



# Indiana Crop & Weather Report

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## CROP REPORT FOR WEEK ENDING JULY 23

Weather conditions continued to be favorable for corn and soybean development. Cool temperatures have been ideal for pollination of corn. Winter wheat harvest is virtually complete and most farmers have finished spraying for weeds in soybean fields, according to the Indiana Agricultural Statistics Service. Major activities included, baling hay, mowing roads, scouting for insects, repairing equipment and attending local county fairs.

### CORN

Corn **condition** is rated 85 percent good to excellent compared with 84 percent last week and 56 percent last year at this time. Ninety percent of the corn acreage has **silked** compared with 86 percent last year and 46 percent for the average. Thirteen percent of the corn acreage has reached the **dough** stage compared with 12 percent last year and 5 percent for the average. By region, 9 percent of the corn acreage is in the dough stage in the north, 12 percent in the central region and 24 percent in the south.

### SOYBEANS

Soybean **condition** is rated 69 percent good to excellent compared with 71 percent last week and 58 percent last year. Eighty percent of the soybean acreage is **blooming** compared with 89 percent last year and 54 percent for the average. Twenty-seven percent of the soybean acreage is **setting pods** compared with 33 percent last year and 13 percent for the average. By region, 22 percent of the soybean acreage is setting pods in the north, 32 percent in the central region and 27 percent in the south.

### OTHER CROPS

**Pasture condition** is rated 15 percent excellent, 56 percent good, 25 percent fair and 4 percent poor. Second cutting of **alfalfa hay** is 92 percent complete compared with 99 percent a year ago and 66 percent for the 5-year average.

### DAYS SUITABLE and SOIL MOISTURE

For the week ending Friday, 5.6 days were rated **suitable for fieldwork**. **Topsoil moisture** was rated 1 percent very short, 12 percent short, 77 percent adequate and 10 percent surplus. **Subsoil moisture** was rated 2 percent very short, 18 percent short, 74 percent adequate and 6 percent surplus.

#### CROP PROGRESS

Crop	This Week	Last Week	Last Year	5-Year Avg
Wheat Harvested	100	99	100	91
Corn Silking	90	67	86	46
Corn in Dough	13	3	12	5
Soybeans Blooming	80	61	89	54
Soybeans Podding	27	16	33	13
Alfalfa, Second Cutting	92	79	99	66

#### CROP CONDITION

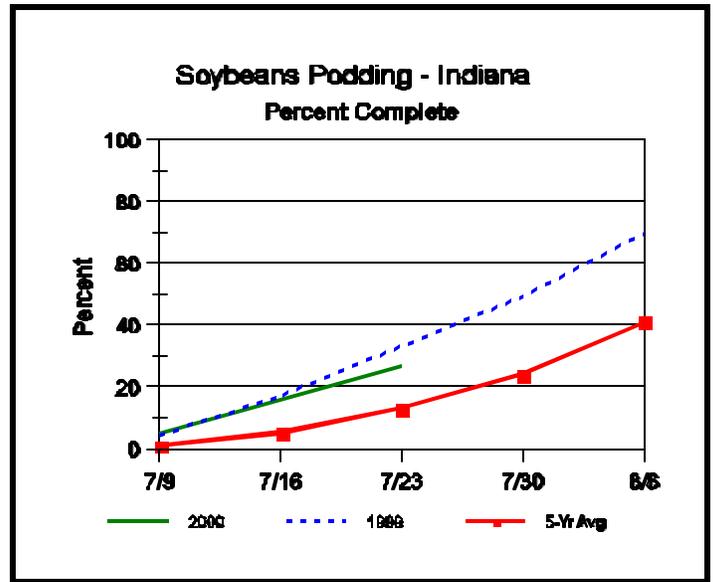
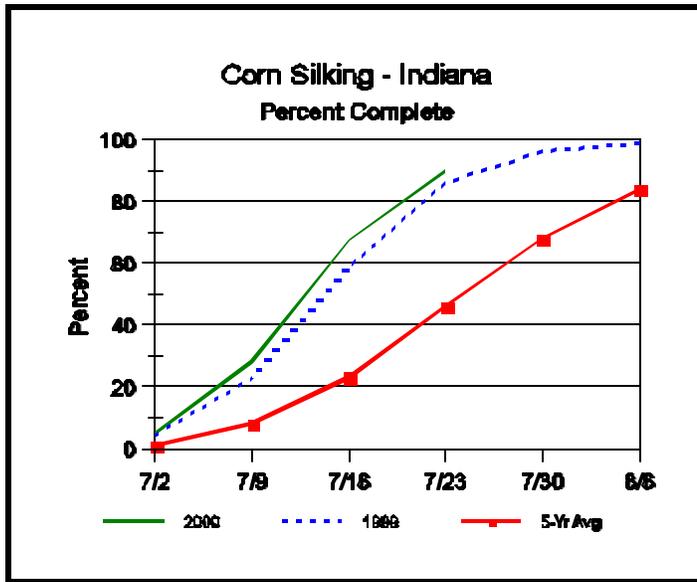
Crop	Very Poor	Poor	Fair	Good	Excellent
Corn	1	3	11	54	31
Soybeans	2	5	24	52	17
Pasture	0	4	25	56	15

