3-1-1980

# 1980 Indiana Corn Production Recommendations

H. F. Reetz Jr.

D. B. Mengel

Adm - Yes

agronomy guide

COOPERATIVE EXTENSION SERVICE, PURDUE UNIVERSITY, WEST LAFAYETTE, INDIANA (CORN) AY-223

Replaces 1979

# 1980 Indiana Corn Production Recommendations

H. F. Reetz, Jr. and D. B. Mengel, Agronomy Department, Purdue University



Crop prospects for 1980 should be above average, due to good progress last fall in fertilization and tillage. Even if spring warm-up is delayed, this field preparation should help get planting started on schedule or even earlier than usual. A normal or early spring would put the prospects even higher.

The recommendations which follow are intended to be a reminder for Indiana farmers to sharpen their management as they enter a new season. Errors made at planting time must be reckoned with throughout the season. Don't underestimate the importance of time spent in making sound management decisions at planting time.

Further updates on recommendations as the season progresses will be available from your county Cooperative Extension Service office through the 'FACTS' computer network Crop Advisories.

## Planting Date

Most farmers get started planting as early as they can, but a few still use the calendar and the soil thermometer as their only guides. With farm sizes continuing to increase, early planting is even more important. Better fertility, improved seedbed preparation and frost-tolerant hybrids have helped reduce risks of early planting in recent years. The danger of potential yield loss from fields planted after the optimum date is greater than potential losses from planting too early.

That doesn't mean ignore the soil and climatic conditions. But if the soil is suitable for seedbed preparation, there is no reason to delay planting after the first week of April in southern Indiana and mid-April in central and northern areas. The goal is still to get the crop in by about May 10 in south and central areas, and by May 20 in the north.

While soil temperature is important for rapid germination, it should not be considered the prime factor in deciding when to plant. A good rule-of-thumb is this: after May 1, don't allow soil temperature to slow planting progress; before May 1, however, avoid planting a large percentage of your acreage if soil temperature remains below 50°F, especially in poorly-drained soils. (On well-drained soils, less risk is involved.)

Besides starting earlier, several other steps might be taken to help improve timeliness in corn planting. These include: (1) switching to a larger planter, (2) reducing or omitting starter fertilizer when soil test levels are medium or higher (3) improving drainage and (4) reducing tillage for seedbed preparation.

## Hybrid Selection

If able to plant early, start with full-season hybrids to take best advantage of the extended growing season. But consider early planting of some earlier maturing ones as well. Here's why:

1. Early maturity types allow for earlier starts at harvest.
2. Some early hybrids make more vigorous initial growth if cool, wet conditions prevail.
3. Planting hybrids of differing maturities spreads risk of stress problems at pollination time.

While full-season varieties will probably give the best yields from early planting, any maturity will yield better when planted early year in and year out. The suggestion, therefore, is to use about three different maturities to minimize problems.

Use Purdue Agricultural Experiment Station Bulletin No. 249, "Performance of Commercial Dent Corn Hybrids in Indiana", as a guide in selecting hybrids. Your own experience and local demonstration plot results are also important aids in hybrid selection. For further help, see Purdue Extension Publication AY-195, "Selecting Corn Hybrids."

Table 1. Recommended Nitrogen Rates for Corn.

| Previous crop | N rate for bu./acre yield levels of — 100-110 | 111-125 | 126-150 | 151-175 | 176-200 |
|---|---|---|---|---|---|
| | pounds N per acre | | | | |
| Good legume (5 plants/sq. ft.) | 40 | 70 | 100 | 120 | 150 |
| Average legume (2-4 plants/sq. ft.) | 60 | 100 | 140 | 160 | 180 |
| Soybeans, legume seeding | 100 | 120 | 160 | 190 | 220 |
| Corn, small grain, grass crops, etc. | 120 | 140 | 170 | 200 | 230 |

Table 2. Recommended Phosphorus Rates for Corn Grown on Medium-Textured Soil.

| Soil test level | Bray P test* | $P_2O_5$ rate for bu./acre yield levels of — 100-110 | 111-125 | 126-150 | 151-175 | 176-200 |
|---|---|---|---|---|---|---|
| | lbs. P/A | pounds $P_2O_5$ per acre | | | | |
| Very low | 0-10 | 100 | 110 | 120 | 130 | 150 |
| Low | 11-20 | 70 | 80 | 90 | 100 | 120 |
| Medium | 21-30 | 50 | 60 | 60 | 70 | 80 |
| High | 31-70 | 30 | 30 | 40 | 50 | 50 |
| Very high | 71+ | ** | ** | ** | ** | ** |

*Based on a 7-inch plow layer or 2,000,000 pounds of soil per acre.

