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Agronomy Guide

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# AGRONOMY guide

COOPERATIVE EXTENSION SERVICE, PURDUE UNIVERSITY, WEST LAFAYETTE, INDIANA (SORGHUM) AY-198

## Where Grain Sorghum Deserves Serious Consideration

W. D. Reiss and H. M. Galloway, Agronomy Department

There are certain soils in Indiana on which farmers with average or above-average management could probably produce greater returns from grain sorghum than from either corn or soybeans, *provided* the grain is fed to livestock. Annual crop yields on these soils are highly variable, with the advantage of one crop over the other two determined primarily by amount and timeliness of rainfall. Yields over 5 to 10 years, however, would show grain sorghum to be the most efficient crop, especially if the aftermath forage can be grazed.

The soils that favor grain sorghum production in Indiana fall into four major categories, according to their characteristics and/or location: (1) non-irrigated droughty sands; (2) droughty fragipans derived from sandstones and shales on sloping surfaces; (3) wet, slow-drying fragipans where drainage prevents early tillage and timely planting; and (4) bottomland subject to overflow after the crops are planted and growing.

Following is a brief description of each of these four "sorghum belts," including where located and what soil types or conditions exist (see Figure 1). Those farming within any of these areas should seriously consider grain sorghum in their cropping sequence, particularly if both grain and forage can be utilized by livestock.

### DROUGHTY SANDS

These soils include Plainfield, Chelsea, Oshtemo and Fox, and are found extensively in the northern two tiers of counties. Other sandy soils are located in a band along the Wabash River beginning in southern Parke Co. and extending towards Terre Haute, but following the river through Sullivan, Knox, Gibson and into northern Posey Co.; these soils include Elston, Wea, Warsaw, Bloomfield and Princeton. Other small areas of melon sands are located in western Daviess, central Greene and southern Clay

counties. Also, a narrow band of sandy soils begins near Columbus in Bartholomew Co. and extends diagonally through Jackson Co.

Droughty soils have low water-holding capacity, and crops must depend upon frequent rainfall to survive. Unfortunately, neither corn or soybeans can tolerate many days of severe moisture stress. Grain sorghum, however, in early stages of growth is able to roll its leaves tightly to conserve moisture until additional moisture arrives, then continues its growth processes as before.

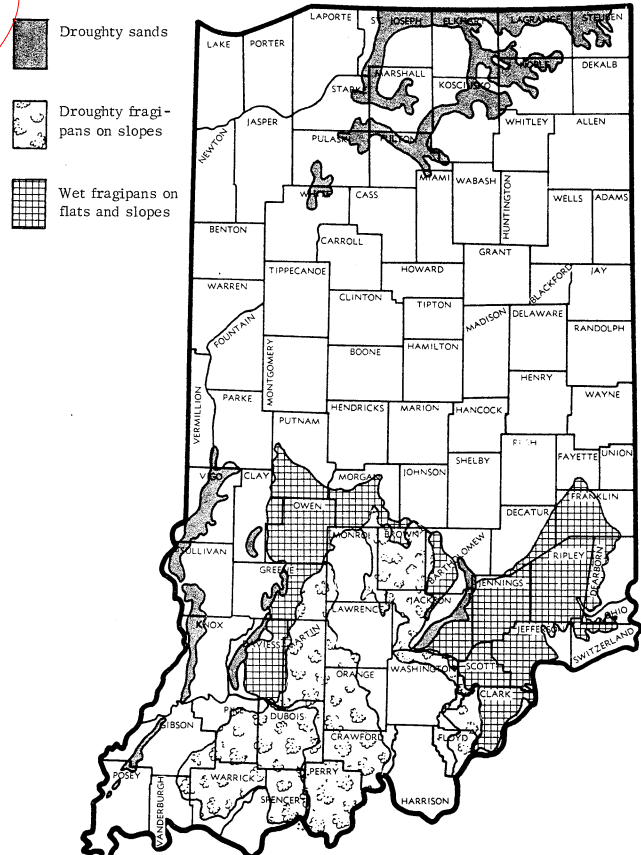


Figure 1. Areas favoring grain sorghum production.

For grain sorghum hybrids adapted to sandy soils in northern Indiana, obtain results of performance trials from the Pinney-Purdue Agricultural Center near Wanatah. These trials are conducted on a Tracy sandy loam soil.

#### **DROUGHTY FRAGIPAN SOILS ON SLOPES**

Southern Indiana has large areas of fragipan soils underlain with sandstones and shales. These soils receive variable summer rainfall and tend to be droughty on slopes.

About one-third of the area covering Perry, Crawford, western Orange, Martin, eastern Greene, Brown, western Jackson and parts of Washington, Scott and Floyd counties is composed of sloping Tilsit, Zanesville and Wellston soils where cropland occurs. The less rolling area in Dubois, Pike and northern Warrick and Spencer counties, although composed of the same soil types, contains larger acreages of smooth croplands, which tend to be more responsive to summer rainfall.

#### **WET FRAGIPAN SOILS ON FLATS AND SLOPES**

A large area in southeastern Indiana and extending westward into Morgan, Putnam, Owen and parts

of Greene and Daviess counties contains slowly-drying fragipan soils which developed from glacial till. Some of this area is very flat and produces excellent corn and soybean yields if managed correctly. However, without proper drainage and tillage, these soils can remain wet until June. In southeastern Indiana, soils of these types include Clermont, Cincinnati, Rossmoyne and Avonburg. As the area extends westward, Vigo, Iva, Cincinnati, Rossmoyne and Ava become the major soil types.

For grain sorghum hybrids adapted to southern Indiana, obtain performance trial results from the Southern Indiana Purdue Agricultural Center near Dubois.

#### **OVERFLOW LAND**

Some drainageways flood easily if excessive rainfall occurs in late spring or early summer. Water covering the land for as little as 2 or 3 days will usually kill or severely stunt young corn and soybean plants. The grain sorghum plant, on the other hand, is more hardy and can withstand flooded conditions for nearly a week and still survive. Naturally, yields will be reduced, but the plants will still produce satisfactory yields.

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