



USDA, National Agricultural Statistics Service

Indiana Crop & Weather Report

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CROP REPORT FOR WEEK ENDING JULY 8

AGRICULTURAL SUMMARY

Cooler weather and scattered showers were offset by hot, dry conditions late in the week, according to the Indiana Field Office of USDA's National Agricultural Statistics Service. Major crops were under stress in many areas as afternoon temperatures were above 90 degrees during the weekend. Many corn fields have now entered the critical stage of pollination, so farmers are hoping for cooler temperatures and precipitation. Wheat harvest along with cutting and baling of hay made good progress. Farmers are spraying to control feeding of Japanese beetles on corn silks and soybean plants.

FIELD CROPS REPORT

There were 5.6 **days suitable for field work**. **Corn condition** is rated 51 percent good to excellent compared with 60 percent last year at this time. Thirty-five percent of the **corn** acreage has **silked** compared with 12 percent last year and 19 percent for the 5-year average. Thirty-six percent of the **soybean** acreage is **blooming** compared with 11 percent last year and 21 percent for the average. **Soybean condition** is rated 45 percent good to excellent compared to 59 percent last year at this time.

Winter wheat harvest is 87 percent complete compared with 65 percent last year and 71 percent for the 5-year average. By area, 80 percent of the winter wheat crop has been harvested in the north, 85 percent in the central region and 97 percent in the south. The second cutting of **alfalfa hay** is 61 percent complete compared with 49 percent last year and 39 percent for the average. Major activities during the week included: maintaining irrigation equipment, scouting fields, spraying, cutting and baling hay, mowing roadsides and ditches and taking care of livestock.

LIVESTOCK, PASTURE AND RANGE REPORT

Pasture condition is rated 0% excellent, 13% good, 33% fair, 34% poor, and 20% very poor. Hot, dry conditions late in the week placed livestock under some stress.

CROP PROGRESS TABLE

Crop	This Week	Last Week	Last Year	5-Year Avg
	Percent			
Corn Silked	35	10	12	19
Soybeans Blooming	36	15	11	21
Winter Wheat Harvested	87	49	65	71
Alfalfa Second Cutting	61	38	49	39

CROP CONDITION TABLE

Crop	Very Poor	Poor	Fair	Good	Excellent
	Percent				
Corn	4	13	32	43	8
Soybean	6	13	36	40	5
Winter Wheat	3	18	46	30	3
Pasture	20	34	33	13	0

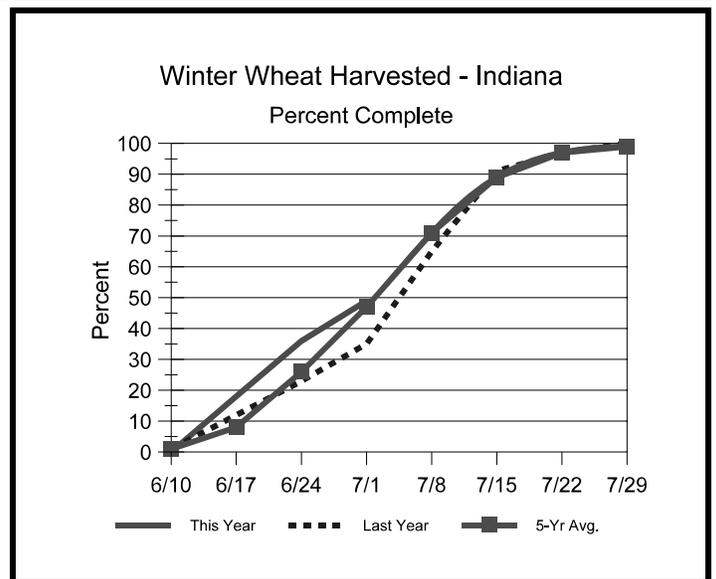
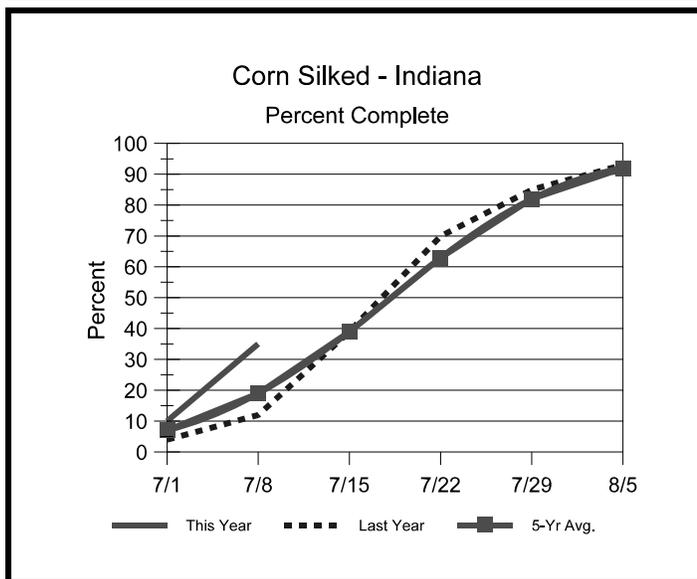
SOIL MOISTURE & DAYS SUITABLE FOR FIELDWORK TABLE

