

**Project Title:** 2020 Soybean Planting Date Study

**Objective:** To evaluate the effect of planting date and maturity group on soybean grain yield and quality in northwestern Montana

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**Summary:**

Five different maturity groups (MG) of soybeans were planted on different dates, starting from late-April to late-May (Table 2) dryland conditions. Damage due to vegetative consumption by deer was observed in the late part of the season (prior to harvest, primarily) but did not contribute to the variability in yields. There was minimal lodging and shattering in the trial.

No significant interaction between planting date and MG was recorded for soybean measured traits except seed oil content. The average grain yield across the trail was 36.6 bu/A. the highest yield (42.9 bu/A) was observed when soybean was planted in May 6<sup>th</sup> and the lowest (33.6 bu/A) was recorded with delayed planting (Figure 1). The MG 0.08 had higher yields (39.0 bu/A) and increasing MG beyond 0.08 did increase yield any further (Figure 2). The caveat is that for longer MG beyond 0.08, drying down time of the pods and stems is a major concern for timely harvesting.

The highest seed protein content was observed under the delayed-planted and early maturing soybean varieties (Table 3). As planting was delayed, thousand kernel weight (TKW) and test weight (TWT) increased (Table 3). The lowest TKW (34.5 g) and TWT (57.3 lbs/bu) was found for early-planted soybean. The average TKW and TWT were 35.8 g and 57.7 lbs/bu, respectively. Late maturing soybean varieties also showed the greatest TKW (except 0.4) and TWT compared with the early maturing ones (Table 4). Seed oil content topped out at 22.1% for early-planted soybean, and decreased as planting was delayed. Oil content was inconsistent with the maturity groups, ranging from 20.7% to 21.9%.

**Table 1.** Management information

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Seeding rate (plants/acre): 150,000	Field location: X1
Previous crop: Corn	Soil type: Creston silt loam
Herbicide: 6/3: Basagran	Tillage: Conventional
Insecticide: None	Soil residual nutrient
Fungicide: None	(NO <sub>3</sub> <sup>-</sup> , P, K lb/A): 190-12-258
Inoculant: Verdesian N-Dure	Nutrient fertilizer applied
	(N, P <sub>2</sub> O <sub>5</sub> , K <sub>2</sub> O lb/A): 0-30-0

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**Table 2.** Harvesting dates of the respective soybean planting dates

Planting dates	Harvesting dates
April-27	October-2
May-06	October-2
May-18	October-8
May-29	October-8

**Table 3.** Planting date (individual) effects on soybean quality

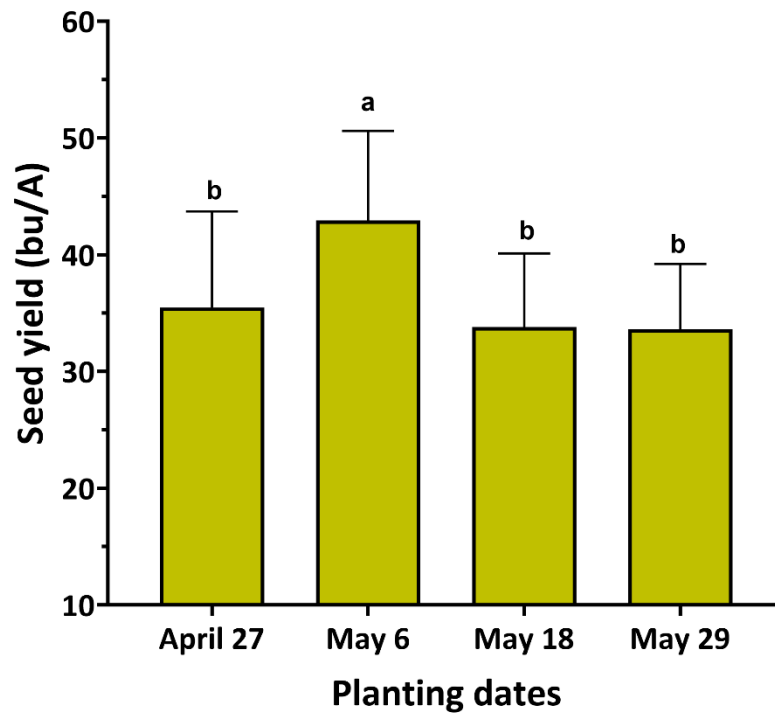
Planting dates	Protein (%)	TKW (g.)	TWT (lbs/bu)	Oil (%)
April-27	37.1b	34.5b	57.3b	22.1a
May-06	36.9b	35.5b	57.8ab	21.2b
May-18	38.2a	34.9b	58.2a	20.7c
May-29	38.3a	36.6a	58.0a	20.6c
<b>Mean</b>	37.6	35.6	57.8	21.2
<b>CV%</b>	4.8	11.9	1.9	4.8
<b>Pr &gt; F</b>	0.006	0.04	0.02	<0.001

TWT= test weight, TKW = thousand kernel weight

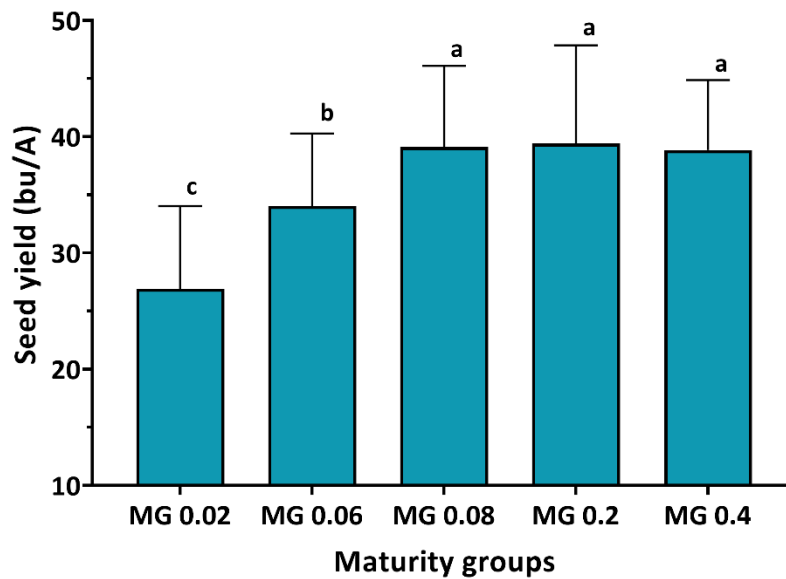
**Table 4.** Maturity group (individual) effects on soybean quality

Maturity groups	Protein (%)	TKW (g.)	TWT (lbs/bu)	Oil (%)
0.02	39.9a	33.8bc	57.4ab	20.7c
0.06	37.9b	36ab	57.3b	21.9a
0.08	37.2bc	35.9ab	57.9a	21.1bc
0.2	36.8bc	38.7a	57.8ab	21.3b
0.4	37.1c	32.4c	58.4a	20.7c
<b>Mean</b>	37.8	35.4	57.7	21.3
<b>CV%</b>	4.5	10.8	1.8	4.7
<b>Pr &gt; F</b>	<0.001	<0.001	0.02	0.0008

TWT= test weight, TKW = thousand kernel weight



**Figure 1.** Soybean seed yield with planting dates. Same letter assignment denotes no statistical difference ( $\alpha = 0.05$ ).



**Figure 2.** Soybean seed yield with maturity groups. Same letter assignment denotes no statistical difference ( $\alpha = 0.05$ ).