#### SOIL MOISTURE

	This Week	Last Week	Last Year
<b>Topsoil</b>			
Very Short	1	0	21
Short	12	5	44
Adequate	77	81	34
Surplus	10	14	1
<b>Subsoil</b>			
Very Short	2	1	14
Short	18	13	49
Adequate	74	77	37
Surplus	6	9	0

--Ralph W. Gann, State Statistician  
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# Crop Progress



## Suggestive Behavior in the Corn Field\*

- Success of pollination critical to success at harvest
- Fields with uneven development will also flower unevenly

From my windshield surveys of corn fields in recent days throughout the southern two-thirds of the state, it is obvious that many fields are in or moving into the critical flowering stage of pollen shed and silking. Success or failure during this period of the corn plant's life will greatly determine the yield potential at harvest time. As important as this process is to determination of grain yield, it is surprising how little some folks know about the whole thing. Rather than leaving you to learn about such things "in the streets", here are the fundamentals about sex in the corn field.

Remember that corn has both male flowers and female flowers on the same plant (a flowering habit called monoecious for you trivia fans.) Interestingly, both flowers are initially bisexual (aka 'perfect'), but during the course of development the female components (gynoecia) of the male flowers and the male components (stamens) of the female flowers abort.

### Tassels & Pollen

More trivia: From 500 to 1000 spikelets form on each tassel. Each spikelet contains two florets. Each floret contains three anthers. As these florets mature, anthers emerge and pollen is dispersed through pores that open at the tips of the anthers.

The anthers are those gizmos that hang from the tassel during pollination. Under a magnifying lens, anthers look somewhat like the double-barrel of a shotgun. Don't mistake anthers for the pollen itself. Pollen is contained inside the anthers. The yellow 'dust-like' pollen that falls from the anthers of the tassel actually represent two to five million individual, nearly microscopic, spherical, yellowish-translucent pollen grains. Each pollen grain contains the male genetic material necessary for fertilizing the ovary of one potential kernel.

All of the pollen from a single anther may be released in as little as three minutes. An individual tassel may take as long as seven days to finish shedding its pollen, although the greatest volume of pollen may be shed during the second and third day of anther emergence. Because of natural field variability in plant development, a whole field may take as long as 14 days to complete pollen shed.

If the anthers are wet, the pores will not open and pollen will not be released. Thus, on an average Indiana summer morning following a heavy evening dew, pollen shed will not begin until the dew dries and the anther pores open. Cool, cloudy, humid conditions also delay the onset of pollen shed. Similarly, pollen is not shed during rainy conditions. So, growers need not worry about pollen being washed off the tassel during heavy rainfall.

Extreme heat stress (100°F or greater) can kill corn pollen, but fortunately the plant avoids significant pollen

(Continued on Page 4.)

