

## Subsoil Moisture Levels for 2005

Todd Vagts, crop specialist  
ISU Extension

Each spring and fall, a soil moisture survey is conducted to determine the amount of plant-available water (PAW) in the top five feet of the major soils in Iowa. Adequate soil moisture reserves increase the probability of average or above-average crop yields in the following season. Producers may use this information to alter their crop management plans according to expected soil moisture levels. Several sampling sites are located at the Western Research and Demonstration Farm.

The 2005 growing season was near normal in terms of temperature and moisture for the first half of the summer, but then turned warmer and drier than normal for the second half of the summer. Excellent corn and soybean yields were obtained across most of the region.

Only five rainfall events (April–September) exceeded 1 in. in a 24-hr period. A dryer than normal precipitation trend began in mid-July and lasted through September, culminating in a precipitation deficit of 2.7 in. for this growing season

*Fall Soil Moisture Status.* Results from the fall sampling indicate a great need for fall and spring rains to replenish dry soils. At the time of sampling, the 60-in. soil moisture status contained 50% less moisture than has been typically observed at the same time of year compared with the previous five years.

Results from the soil moisture survey taken in late October indicate that west-central Iowa had an average PAW of 2.8 in. in the 60-in. soil profile, or 25% capacity. This can be compared with last year's 5.0 in. and 43% capacity. Sac County appeared to be in the best shape with an average of 5.6 in. of PAW, followed by Pocahontas and Ida counties with 4.6 and 3.5 in. of PAW, respectively (Table 1). Carroll and Calhoun counties were definitely on the dry side with only 3.2 and 2.0 in. of PAW, respectively. The driest soils encountered while performing this survey were found in the fall in Crawford and Monona counties with only 0.7 and 0.0 in. of PAW in the top 60-inch profile. Far west-central Iowa will need fall and spring rains to help replenish soil moisture for a potentially profitable crop next year. Other falls with similar PAW readings include 2003 with 2.5 in. of PAW and 2000 with 2.8 in. of PAW (Table 2).

**Table 1. Fall 2005 subsoil moisture.<sup>1</sup>**

County	Spring PAW <sup>2</sup> (in.)	% of capacity	Fall PAW* (in.)	% of capacity
Crawford	na <sup>3</sup>	64.5	0.7	5.7%
Monona	na	51.1	0.0	0.0%
Ida	na	73.3	3.5	28.3%
Woodbury	na	-	4.8	-
Carroll	na	77.3	3.2	26.0%
Sac	na	88.1	5.6	25.1%
Pocahontas	na	73.4	4.6	41.3%
Calhoun	na	62.5	2.0	17.8%

<sup>1</sup>Fall sampling date=October 27, 2004; sampling depth=60 in.

<sup>2</sup>PAW=plant-available water

<sup>3</sup>na=data not available

**Table 2. Fall subsoil moisture totals, 1999–2005.**

County	Township	Town	Fall PAW (in.)							% of fall avg.
			2005	2004	2003	2002	2001	2000	1999	2005
Carroll	Washington	Carroll	3.2	7.1	3.9	11.5	8.0	5.8		49%
Crawford	Paradise	Dow City	0.3	3.4	1.8	3.0	2.1	3.9	3.3	12%
Crawford	Paradise	Dow City	1.0	3.2	2.2	7.3	4.3	3.6	1.8	30%
		<b>Co. avg.</b>	0.7	3.3	2.0	5.2	3.2	3.8	2.5	21%
Ida	Grant	S-C Ida Co.	2.2	2.9	1.3	7.6	3.4	1.8	4.0	67%
Ida	Maple	Battle Creek	1.9	3.6	2.2	8.5	5.5	1.2	2.5	52%
Ida	Griggs	Holstein	6.3	10.3	3.4	11.3	7.3	1.6	2.0	104%
		<b>Co. avg.</b>	3.5	5.6	2.3	9.1	5.4	1.5	2.9	75%
Monona	Center	Castana	0.0	2.1	0.5	4.4	1.8	1.2		0%
Monona	Center	Castana	0.0	2.2	1.3	5.2	4.0	2.2		0%
Monona	Center	Castana	0.0	2.2	1.0	3.5	0.7	0.0		0%
		<b>Co. avg.</b>	0.0	2.2	1.0	4.4	2.2	1.1		0%
Sac	Richland	Odebolt North	5.8	6.5	2.6	11.8	7.8	4.4	5.4	91%
Sac	Eurek	Schaller	6.5	6.0	2.8	11.3	9.8	3.8	2.3	108%
Sac	Jackson	Sac City	6.8	7.8	4.0	12.8	8.5	4.7	4.8	97%
Sac	Sac	Auburn		7.6	6.4	8.8	7.7	2.8	4.4	0%
Sac	Wheeler	Odebolt South	3.1	6.3	2.8	9.6	6.2	3.4	4.1	61%
		<b>Co. avg.</b>	5.6	6.9	3.7	10.9	8.0	3.8	4.2	71%
Pocahontas	Roosevelt	Gilmore City	4.6	7.4	3.2	8.5	6.2			77%
Calhoun	Elm Grove	Yetter	2.0	2.7	1.9	8.0	0.0			68%
<b>Area avg.</b>			<b>2.8</b>	<b>5.0</b>	<b>2.5</b>	<b>8.1</b>	<b>5.1</b>	<b>2.8</b>	<b>3.4</b>	<b>49%</b>