	This Week	Last Week	Last Year
	Percent		
Topsoil			
Very Short	26	18	4
Short	38	34	19
Adequate	34	46	70
Surplus	2	2	7
Subsoil			
Very Short	25	23	3
Short	40	38	15
Adequate	34	39	74
Surplus	1	0	8
Days Suitable	5.6	4.5	5.9

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http://www.nass.usda.gov/Statistics_by_State/Indiana/

Crop Progress



Other Agricultural Comments And News

Sex in the Corn Field: Silk Emergence

- Corn produces individual male and female flowers on the same plant.
- The ear represents the female flower of the corn plant.
- Severe soil moisture deficits can delay silk emergence and disrupt the synchrony of pollen shed and silk availability, resulting in poor kernel set.

Published 2001 (Rev. July 2007)

As important as the process of pollination is to the determination of grain yield in corn, it is surprising how little some folks know about the details of cornfield sex. Rather than leaving you to learn about such things "in the streets", take the time to read this article and the accompanying one on tassels and anthers (Nielsen, 2007b) that describe the ins and outs of this critical period of the corn plant's life cycle.

The corn plant produces individual male and female flowers (a flowering habit called monoecious for you corny trivia fans.) Interestingly, both flowers are initially bisexual (aka "perfect"), but during the course of development the female components (gynoecea) of the male flowers and the male components (stamens) of the female flowers abort, resulting in tassel (male) and ear (female) development.

The silks that emerge from the ear shoot are the functional stigmas of the female flowers of a corn plant. Each silk connects to an individual ovule (potential kernel). A given silk must be pollinated in order for the ovule to be fertilized and develop into a kernel. Up to 1000 ovules typically form per ear, even though we typically harvest only 400 to 600 actual kernels per ear.

Technically, growth stage R1 (Ritchie et al., 1993) for a given ear is defined when a single silk strand is visible from the tip of the husk. A field is defined as being at growth stage R1 when silks have emerged on at least 50 % of the plants.

Silk Elongation and Emergence

Silks begin to elongate from the ovules about 10 days prior to growth stage R1. Silk elongation begins first from the basal ovules of the cob, then proceeds sequentially up the ear. Similarly, silks from the basal (butt) portion of the ear typically emerge first from the husk, while the tip silks generally emerge last. Complete silk emergence from an ear generally occurs within four to eight days after the first silks appear.

As silks first emerge from the husk, they lengthen as much as 1.5 inches per day for the first day or two, but gradually slow over the next several days. Silk elongation occurs by expansion of existing cells, so elongation rate slows as more and more cells reach maximum size. Once pollinated, elongation of an individual silk will stop.

Silk elongation stops about 10 days after silk emergence, regardless of whether pollination occurs, due to senescence of the silk tissue. Unusually long silks can be a diagnostic symptom that the ear was not successfully pollinated.

Silks remain receptive to pollen grain germination up to 10 days after silk emergence, but to an ever-decreasing degree. Natural senescence of silk tissue over time results in collapsed tissue that restricts continued growth of the pollen tube. Silk emergence usually occurs in close synchrony with pollen shed, so that duration of silk receptivity is normally not a concern. Failure of silks to emerge in the first place, however, does not bode well for successful pollination.

Pollination and Fertilization

For those of you serious about semantics, let's review two definitions relevant to sex in the cornfield. 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

(Continued on Page 4)

