



Indiana Crop & Weather Report

INDIANA AGRICULTURAL STATISTICS
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Released: Monday, 3PM

July 22, 1997

Vol. 47, #16

West Lafayette, IN 47907

CROP REPORT FOR WEEK ENDING JULY 20

Wheat harvest is advancing rapidly across the state according to the Indiana Agricultural Statistics Service. Continued hot and dry weather has provided farmers ample opportunity to harvest wheat and hay, but is beginning to stress the fallcrops. Many areas of the state are in need of rain, as soil moisture conditions begin to decline. Other activities during the week were spraying and cultivating crops, baling straw, and attending 4-H fairs.

CORN AND SOYBEANS

Corn condition is rated 59 percent good to excellent, 32 percent fair, and 9 percent poor to very poor. Seven percent of the corn acreage is **silking**, behind 12 percent last year and 32 percent for the 5-year average. Forty-nine percent of the soybean acreage is **blooming**, ahead of 14 percent last year and 45 percent for the 5-year average. **Condition** of the soybean crop is 57 percent good to excellent, 35 percent fair, and 8 percent poor to very poor.

WINTER WHEAT

Winter wheat harvest is 76 percent complete, ahead of 69 percent last year and equal to the 5-year average for this date. Harvest is virtually complete in the southern region, 83 percent complete in the central region, and 43 percent complete in the northern region of the state.

OTHER CROPS

Pasture condition was rated 2 percent excellent, 37 percent good, 43 percent fair, 16 percent poor and 2 percent very poor. Second cutting of **alfalfa** is 40 percent complete, ahead of 39 percent last year, but behind the 5-year average of 52 percent.

DAYS SUITABLE and SOIL MOISTURE

For the week ending Friday, 6.7 days were rated **suitable for fieldwork**. **Topsoil moisture** was rated 13 percent very short, 48 percent short, 8 percent adequate and 1 percent surplus. **Subsoil moisture** was rated 6 percent very short, 32 percent short, 61 percent adequate and 1 percent surplus.

CROP PROGRESS

Crop	This Week	Last Week	Last Year	5-Year Avg
Percent				
Alfalfa 2nd Cutting	40	20	39	52
Corn Silked	7	1	12	32
Soybeans Blooming	49	17	14	45
Wheat Harvested	76	45	69	76

CROP CONDITION

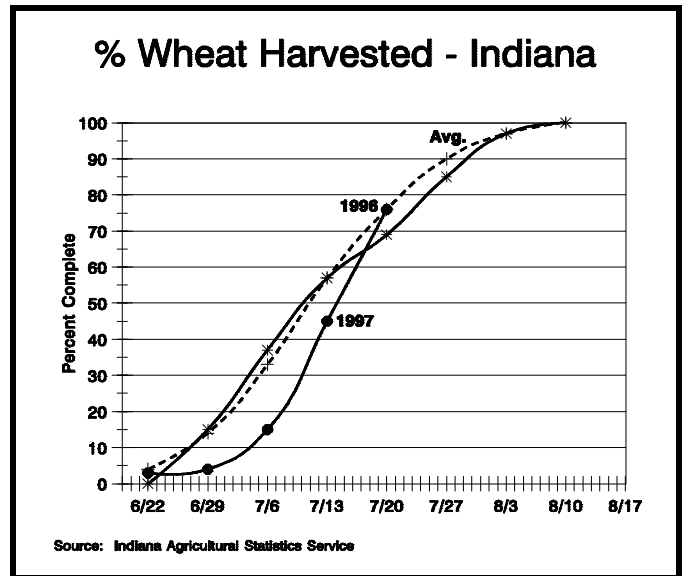
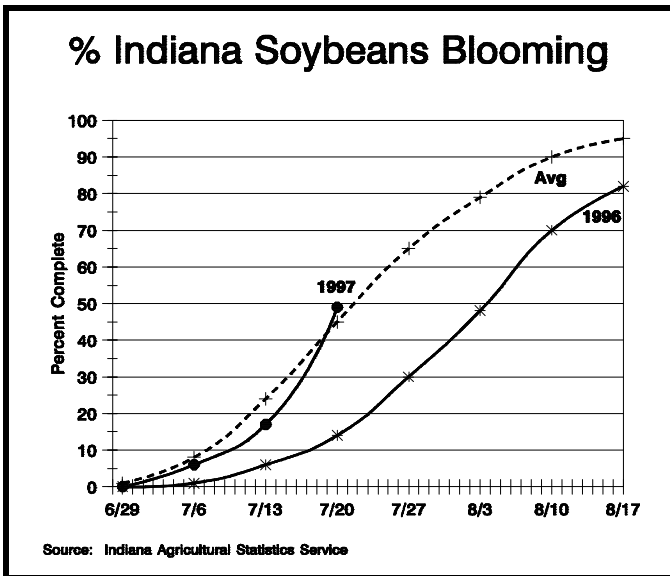
Crop	Very Poor	Poor	Fair	Good	Excellent
Percent					
Corn	1	8	32	49	10
Soybeans	1	7	35	47	10
Pasture	2	16	43	37	2