**On soil test reports, no P is recommended for very high soil test levels because the recommendation is for one crop only. In planning a long-term fertility program, maintenance applications should not exceed 1/3 pound $P_2O_5$ per bushel of grain harvested per year. Retest on a regular basis.

Table 3. Recommended Potassium Rates for Corn Grown on Medium-Textured Soil.

| Soil test level | Potassium test* | $K_2O$ rate for bu./acre yield levels of — 100-110 | 111-125 | 126-150 | 151-175 | 176-200 |
|---|---|---|---|---|---|---|
| | lbs. K/A | pounds $K_2O$ per acre | | | | |
| Very low | 0- 80 | 100 | 120 | 150 | 180 | 200 |
| Low | 81-150 | 70 | 90 | 120 | 140 | 160 |
| Medium | 151-210 | 50 | 60 | 70 | 90 | 120 |
| High | 211-300 | 30 | 30 | 40 | 60 | 80 |
| Very high | 301+ | ** | ** | ** | ** | ** |

*Based on a 7-inch plow layer or 2,000,000 pounds of soil per acre.

**On soil test reports, no K is recommended for very high soil test levels because the recommendation is for one crop year only. In planning a long-term fertility program on soils that test very high in K, maintenance applications should not exceed 1/4 pound $K_2O$ per bushel of grain harvested or 1 1/2 pounds per bushel equivalent where silage is harvested. Retest on a regular basis.

## Seedbed Preparation

Try not to prepare more seedbed than can be planted in one day. When a prepared seedbed recieves heavy rains, it is difficult to restore it to optimum planting condition. Also, if herbicides, insecticides and/or fertilizer are applied during seedbed preparation, you keep your options open to change crops if you don't work too far ahead of the planter. If a field must be reworked, don't attempt to do it if it's too wet.

Good stands and uniform emergence, which are critical to top yields, depend upon good seedbed preparation. The soil should be worked only enough to provide uniform depth control and uniform soil-to-seed contact for rapid germination. Overworking may lead to compaction of soil in the root zone and inhibition of root growth. Leaving the surface too fine may result in crusting and poor emergence. Rising energy costs are another good reason for minimizing secondary tillage.

## Planting Rate

If planting before May 1, increase your normal seeding rate 10-15 percent to allow for possible stand loss from frost and other problems. Since earlyplanted corn is usually shorter, the additional population will not cause problems, even if all the plants survive. (To determine proper seeding rates, see Purdue Extension Publication AY-220, "Plant Populations for Corn.")

## Planting Depth

Shallow planting (about 1 inch) helps get the crop off to a faster start in cool soils. For corn planted after May 10, planting depth should be between 1 and 2 inches, depending on moisture conditions.

Do not plant deeper than 2 inches until late May, and then only if persistent dry weather is a problem. In fact, it may be better to wait for rain than risk planting too deep. (On coarse textured soils, these depths may be increased slightly.)

## Fertilization

A good fertility program is essential for top yields. Periodic soil testing will monitor soil pH and nutrient levels and help determine fertilizer needs.

Nitrogen (N) is the key nutrient needed for Indiana corn production. As a rule-of-thumb, N rates of 1-1 1/4 pounds actual N per bushel of intended yield are normally recommended. For continuous corn or corn following soybeans, N rates of less than 1 pound per bushel of expected yield may reduce yields, while rates above 1 1/4 pounds per bushel of expected yield are usually inefficient. Table 1 gives recommended nitrogen rates for different yield levels and previous crops.

Phosphorus (P) and potassium (K) applications should be based on a current soil test. Recommended P and K rates for different yield goals and soil test levels are given in Tables 2 and 3.

Phosphorous fertilizers can be applied broadcast and plowed down or applied in a band at planting time. Generally for soils with low or very low phosphorus soil tests, 1/3 of the phosphorus should be applied in a band 2 inches to the side and 2 inches below the seed, and the balance broadcast. In soils with medium or higher P soil tests, all of the P can be broadcast and no row "starter" used.

As with phosphorus, potassium may be applied either by broadcasting and incorporating or as a band 2 inches to the side and 2 inches below the seed at planting. Both methods will effectively supply potassium in most instances.

Occasionally, micronutrient deficiencies are suspected in corn in Indiana. Since micronutrient soil tests are not as reliable as those used for P and K, plant analysis should be used to confirm suspected micronutrient problems. If a deficiency is suspected, leaves should be taken from several plants exhibiting deficiency symptoms, and a second sample taken from normal plants in the same field. Soil samples should be taken from both areas and submitted with the plant samples. Detailed instructions on both plant analysis and soil sampling are available from your county Extension office.

For additional information on corn fertilization, see Purdue Extension Publications AY-171, "Corn Fertilization"; AY-203, "Micronutrients for Field Crops in Indiana"; and AY-204, "Types and Uses of Nitrogen Fertilizers for Crop Production".

(Crops-Corn) REV 3/80