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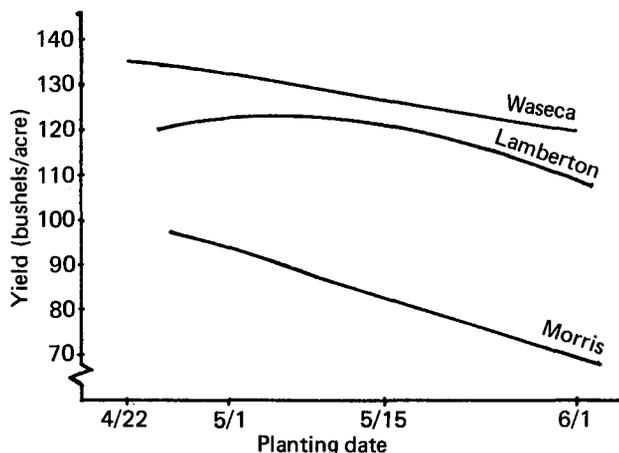
D. R. HICKS and R. H. PETERSON

Date of planting corn

Minnesota corn growers begin planting corn earlier each year. The trend to early planting is a result of larger farms, use of herbicides and fungicides, high quality seed of vigorous hybrids, starter fertilizer, and the resultant higher yields. Factors to consider when determining a planting date are:

1. **Yield**—Early planting produces the highest yields. Results from several states show yields begin to decline when planting occurs later than the first week in May. Recent Minnesota tests (figure 1) show that yields from later planting were reduced, with the greatest reduction occurring at Morris.

Figure 1. Effect of date of planting on corn yield, Lambertson, Morris, and Waseca (1968-70)



2. **Hybrid maturity**—Yield reduction from late planting was greater for "full season" than for "midseason" hybrids. "Short season" hybrids were affected little by the planting date (figure 2). Maximum yield for any area usually is obtained with hybrids that utilize the entire growing season. Early planting allows full season hybrids to produce their maximum potential yield, without the risk of immature corn.

3. **Planting days available**—At Lambertson, the soil could be tilled during only 15 days in May. Of these 15, only 4 occurred before May 11. Data are not available for April 20 to 30, but quite likely there are no more than 4 "field days." Therefore, about 8 days are available for corn planting from April 20 to May 10, when most corn should be planted. Equipment and materials must be ready if full use is to be made of these good planting days.

Planting days in May at Lambertson, 1962-66

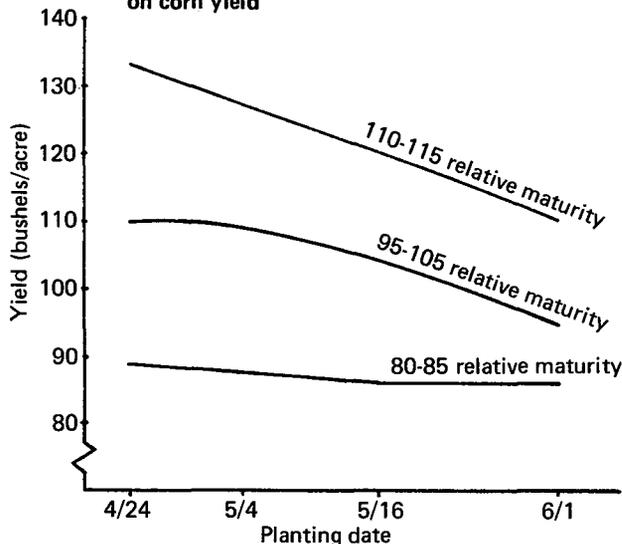
Date	Average no. of planting days*
May 1-10	4
May 11-20	5 3/5
May 21-31	5 4/5

* Excludes Sundays

4. **Planting depth**—Low soil temperatures are associated with early plantings, so germination and emergence require more time (figure 3). Shallow planting, about 1" deep, places the seed in the warmest soil. When planting depth is less than 2 inches, good seed-soil contact is extremely important to promote uniform germination and plant emergence before the soil dries around the seed. However, this condition is unlikely with early planting if normal rainfall occurs.

5. **Planting rate**—Percent emergence is lower with early planting. Cool soil temperatures slow germination and growth, resulting in more rotting of kernels and seedlings. Generally, a 10 to 15 percent increase in planting rate is suggested for early-planted fields. High quality seed with a good fungicidal treatment is important, regardless of planting date, but it is a "must" for early planting.

