Indiana Crop & Weather Report

INDIANA AGRICULTURAL STATISTICS
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CROP REPORT FOR WEEK ENDING JULY 6

Wheat harvest is moving into full swing in the southern region of the state, according to the Indiana Agricultural Statistics Service. The best progress has been made in the southwest district, which also has the largest wheat acreage. Corn and soybeans continue to grow rapidly, taking advantage of the hot sunny conditions.

CORN AND SOYBEANS

Corn condition is rated 70 percent good to excellent, 23 percent fair, and 7 percent poor to very poor **Soybean planting** is 99 percent complete. This is ahead of 98 percent last year, but the same as the average. **Condition** of the crop is 65 percent good to excellent, 27 percent fair, and 8 percent poor to very poor.

WINTER WHEAT

Winter wheat **condition** is rated 72 percent good to excellent, compared with 22 percent at this time last year. Wheat **harvest** is 15 percent complete, compared to 37 percent last year and the 33 percent average for this date.

OTHER CROPS

Pasture condition was rated 10 percent excellent, 62 percent good, 21 percent fair, 6 percent poor and 1 percent very poor. First cutting of **alfalfa** is 90 percent complete. Second cutting of **alfalfa** is 14 percent complete.

DAYS SUITABLE and SOIL MOISTURE

For the week ending Friday, 5.7 days were rated **suitable for fieldwork**. **Topsoil moisture** was rated 9 percent short, 78 percent adequate and 13 percent surplus. **Subsoil moisture** was rated 6 percent short, 80 percent adequate and 14 percent surplus.

CROP PROGRESS

Crop	This Week	Last Week	Last Year	5-Year Avg
	Percent			
Soybeans Planted	99	98	98	99
Wheat Harvested	15	4	37	33

CROP CONDITION

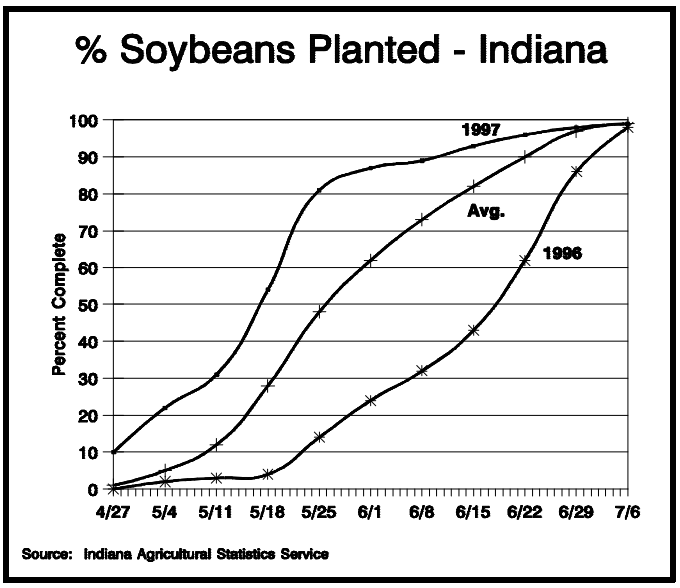
Crop	Very Poor	Poor	Fair	Good	Excel-lent
	Percent				
Corn	1	6	23	57	13
Soybeans	1	7	27	56	9
Winter Wheat 7/6	1	4	23	58	14
Winter Wheat 1996	9	27	42	20	2
Pasture	1	6	21	62	10

