

HIGHER CROP YIELDS FROM IMPROVED SOILS

corn

soybeans

wheat

oats

legumes

grasses

Purdue University
Agricultural Extension Service

Mimeo AY-50 a
January 1953

NITROGEN RECOMMENDATIONS FOR CORN IN INDIANA

The amount of commercial nitrogen that needs to be applied for the most profitable corn production depends upon (1) organic matter content of the soil; (2) moisture holding capacity of the soil; (3) stand, growth and quality of the preceding legume; (4) elapse of time since a good legume has been grown, and (5) the amount of manure applied.

Table 1. Nitrogen Recommended for Corn according to Cropping History and Soil
Pounds of Nitrogen (N) Per Acre¹

Corn Following	Light Colored Soils	Dark Colored Mineral Soils	Droughty Soils
1. Good legume (alfalfa, sweet clover, red clover)	0 to 40	0	0
2. Second year from good legume	60 to 80	40 to 60	20 to 40
3. Third or more years away from good legume.	80 to 120	80 to 100	40 to 60
4. Poor legume ² .	40 to 80	40 to 60	0 to 20
5. Grass sod ³ .	80 to 120	60 to 100	40 to 60

1/ For each load of manure applied reduce nitrogen 5 pounds per acre.

2/ Lespedeza or thin stand or poor growth of No. 1.

3/ Three or more years away from good legume.

The nitrogen recommendations for corn in Table 1 are based on the following assumptions:

1. Adequate phosphorus and potassium are either supplied or are present in the soil.
2. The land has been limed sufficiently to produce good legume crops (pH 6.5 for red clover and alfalfa, 6.8 for sweet clover).
3. Corn production without irrigation.
4. A bushel of corn will buy 10 pounds of nitrogen.

The recommendations also take into account variations of summer rainfall from year to year and are based on the most profitable returns over a period of years.

Nitrogen may be supplied in either solid nitrogen fertilizer, anhydrous ammonia, nitrogen solutions or in mixed fertilizer high in nitrogen such as 8-8-8 or 10-10-10. Applications may be (1) broadcast and plowed under or in the plow furrow (2), placed 4 to 6 inches deep in the seed bed before planting (3), side dressed midway between rows any time after planting until the corn is 18 inches high.

Regardless of cropping history, nitrogen in fertilizer applied in the row at planting time is important especially on poorly drained soils. The above amounts are recommended to be applied in addition to the generally small amount of nitrogen

applied in the row such as contained in 3-12-12 or 4-16-16. A few farmers use from 200 to 250 pounds per acre of higher nitrogen ratio for row application such as 8-8-8 or 10-10-10. In such cases deductions may be made for the nitrogen used.

Nitrogen for Muck. Nitrogen is not recommended for well-drained muck soils. Nitrogen in the row fertilizer should be used on poorly drained mucks. Where the water level is maintained close to the surface throughout the season, (18 to 24 inches) either naturally or artificially, from 60 to 80 pounds of nitrogen should be applied in addition.

Legumes vary as to their quality, growth and stand even between crops that may be considered good. Also soils vary as to their organic matter content with the amount indicated by color shades ranging from light grey through chocolate to black. For these reasons a range is given in the amount of nitrogen recommended for both light and dark colored soils.

Moisture shortage is chronic on droughty soils. The rate of planting and fertilization should be adjusted downward for such soils.

Our best corn crops occur in seasons of well distributed summer rainfall averaging about one inch per week with the daily temperature around 76°. A large amount of nitrogen as well as phosphorus and potash is required to enable the crop to take advantage of such conditions. Recommended rates of nitrogen will be insufficient to produce the largest net returns under favorable growing conditions and higher rates are advisable for yield contests. For maximum yields on soils with good moisture holding capacity, regardless of profit and lodging, from 100 to 200 pounds of nitrogen are recommended to be applied in addition to amount shown in table 1.

COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS
State of Indiana, Purdue University
And the United States Department of Agriculture Cooperating
H. J. Reed, Director, Lafayette, Indiana
Issued in furtherance of the Acts of May 8 and June 30, 1914