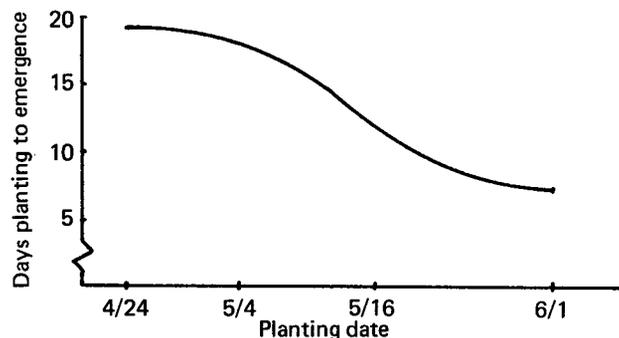
Figure 2. Effect of date of planting and hybrid maturity on corn yield



6. **Frost damage**—Early planting may cause some concern about plants killed by a late occurring spring frost. The corn growing point remains below ground for 2 to 2 1/2 weeks after emergence. Therefore, the corn is protected, and a prolonged period of low temperature is necessary to kill the plant. There may be some leaf loss, but this temporary setback would have little effect on yield.

For the major corn producing areas in Minnesota, the probability is less than 20 percent that a temperature of 32 F. or lower will occur after May 20. If corn takes two weeks to emerge plus two weeks for the growing point to reach the soil surface, the odds are better than 4 to 1 that corn planted April 20 to 30 will not be exposed to a killing frost.

Figure 3. Effect of date of planting on the number of days required for corn emergence



7. **Weed control**—Control of weeds is essential, regardless of planting date. Low soil and air temperatures early in the season may favor faster growth of weeds than corn. Therefore, weed control methods must be effective to prevent corn yield losses as a result of early weed competition. Application of an herbicide specific for the weed population before or at planting, followed by timely rotary hoeing or harrowing, cultivation, and/or post-emergence applications of herbicide(s), should be effective in controlling both early and late germinating weeds.

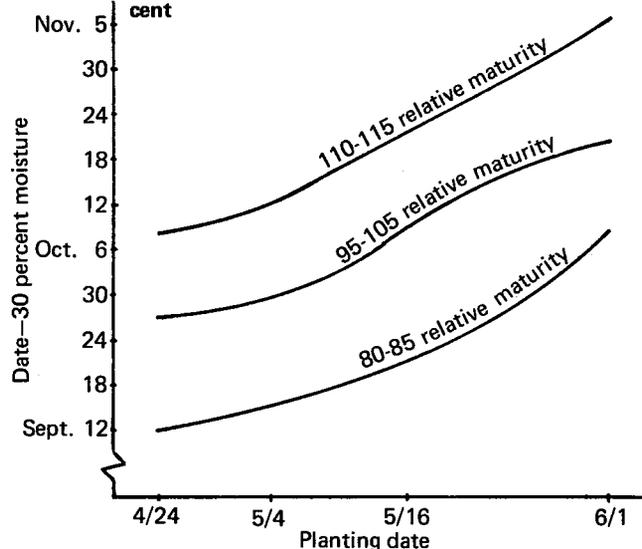
8. **Fertilizer considerations**—Cool soil temperatures retard nutrient uptake as well as reduce the rate of soil nutrient release. As a result, early corn growth is hampered. Row placement of a starter fertilizer stimulates early growth and increases yield, especially during a cool season.

9. **Harvest considerations**—Early planting facilitates early harvest. Calendar dates when ear moisture reached 30 percent are shown in figure 4 for different maturity groups and dates of planting. The time delay between maturity groups was about the same for each planting date. After May 16, one day's delay in planting delayed reaching 30 percent moisture by about one day.

The "harvest season" can be planned by planting corn hybrids of different maturities. Because full season hybrids yield highest when planted early and short season hybrids are less affected by the planting date (figure 2), full season hybrids should be planted first, followed by the shorter season hybrids, to maximize yields on the total corn acreage. If the planting date interval is not too great, the shorter season hybrids will reach harvestable moisture content first. As an extreme example, planting of short season hybrids can be delayed three weeks after the full season hybrids are planted and still be ready to harvest two weeks before full season hybrids (figure 4).

Early harvest of part of the corn acreage may be an advantage to producers with large corn acreages because they can start fall plowing sooner. Fall plowing is necessary for early planting on fine-textured, slow-draining soils. In addition, harvesting conditions are usually better early in the season, and reduce field losses and lost work time.

Figure 4. Effect of date of planting and hybrid maturity on date when ear moisture content is 30 percent



10. **Soybean planting date**—Soybean planting date studies have not shown large soybean yield differences. However, recent data from Waseca show certain varieties have yielded as much as 10 bushels per acre more when planted in early May than in late May. Planting corn early allows more days to plant soybeans in mid-May.

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