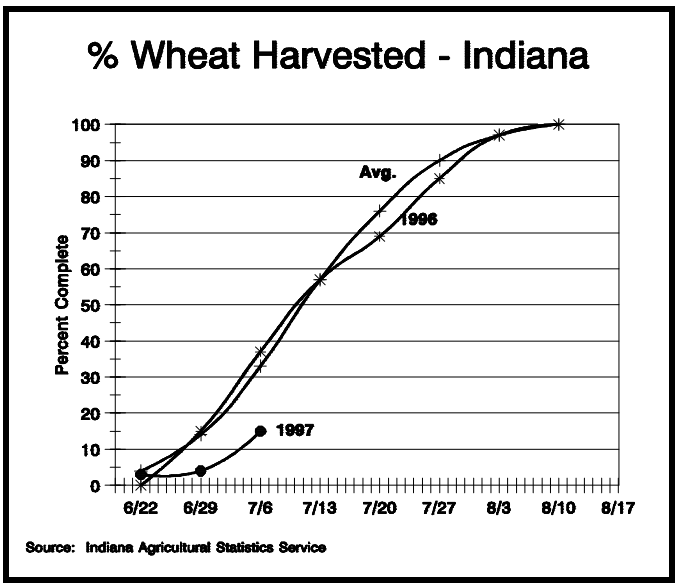
SOIL MOISTURE

	This Week	Last Week	Last Year
	Percent		
Topsoil			
Very Short	0	0	7
Short	9	2	40
Adequate	78	74	50
Surplus	13	24	3
Subsoil			
Very Short	0	0	2
Short	6	1	7
Adequate	80	73	84
Surplus	14	26	7

--Ralph W. Gann, State Statistician
--Lance Honig, Agricultural Statistician
E-Mail Address: nass-in@nass.usda.gov
http://info.aes.purdue.edu/agstat/nass.html

Crop Progress





Corn Development & Heat Accumulation

BOTTOM LINE: April and May were cold, what do you expect!

THE REST OF THE STORY: As most of you are probably aware, corn development is closely related to heat. Measuring temperature is one way to measure heat. Warmer temperatures mean faster corn development, and cooler temperatures mean slower corn development.

Another way of measuring heat is to use temperatures to calculate growing degree days (GDD), sometimes also called heat units. Several formulas exist to calculate these GDD, but the one used most frequently by those of us who work with corn is called the "Modified 86/50 Cutoff Method".

The number of GDD for any given day are calculated by subtracting 50 from the average daily temperature. The average daily temperature is calculated by adding the daily high and the daily low temperatures, then dividing by two.

Two special rules exist, however. Rule number 1: If the daily high was greater than 86 degrees Fahrenheit, then 86 is used to calculate the average. Rule number 2: If the daily low was less than 50 degrees Fahrenheit, then 50 is used to calculate the average. These high and low temperature limits define the boundaries beyond which corn develops very slowly, if at all.

Over the years, researchers have investigated the relationships between GDD accumulation and the occurrence of silking or grain maturation (black layer). Consequently, we often talk about hybrids that will mature in 2,700 GDD or maybe silk in 1,400 GDD.

However, GDD accumulation can also be associated with the rate of leaf development prior to pollination. One of my former graduate students, Kirby Wuethrich, recently completed his M.S. thesis research that described this relationship for 14 corn hybrids. For more information on his research, contact Kirby by E-mail at wuethrichkl@phibred.com.

In a nutshell, here's what he discovered: From emergence to about the 10-leaf collar stage, corn develops at a rate of about 85 GDD per leaf stage. From about the 10-leaf collar stage to the final leaf stage, the rate changes to about 50 GDD per leaf stage.

Armed with this knowledge, we can estimate how far along the corn crop should be for any given location if we know the planting date and the GDD accumulations since that planting date. It especially helps if we also know the emergence date, but we can use an estimated 125 GDD from planting to emergence in lieu of knowing the actual date.

So, I obtained GDD data (via the Internet) from the Purdue Agronomy Research Center in west central Indiana and created the following table of accumulated GDD (as of June 25) and estimated leaf stages for various planting dates.

(Continued on Page 4.)