SOIL MOISTURE

	This Week	Last Week	Last Year
Percent			
Topsoil			
Very Short	13	3	5
Short	48	21	16
Adequate	38	71	51
Surplus	1	5	28
Subsoil			
Very Short	6	1	2
Short	32	12	18
Adequate	61	83	60
Surplus	1	4	20

--Ralph W. Gann, State Statistician
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Crop Progress



Drought & Heat Stress Effects on Corn Pollination

- Pollination period for corn is a critical time of the growing season
- Separating heat stress from drought stress effects on pollination is difficult
- High temperatures will not severely stress corn if soil moisture is adequate
- Severely compacted soils, or fields with significant root injury, will suffer most

Recent weeks of dry, warm weather have caused corn leaves to roll, especially in fields where soil compaction was severe. Now that Indiana's corn crop is entering its critical pollination and fertilization period, what effects can drought and heat stress have on corn grain yield?

There is no doubt successful pollination goes a long way towards guaranteeing grain in the bin this fall. Stress during pollen shed and silking can cause more yield loss than almost any other period in the crop's development. Conversely, optimum weather during pollination can set the stage for good yields this fall.

Heat Stress. High-temperature damage to pollination in Indiana almost always occurs in conjunction with drought stress, rarely by itself. Thus, separating heat stress from drought stress effects on pollination is usually difficult.

Temperatures in excess of 95 degrees, especially when accompanied by low relative humidity, can desiccate exposed silks, but affect silkelongation very little. Pollen is likely damaged or killed by mid-90's or greater temperatures, especially when accompanied by low relative humidity.

Luckily, pollen shed typically occurs during early to mid morning hours before temperatures climb to such dangerous heights. Furthermore, pollen maturation for a given tassel occurs over time and 'fresh' pollen is available every morning until pollen shed is complete.

Successful pollination can therefore occur even during lengthy periods of high temperatures if soil moisture reserves are adequate to meet the plants' demands. Bottom Line: Where soil moisture is adequate, high temperature by itself will not severely impact the yield of a given field.

Drought Stress. Severe drought stress, as indicated by continual or nearly continual wilting of the plant, effects the pollination process primarily by slowing down silkelongation. Silks begin elongating from the ovules of the ear shoot about 7 days prior to silking. The silks from the butt of the ear elongate first, followed by those from the central part of the ear, then the tip of the ear.

(Continued on Page 4.)

