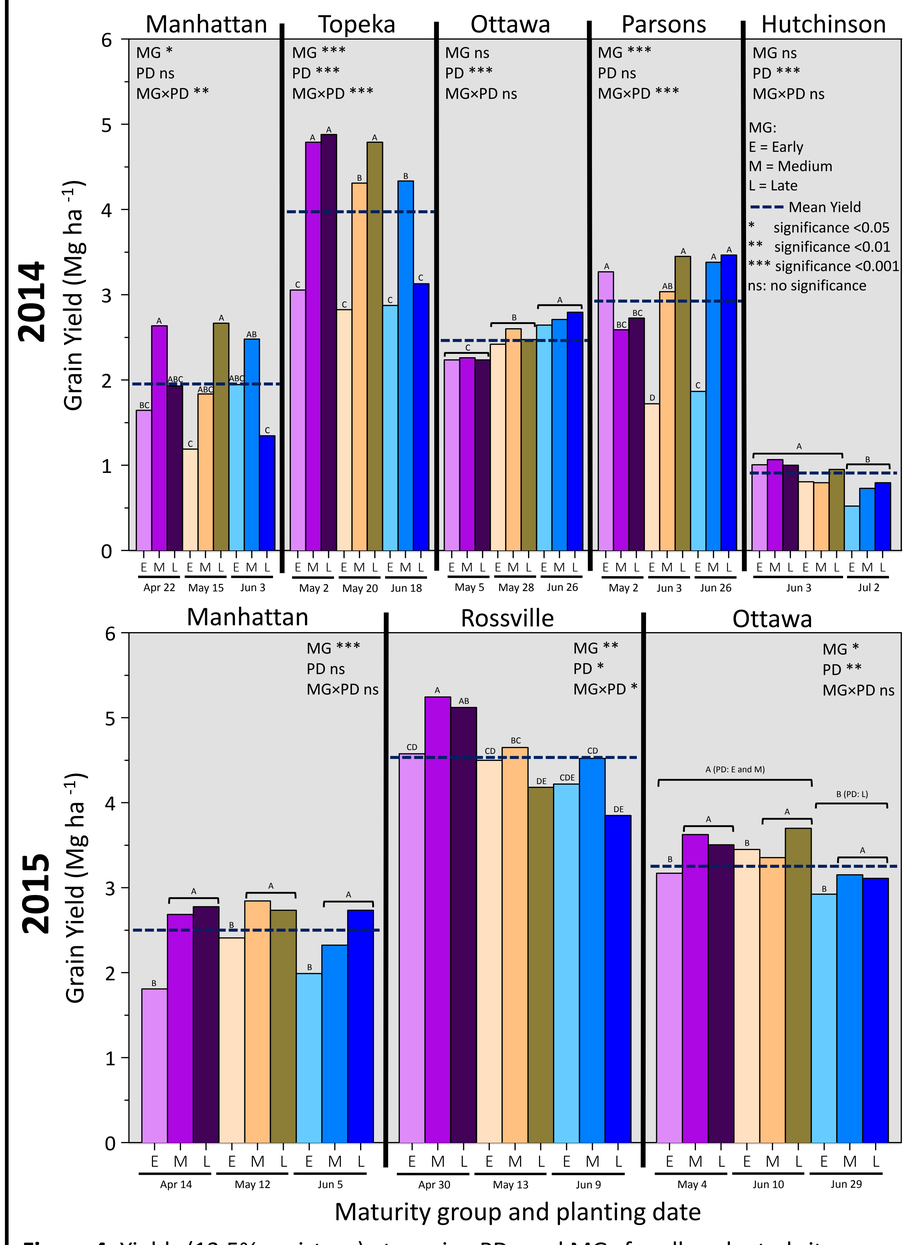


Figure 4. Yields (13.5% moisture) at varying PDs and MGs for all evaluated site-years.

CURRENT SOYBEAN PD x MG RESEARCH

Optimum PD depends on the genotype, environment and management practices (G × E × M)

Conclusions

- Historical synthesis-analysis provided a new map for optimal PD x MG combinations.
- Current research will be utilized to update the PD x MG map.
- A support tool for farmers is proposed to be developed with the goal of providing optimum PD and MG combinations for different regions across the state.