Average Daily Values for week ending Monday morning July 7, 1997

Area	Station	Air Temperature			Precipitation			Growing Degree Days		
		Max	Min	DN	Past Week	Since April 1	DN Since April 1	Past Week	Since April 1	DN Since April 1
NW	Wanatah	80	58	-3	1.23	13.30	+1.07	134	1065	-85
	Kentland	81	60	-3	.57	11.08	-1.40	143	1174	-145
	Winamac	79	59	-3	2.06	12.30	+.18	136	1122	-133
NC	South Bend	79	59	-3	1.06	8.38	-3.51	136	1077	-102
	Waterford Mills	82	58	-3	1.05	12.10	+1.06	138	1093	-131
NE	Prairie Heights	82	59	+0	.28	10.00	-1.55	140	1087	+17
	Columbia City	80	60	-1	1.35	11.78	-.20	142	1102	-58
	Fort Wayne	78	60	-4	1.51	11.88	+.80	137	1113	-142
	Bluffton	80	61	-3	2.06	15.83	+3.61	146	1151	-150
WC	West Lafayette	81	61	-2	.13	15.68	+3.62	145	1197	-73
	Lafayette	81	60	-2	.15	12.54	+.48	145	1239	-31
	Perrysville	81	59	-5	.00	9.98	-3.60	142	1234	-276
	Crawfordsville	81	56	-4	.06	11.19	-.86	135	1149	-130
	Terre Haute 8s	84	61	-3	.08	13.82	+.85	152	1333	-108
C	Tipton	79	59	-4	1.15	14.70	+2.67	134	1092	-151
	Indianapolis	81	62	-3	.09	8.82	-3.31	151	1240	-190
	Indian Creek	82	61	-2	.00	11.92	-.72	150	1271	-93
EC	Farmland	81	60	-2	1.14	12.26	+.02	142	1175	-24
	Liberty	81	61	-2	.26	11.98	-1.06	149	1227	-117
SW	Vincennes	83	62	-3	1.45	18.75	+5.23	157	1374	-125
	Dubois	82	61	-3	.38	16.86	+2.59	150	1311	-133
	Evansville	84	64	-4	.03	13.79	+.65	164	1425	-234
SC	Bedford	82	61	-2	.17	16.19	+2.45	154	1275	-121
	Louisville	84	65	-2	.07	13.22	-.04	170	1437	-179
SE	Butlerville	82	61	-3	.06	14.49	+1.47	152	1243	-277

DN = departure from normal.
Growing Degree Days = daily mean - 50 (below 50 adjusted to 50, above 86 adjusted to 86.)

Maps Not Available

The above information is provided by Ken Scheeringa, Indiana State Climatologist (765)494-8105
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Corn Development (continued)

Table 1. Estimates of Leaf Stage Development as of June 25, 1997.

Planting Date	Accumulated GDD	Estimated Leaf Stage
	Number	Collars
April 1	911	9
April 15	845	8
May 1	750	7
May 15	656	6
June 1	468	4

Table 2. Estimates of Leaf Stage Development as of June 25, 1994.

Planting Date	Accumulated GDD	Estimated Leaf Stage
	Number	Collars
April 1	1,104	13
April 15	1,035	11
May 1	890	9
May 15	764	8
June 1	518	5

By comparison, corn development occurred faster during the warmer early season of 1994 (Table 2). A mid-April planting in 1994 would have been three leaf stages farther along in its development by June 25 compared to this year's snail pace.

FINAL COMMENTS: Remember that a shortage of GDD resulting from early season cool temperatures can really never be recovered. Recent days in the 90's do not necessarily accelerate GDD accumulations (remember Rule #1). We normally toot along at 25 to 30 GDD per day in mid-summer anyway, equal to what the Purdue Agronomy Research Center has reported for June 18 - 26. Warmer than normal temperatures in late summer to early fall do not seem to mean as much to the corn crop, probably because of increasingly shorter daylight hours and the corn crop's increasing senescence.

But, also remember that the rick of fall frost damage to this year's crop is likely still minimal since so much of the crop was planted in mid- to late April (as opposed to late May and early June of last year). Additionally, yield potential has not necessarily been greatly reduced by its slow development because early season development is only one factor among many that determines yield. The truly important yield determinant from now on is the level of heat/moisture stress during pollination and grain fill.

--Bob Nielsen, Purdue Extension Corn Specialist

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