



When Could Grain Farmers Switch Fields from Corn to Soybean?

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The wet weather this year has caused corn planting delays and some fields will need to be re-planted possibly to another crop such as soybean. The decision to switch crops on a field is influenced by expected corn and soybean price, intended use of the crop (grain v. silage), prior herbicide and fertilizer applications, desired rotation, potential pest problems, risk associated with late- or re-planting, livestock feed requirements, and the possibility of erosion on slopes. Below are some guidelines and switch dates to consider when changing field intentions from corn to soybean based on expected corn and soybean price.

Relative grain yield data used to develop switch dates summarized in Tables 2 and 3 were derived from Lauer (1997) and Gaska (2000) and are shown in Table 1. Full-season corn hybrids were assumed to be planted on May 1 and May 10. Full-season soybean varieties were assumed to be planted on May 1, May 10 and May 20. Beginning May 20 for corn and June 1 for soybean, shorter-season hybrids and varieties were planted. Relative yield was calculated for each planting date using recommended plant densities (corn = 30,000 plants/A; soybean = 200,000 plants/A).

Knowing the cost of production for fields is crucial to numerous management decisions including crop switch dates. Usually corn has greater cost of production than soybean. An average cost of production was derived from the PEPS program cash corn and soybean divisions over the last 10 years (1994-2003). For corn the average cost of production was \$277 per acre, while for soybean the average cost of production was \$203 per acre. The average yield of corn and soybean for the same time period in PEPS was 170 and 50 bu/A.

Expected corn and soybean price can significantly affect when switch dates between crops could occur. When cost of production is the same for both crops and the expected corn and soybean price is \$2.00 and \$5.00 per bushel, then fields could be switched from corn to soybean beginning June 12 (Table 2). As corn price increases from \$2.00 to \$3.00 per bushel and soybean price remains the same at \$5.00 per bushel, switching from corn to soybean should occur about 8 days later. As soybean price increases from \$5.00 to \$7.00 per bushel and corn price remains the same at \$2.00 per bushel, then switching a field from corn to soybean could occur 31 days earlier.

Lower cost of production for soybean (\$203 per acre) relative to corn (\$277 per acre), results in earlier switch dates from corn to soybean than when costs of production are similar (Table 3 v. Table 2). For example, when cost of production was lower for soybean, expected corn price was \$2.00 per bushel, and expected soybean price was \$5.00 per bushel, then fields could be

switched from corn to soybean beginning May 12 (Table 3). In fact, when expected corn price was \$2.00 per bushel and expected soybean price was \$6.00 or \$7.00 per bushel, greater grower return was always seen with soybean.

Remember the decision to switch a field from corn to soybean is influenced by many factors besides expected corn and soybean prices (see above). Some decisions will influence future yield potential of the field or increase the cost of production. For example, if a field planted to soybeans the previous year was intended to be planted to corn this year but had to be switched to soybean again (soybean following soybean), then soybean yield potential will likely be reduced 10% and more inputs may be required for pest control. Thus, switch dates become later than those shown in Tables 2 and 3.

Table 1. Relative yield response to planting date of corn and soybean.

Planting date	Corn	Soybean
	Relative yield (%)	
May 1	100	100
May 10	96	100
May 20	87	100
June 1	72	90
June 10	56	75
June 20	32	67
July 1	0	60

derived from Lauer (1997) and Gaska (2000)

Table 2. Switch dates from corn to soybean when the cost of production for both crops is the same.

Expected corn price (\$ per bushel)	Expected soybean price (\$ per bushel)		
	5.00	6.00	7.00
2.00	June 12	May 20	May 10
2.50	June 17	June 12	May 30
3.00	June 20	June 18	June 14

Table 3. Switch dates from corn to soybean when the cost of production for corn = \$280/A and soybean = \$205/A (derived from 1994-2003 PEPS program).

Expected corn price (\$ per bushel)	Expected soybean price (\$ per bushel)		
	5.00	6.00	7.00
2.00	May 12	---	---
2.50	June 4	May 20	May 10
3.00	June 14	June 8	May 25

Literature Cited

Gaska, J. 2000. Soybean Replant and Late Plant Issues. Wisconsin Crop Manager 7:75. URL http://soybean.agronomy.wisc.edu/publications/wcm/00wcm_soybean_replant.htm

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