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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 5 ft of many of the major soil types in Iowa. Several of the sites, which are the same each year, are in the Wallace Foundation for Rural Research and Development (WFRRD) area. Many producers make or alter their crop management and/or marketing 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 5 ft of many of the major soil types in Iowa. Several of the sites, which are the same each year, are in the Wallace Foundation for Rural Research and Development (WFRRD) area. Many producers make or alter their crop management and/or marketing plans according to expected soil moisture levels.

Materials and Methods

Samples were taken at ten sites in southwest Iowa this fall. A deep-soil sampling probe was used to take samples 5 ft deep in 1-ft increments. Five feet is the normal depth at which corn, soybeans, and alfalfa can extract

moisture. Sampling at the sites consisted of two groups of three replications. Each 1-ft increment of soil from the three replications was placed in a container, weighed, had the moisture extracted from it by a baking process, and then was weighed again to measure the water loss. The results were entered into a spreadsheet to determine plant-available moisture.

Results and Discussion

An adequate soil moisture reserve increases the probability of average to above-average crop yields the following season. Most soils sampled in southwest Iowa can hold a maximum of 10.8–11.3 in. of plant-available moisture in the top 5 ft. A fall moisture level of less than 4 in. is considered “dry,” a level between 4 and 7 in. is considered “marginal,” and a level greater than 7 in. is termed “favorable.” The following are measurements taken in the WFRRD area in November 2005 (Table 1).

Table 1. Fall moisture amounts for soil moisture sampling sites in the WFRRD area, fall 2005.

<u>Location</u>	<u>Soil type</u>	<u>Date sampled</u>	<u>In. of water, 5-ft depth</u>
East Pottawattamie County (Oakland)	Marshall	11-10	2.88
Armstrong Farm	Marshall	11-8	2.45
Cass County	Marshall	11-8	2.60
Harrison County	Marshall	11-10	2.25
East Pottawattamie County (Avoca)	Marshall	11-10	2.65
Audubon County	Marshall	11-8	3.13
Shelby County	Marshall	11-10	1.72
Page County	Marshall	11-9	1.65
Mills County	Marshall	11-9	1.86
Fremont County	Marshall	11-9	.58