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What's there to lose...with replanted corn?

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Abstract
It seems inevitable that we cannot get through a spring without talking about replant issues to some degree. Although the majority of the corn in the state appears to be fine, there are some areas that will have to deal with replanting. Mark Carlton, extension field crops specialist in south-central Iowa, has reported seeing fields that need to be replanted due to a lack of coleoptile growth or mesocotyl rot. (See "Corn seedling health and stand establishment" on page 131.)

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What's there to lose . . . with replanted corn?

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It seems inevitable that we cannot get through a spring without talking about replant issues to some degree. Although the majority of the corn in the state appears to be fine, there are some areas that will have to deal with replanting. Mark Carlton, extension field crops specialist in south-central Iowa, has reported seeing fields that need to be replanted due to a lack of coleoptile growth or mesocotyl rot. (See "Corn seedling health and stand establishment" on page 131.) Fields in this area that were planted in the first week of April appear to be healthy with a uniform stand. Yet fields planted during the last week of April are having emergence problems. Late April plantings were exposed to cool and wet conditions, which occurred when the seeds were germinating. Areas that are flat, wet, or low lying are the most likely to have stand establishment problems and are potential candidates for replanting.

Two scenarios typically exist in fields with problematic stands:

(1) The corn had non-uniform emergence resulting in different plant developmental stages. It is highly unlikely that you will benefit from replanting a field that appears this way. A two-leaf differential between plants will potentially cause a 5 to 10 percent reduction in yield because the smaller plants compete with the larger plants.

(2) The corn has emerged (uniform or non-uniform stand) but has a significantly lower population than desired. Replanting may be beneficial in this case. Several considerations and comparisons should be made when determining if a specific field fits this category.

Measure the existing plant population in several random areas in the field; this will help determine the potential yield of the field. To estimate the plant stand, count plants in at least three areas. For 30″-row spacing, measure 17′5″ of row and count the number of plants in that section. Once you have averaged those three measurements, multiply the value by 1,000 to figure your plant population on an acre basis.

The most important factor in deciding whether or not replanting will be beneficial is to calculate your expected yield now versus what you could potentially have if it was replanted. Refer to Table 7 from the *Corn Planting Guide* (see table on page 134); this gives relative yield potentials for numerous planting dates and plant populations.

Replanting may be beneficial if corn has a lower population than desired. ***(Iowa State University)***

Let's consider that a producer wants to replant this week. The field was originally planted on April 26 but only has a population of 24,000 plants per acre. Is there any yield advantage to replanting it now? By looking at the May 26–June 1 planting date window in the table, we can see the relative yield potential expected from a field replanted now. Approximately 90 percent of the maximum yield potential would be achieved if it was replanted, with a population of 32,000 plants. Yet the producer's original stand will reach approximately 94 percent of its yield potential; therefore, it is better to leave the original stand than to replant. Realize that extra costs will occur from replanting not only upfront but also potentially post-harvest due to higher grain moisture content.

In "Has the best time to plant corn changed?" (*ICM*, March 13, 2006, pages 61–62), we discussed recent ISU corn research that has shown a very positive yield response to earlier planting dates. These dates are earlier than what is contained in the *Corn Planting Guide*. Does this newer data give us a different view of what we should do with potential replant fields?

In the *Corn Planting Guide,* 100 percent relative yield potential is shown to occur with planting dates between April 20 and May 5. Yet recent planting date research conducted at the Southeast Research and Demonstration Farm between 2002 and 2004 and at the Northeast Research and Demonstration Farm between 2003 and 2005 showed a yield decline when corn was planted in May compared to April. The best yields at both locations were obtained from April planting dates. At the Southeast Research and Demonstration Farm, an 11 percent yield reduction resulted when corn was planted May 1 compared to April 15. No planting dates after May 1 were used at that location. A 7 percent yield reduction occurred from corn planted between May 5 and May 20 compared to corn planted late April at the Northeast Research and Demonstration Farm. If we generalize across these locations and years, corn that was planted early/mid-May yielded approximately 10 percent less than when it was planted in April. It is therefore possible that the values given in the table are more optimistic than what they should be. Of course, numerous factors will determine what each field may potentially yield this year; data can only be used as a tool in approximating what may result. Producers should take the values contained within the table as approximate, realizing that the actual yield loss may be greater than what is shown.

Influence of planting date and plant population on corn grain yields. (Based on recent research, this table potentially overestimates corn yields with later planting dates.)

	Planting Date				
	April 20–May 5	**May 13–19**	**May 26–June 1**	**June 10–16**	**June 24–28**
Final Stand*	**Relative Yield Potential (%)**				
28,000–32,000	100	99	90	68	52
24,000	94	93	85	64	49
20,000	81	80	73	55	42
16,000	74	73	67	50	38
12,000	68	67	61	46	35

*Assumes uniform plant spacing

Source: Iowa State University Extension, 2001. *Corn Planting Guide,* PM 1885, (Table 7).

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