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Soil Moisture Survey

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Abstract

Each spring and fall, a soil moisture survey is conducted to determine the amount of plant-available moisture in the top five feet of many of the major soil types in Iowa. Several of the sites, which are the same each year, are located in the Wallace Foundation for Rural Research and Development (WFRRD) areas in southwest Iowa. Many producers make or alter crop management plans according to expected soil moisture levels.

Disciplines

Agricultural Science | Agriculture

Soil Moisture Survey

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Introduction

Each spring and fall, a soil moisture survey is conducted to determine the amount of plant-available moisture in the top five feet of many of the major soil types in Iowa. Several of the sites, which are the same each year, are located in the Wallace Foundation for Rural Research and Development (WFRRD) areas in southwest Iowa. Many producers make or alter crop management plans according to expected soil moisture levels.

Materials and Methods

In fall 2001, soil samples were taken at 12 sites in southwest Iowa. A deep-sampling soil probe was used to take samples five feet deep, in one-foot increments. Five feet is the normal depth at which corn, soybeans, and alfalfa extract moisture. Sampling at the sites consisted of two

groups of three replications. Each foot increment of soil from the three replications was placed in a container, weighed, then had the moisture baked out and was weighed again to measure the amount of water it contained. The results were entered into a spreadsheet to determine plant available moisture.

Results and Discussion

Adequate soil moisture reserve increases the probability of average to above-average crop yields in the following season. Most soils sampled in southwest Iowa can hold a maximum of 10.8–11.3 inches of plant-available moisture in the top five feet. A fall moisture level of less than four inches is considered “dry,” a level between four and seven inches is considered “marginal,” and a level greater than seven inches is termed “favorable.” Table 1 shows measurements taken in the WFRRD area in late October and early November 2001.

Table 1. Fall moisture amounts for soil moisture sampling sites in the WFRRD areas, fall 2001.

Location	Soil Type	Date Sampled	Inches of Water, Five Foot Depth
Armstrong Farm	Marshall	10-29	8.24
Cass County	Marshall	10-29	5.38
Adair County	Sharpsburg	10-29	9.85
Taylor County	Sharpsburg	10-29	6.01
Shelby County	Marshall	10-31	2.95
Harrison County	Marshall	10-31	3.17
East Pottawattamie County (Avoca)	Marshall	10-31	4.28
East Pottawattamie County (Oakland)	Marshall	11-8	4.59
Audubon County	Marshall	11-8	4.14
Page County	Marshall	11-8	6.94
Mills County	Marshall	11-8	6.98
Fremont County	Marshall	11-8	1.66