

Soybean Planting Date and Early Fall Freeze

Summary: There is no advantage to planting an early Group I maturity soybean in Cass, Richland and Ransom counties. A late Group 0 variety will produce as much yield, especially when averaged across growing seasons that are cooler than average with an early fall-freeze. Planting May 8 greatly increased yield, while planting May 21 or June 2 decreased yield in a cooler than average summer with an early fall freeze. The seed-filling process was not completed when late planted beans were killed by frost in early September and this reduced yield for the May 21 and June 2 planting dates. If the soybean crop is prematurely killed by an early fall freeze and the stems and seeds are still green but the seeds completely fill the pod cavity, the seeds will dry down and turn a normal yellow color, provided that the weather turns warm and the seeds have already separated from the pod wall.

In a warmer than average growing season, yield of 0.8 relative maturity and 1.2 relative maturity soybean varieties was the same (Table 1). There was no advantage to planting an early Group I variety in Cass, Richland or Ransom counties in a year with above average temperatures and warmer than average nights in June. In a colder than normal growing season, the yield of a 0.8 (late-Group 0) cultivar yielded more than a 1.2 (early-Group I) cultivar (Table 2). We simulated an early killing fall freeze by spraying paraquat herbicide on Sept. 3, Sept. 14 and Sept. 22 in 1992. 1992 was a below-average temperature, cool-summer year. A natural fall-freeze occurred Sept. 22, 1992. The 0.8 maturity soybean cultivars yielded 4 bu/A more than the 1.2 maturity variety for the cooler than normal summer of 1992 when the soybeans were prematurely killed by frost on Sept. 22.

When an early fall-freeze occurred on Sept. 3 or Sept. 14, in a cooler than normal growing season (1992), the May 8 planting date increased yield of maturity Group 0.8 cultivars (Table 3). The May 21 and June 2 planting dates resulted in soybean plots that had not completed the seed-filling process for a Sept. 3 and Sept. 14 killing fall-freeze and these later planting dates resulted in lower yield for early fall freeze dates (Table 3). It is better to risk a killing frost in the spring by planting early, during the first week of May. Farmers can always replant if their soybean crop is killed by frost in the spring. However, if farmers plant soybeans late, the combination of a cooler than normal growing season and an early killing frost can greatly reduce yield. If field conditions permit, try to plant soybean in the southern half of the Red River Valley during the first week of May.

Table 1. Soybean yield of early and late maturity varieties in the warm summer of 1991.

Frost date	0.8 maturity variety	1.2 maturity variety
Yield (bu/A)		
Sept. 9	28	26
Sept. 15	26	24
Sept. 19	27	26

Table 2. Soybean yield of early and late maturity varieties after the cool summer of 1992.

Frost date	0.8 maturity	1.2 maturity
	variety	variety
Yield (bu/A)		
Sept. 3	17	8
Sept. 14	26	18
Sept. 22	31	27

Table 3. Soybean yield for 0.8 maturity varieties for three fall frost dates and three planting dates resulting from the cool summer of 1992.

Fall freeze date	Planting date		
	May 8	May 21	June 2
Yield (bu/A)			
Sept. 3	23	17	11
Sept. 14	29	27	32
Sept. 22	30	32	30