Average Daily Values for week ending Monday morning July 22, 1997

Area	Station	Air			Precipitation			Growing Degree Days		
		Temperature			Past Week	Since April 1	DN Since April 1	Past Week	Since April 1	DN Since April 1
		Max	Min	DN						
NW	Wanatah Sand	89	64	+4	.60	14.32	+1.17	176	1369	-88
	Kentland	89	65	+3	.36	11.91	-2.51	183	1503	-152
	Winamac	88	67	+4	.46	12.78	-1.12	185	1445	-132
NC	South Bend	88	67	+5	.00	8.39	-5.26	187	1406	-95
	Wtfd Mills	89	64	+4	.47	12.93	+2.23	178	1405	-141
NE	Prairie Hts	88	66	+6	.33	11.21	-2.05	184	1401	+37
	Columbia City	88	65	+4	.06	12.24	-1.47	181	1425	-44
	Fort Wayne	87	64	+2	.02	11.37	-1.29	176	1425	-165
	Bluffton	89	66	+3	.05	15.44	+1.61	186	1476	-162
WC	W Laf Agron	89	65	+4	.47	14.02	+1.16	183	1519	-72
	Lafayette	89	65	+4	.44	13.69	-.17	183	1566	-26
	Perrysville	89	65	+1	.42	10.77	-4.99	181	1566	-294
	Crawfordsville	90	61	+2	.22	11.91	-1.92	169	1449	-159
	Terre Haute 8s	94	69	+6	.15	12.47	-2.71	197	1705	-85
C	Tipton	87	64	+2	.21	13.56	-.38	175	1395	-170
	Indianapolis	90	67	+3	.18	9.14	-5.01	188	1585	-194
	Indian Creek	92	67	+5	.24	12.25	-2.40	190	1626	-74
EC	Farmland	89	67	+5	.03	11.88	-2.09	187	1492	-27
	Liberty	90	67	+4	.25	12.36	-2.76	188	1572	-107
SW	Vincennes	91	66	+3	.94	19.69	+4.24	187	1712	-137
	Dubois	91	65	+3	.51	17.37	+1.95	183	1648	-146
	Evansville	92	69	+2	.00	13.81	-1.16	195	1790	-247
SC	Bedford	90	65	+2	.09	16.25	+1.45	181	1610	-129
	Louisville	92	72	+4	.13	14.53	-.77	206	1824	-167
SE	Butlerville	90	66	+2	.37	14.86	-.25	184	1585	-285

DN = departure from normal.

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

 Maps Unavailable

The above information is provided by Ken Scheeringa, Indiana State Climatologist (765)494-8105
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Crop Moisture

(Short Term, Crop Need vs. Available Water in 5-foot Soil Profile)

July 12, 1997



Stress Effects (continued)

Inadequate plant water potentials can slow down silk elongation, resulting in delay or failure of the silks to emerge from the ear shoot. Silks that do emerge may desiccate rapidly under severe moisture deficits and become non-receptive to pollen. Ironically, drought stress tends to accelerate pollen shed, often resulting in a poor timing 'nick' between pollen shed and silk emergence.

Beginning about 2 weeks before silk emergence corn enters the period of grain yield determination most sensitive to drought stress. It is important to remember that rolling of leaves during the heat of the day does not constitute severe drought stress for corn. Effects on yield begin to occur when leaf rolling begins very early in the morning and extends well into the evening hours, perhaps 12 to 18 hours a day.

Nearly continual wilting of the plant due to drought stress during the two weeks before pollination can decrease yield 3 to 4 percent per day. During the actual silking and pollen shed period, severe stress may reduce yield up to 8 percent per day. During the two weeks following silking, severe stress may reduce yield up to 6 percent per day.

Fields that will be most susceptible to heat and drought stress during pollination will be those where severe soil compaction or extended periods of soil saturation earlier in the season have restricted the corn root system from penetrating deeply this year. Such shallow root systems will run out of available soil moisture sooner than more deeply developed root systems. Similarly, fields where significant root injury occurred from corn rootworm larvae feeding will also be more susceptible to hot, dry conditions.

--Bob Nielsen, Purdue University

The INDIANA CROP WEATHER REPORT (USPS 675-770), (ISSN 0442-817X) is issued weekly April through November by the Indiana Agricultural Statistics Service, Purdue University, 1148 AgAd Bldg, Rm 223, West Lafayette IN 47907-1148. Second Class postage paid at Lafayette IN. For information on subscribing, send request to above address. POSTMASTER: Send address change to the Indiana Agricultural Statistics Service, Purdue University, 1148 AgAd Bldg, Rm 223, West Lafayette IN 47907-1148.