# Weather Data

**Week ending Sunday July 23, 2000**

Station	Past Week Weather Summary Data							Accumulation				
	Air Temperature				Precip.		Avg 4 in Soil Temp	April 1, 2000 thru July 23, 2000				
	Hi	Lo	Avg	DFN	Total	Days		Precipitation			GDD Base 50°F	
							Total	DFN	Days	Total	DFN	
<b>Northwest (1)</b>												
Valparaiso_Ag	83	52	67	-7	0.00	0		19.48	+4.40	54	1458	-73
Wanatah	85	47	65	-8	0.02	1	77	17.15	+2.57	46	1440	-22
Wheatfield	86	49	67	-7	0.01	1		16.60	+2.33	39	1540	+34
Winamac	84	49	66	-8	0.34	1	76	14.68	+0.38	42	1509	-58
<b>North Central (2)</b>												
Logansport	81	52	67	-8	0.42	1		15.14	+1.39	49	1559	-41
Plymouth	85	52	66	-8	0.08	2		15.95	+0.95	50	1422	-212
South_Bend	85	50	65	-9	0.00	0		15.89	+1.88	50	1457	-57
Young_America	84	48	67	-8	0.33	2		15.37	+1.62	46	1624	+24
<b>Northeast (3)</b>												
Bluffton	83	53	68	-7	0.24	2	74	15.04	+0.85	50	1576	-63
Fort_Wayne	83	53	68	-7	0.11	1		16.83	+3.85	46	1552	-38
<b>West Central (4)</b>												
Crawfordsville	86	47	67	-9	0.02	1	74	14.06	-1.46	44	1538	-200
Perrysville	84	49	68	-7	0.39	1	74	15.32	-0.17	45	1655	-46
Terre_Haute_Ag	88	54	72	-5	0.92	1	77	20.62	+4.97	46	1935	+121
W_Lafayette_6NW	86	49	67	-7	0.29	1	71	15.69	+1.45	46	1645	+42
<b>Central (5)</b>												
Castleton	85	52	69	-8	0.42	2		18.29	+3.20	58	1698	-76
Greenfield	87	53	69	-6	0.26	2		18.33	+2.46	49	1715	+4
Greensburg	85	54	70	-5	0.70	2		19.71	+4.06	56	1772	+93
Indianapolis_AP	86	52	70	-7	0.06	1		16.14	+1.60	42	1804	+7
Indianapolis_SE	84	50	69	-8	0.40	1		16.82	+1.73	44	1681	-93
Tipton_Ag	84	50	66	-8	0.07	1	73	13.62	-0.72	46	1474	-75
<b>East Central (6)</b>												
Farmland	85	49	68	-6	0.20	2	68	18.49	+4.18	51	1574	+69
New_Castle	82	50	66	-9	0.72	2		18.11	+2.44	48	1374	-165
<b>Southwest (7)</b>												
Dubois_Ag	89	56	71	-6	0.92	1	76	15.36	-1.44	52	1951	+130
Evansville	88	57	73	-6	1.05	1		14.24	-1.04	45	2108	-8
Freelandville	86	56	71	-6	1.75	1		18.25	+2.45	38	1906	+28
Shoals	87	54	70	-7	1.06	1		18.67	+1.62	49	1802	-1
Vincennes_5NE	86	55	71	-6	1.02	1	73	18.87	+3.19	46	1881	+3
<b>South Central (8)</b>												
Bloomington	86	53	70	-7	0.39	1		15.81	+0.35	39	1711	-121
Tell_City	88	59	73	-6	0.00	0		16.55	-0.58	39	2035	+35
<b>Southeast (9)</b>												
Scottsburg	88	56	72	-5	3.93	2		21.64	+5.69	43	1934	+73

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 DFN = Departure From Normal (Using 1961-90 Normals Period).  
 GDD = Growing Degree Days.  
 Precipitation (rain or melted snow/ice) in inches.  
 Precipitation Days = Days with precipitation of 0.01 inch or more.  
 Air Temperatures in Degrees Fahrenheit.

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## Suggestive Behavior in the Corn Field\*

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loss by virtue of two developmental characteristics. First of all, corn pollen does not mature or shed all at once. Pollen maturity and shed occur over several days and up to two weeks. Therefore, a day or two of extreme heat usually does not affect the entire pollen supply. More importantly, the majority of daily pollen shed occurs in the morning hours when air temperature is much more moderate.

### Ears & Silks

The silks that emerge from the ear shoot are the functional stigmas of the female flowers. Every potential kernel (ovule) on an ear develops its own silk that must be pollinated in order for the ovary to be fertilized and develop into a kernel. Typically, up to 1000 ovules form per ear, even though we typically harvest only 400 to 600 actual kernels per ear.

Silk elongation begins 7 to 10 days prior to silk emergence from the husk. Complete silk emergence from an ear generally occurs within two to seven days. Silks from the basal portion of the ear typically emerge first, while the tip silks generally emerge last.

### Pollination & Fertilization

For those of you serious about semantics, let's review two definitions relevant to sex in the corn field. Pollination is the act of transferring the pollen grains to the silks by wind or insects. Fertilization is the union of the male gametes from the pollen with the female gametes from the ovary. Technically, pollination usually occurs successfully (i.e., the pollen reaches the silks), but unsuccessful fertilization results in poor kernel set on the ears.

Pollen grain germination occurs within minutes after a pollen grain lands on a receptive (moist) silk. A pollen tube, containing the male genetic material, develops and grows inside the silk, and fertilizes the ovary within 24 hours. Pollen grains can land and germinate anywhere along the length of an exposed silk. Many pollen grains can germinate on a receptive silk, but typically only one will successfully fertilize the ovary.

Silk clipping by certain insects like the corn root-worm beetle not only removes viable silk tissue, but also injures a certain length of the remaining silk. Generally, silk length on these injured ear shoots must be at least 1/2 inch to ensure that a sufficient length of uninjured silk tissue is exposed for pollen germination to occur.

Silk receptivity to pollen grain germination exists up to 10 days after silk emergence. After 10 days, silk receptivity decreases rapidly. Silk elongation continues until pollination is successful, although elongation eventually ceases as unfertilized silks senesce.

*Bob Nielsen, Purdue University, Dept. Of Entomology, Integrated Pest Management*

**\*Footnote:** Versions of this article published in years past included the word "sex" in the title. After several E-mail messages from elementary school teachers chastising me for this rather flippant use of the word in its referral to the corn pollination process, I humbly (albeit still flippantly) substituted the words "suggestive behavior" for the word "sex" in the title.

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