Weather Information Table

Week ending Sunday July 8, 2007

Station	Past Week Weather Summary Data							Accumulation				
	Air Temperature				Precip.		Avg 4 in Soil Temp	April 1, 2007 thru July 8, 2007				
	Hi	Lo	Avg	DFN	Total	Days		Precipitation			GDD Base 50°F	
							Total	DFN	Days	Total	DFN	
Northwest (1)												
Chalmers_5W	88	52	72	-3	0.91	2		10.66	-1.57	32	1442	+118
Francesville	85	54	70	-3	2.10	3		11.47	-0.97	33	1371	+171
Valparaiso_AP_I	87	50	72	+0	0.24	1		5.77	-7.37	25	1415	+251
Wanatah	88	52	71	-2	0.33	2	80	9.91	-2.61	31	1305	+199
Winamac	87	54	71	-2	0.49	3	77	10.36	-2.08	32	1379	+179
North Central(2)												
Plymouth	88	53	71	-3	0.27	2		10.87	-2.11	35	1313	+62
South_Bend	89	56	73	+1	0.30	1		8.41	-3.78	26	1443	+296
Young_America	87	52	71	-3	0.12	2		8.81	-3.13	32	1460	+243
Northeast (3)												
Columbia_City	88	51	71	-2	0.00	0	74	7.01	-5.27	33	1315	+227
Fort_Wayne	90	51	72	-2	0.00	0		7.71	-3.62	34	1461	+254
West Central(4)												
Greencastle	86	52	71	-5	0.95	1		10.54	-2.95	29	1431	+24
Perrysville	89	51	73	-3	0.47	1	82	9.15	-4.14	28	1620	+313
Spencer_Ag	88	53	72	-3	0.37	2		15.61	+1.56	33	1467	+163
Terre_Haute_AFB	88	53	72	-3	1.92	2		12.36	-0.79	32	1612	+211
W_Lafayette_6NW	88	52	71	-3	0.08	1	80	11.83	-0.44	32	1492	+268
Central (5)												
Eagle_Creek_AP	88	57	74	-2	0.19	1		8.44	-3.85	32	1669	+281
Greenfield	87	54	72	-3	0.10	2		9.23	-3.90	39	1513	+201
Indianapolis_AP	89	60	75	-1	0.03	1		7.75	-4.54	33	1697	+309
Indianapolis_SE	88	55	72	-4	0.16	2		11.23	-1.33	36	1510	+147
Tipton_Ag	86	51	70	-4	0.19	1	78	9.52	-2.73	37	1407	+228
East Central(6)												
Farmland	85	48	69	-4	0.48	2	74	9.47	-3.03	37	1372	+234
New_Castle	86	51	69	-4	0.33	1		9.49	-4.06	29	1412	+244
Southwest (7)												
Evansville	91	58	76	-3	0.60	1		9.66	-3.62	32	1862	+199
Freelandville	88	58	74	-3	0.20	2		9.60	-4.09	35	1703	+243
Shoals	89	51	72	-3	0.85	2		12.10	-2.54	32	1577	+180
Stendal	91	57	76	-1	1.26	1		10.88	-3.99	32	1882	+336
Vincennes_5NE	89	54	74	-2	1.25	2	73	12.05	-1.64	36	1771	+311
South Central(8)												
Leavenworth	89	57	75	-1	1.97	2		11.75	-3.06	36	1714	+316
Oolitic	88	53	72	-3	0.68	2	75	11.06	-2.84	30	1527	+205
Tell_City	90	60	75	-3	1.24	2		12.13	-2.77	24	1855	+293
Southeast (9)												
Brookville	89	53	72	-3	0.98	2		10.13	-3.06	24	1580	+351
Greensburg	86	54	72	-3	0.46	2		11.81	-1.69	31	1630	+333
Scottsburg	91	51	74	-2	1.21	2		12.86	-0.72	32	1660	+212

DFN = Departure From Normal (Using 1961-90 Normals Period).

GDD = Growing Degree Days.

Precipitation (Rainfall or melted snow/ice) in inches.

Precipitation Days = Days with precip of .01 inch or more.

Air Temperatures in Degrees Fahrenheit.

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Sex in the Corn Field: Silk Emergence (Continued)

gametes from the ovule. Technically, pollination is almost always successful (i.e., the pollen reaches the silks), but unsuccessful fertilization (i.e., pollen tube failure, silk failure, pollen death) will fail to result in a kernel.

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

Silk Emergence Failure

Severe Drought Stress. The most common cause of incomplete silk emergence is severe drought stress. Silks have the greatest water content of any corn plant tissue and thus are most sensitive to moisture levels in the plant.

Severe moisture deficits will slow silk elongation, causing a delay or failure of silks to emerge from the ear shoot. If the delay is long enough, pollen shed may be almost or completely finished before receptive silks are available; resulting in nearly blank or totally blank cobs. Severe drought stress accompanied by low relative humidity can also desiccate exposed silks and render them non-receptive to pollen germination.

The severity of drought stress required for significant silk emergence delay or desiccation can probably be characterized by severe leaf rolling that begins early in the morning and continues into the early evening hours. Such severe leaf rolling is often accompanied by a change in leaf color from "healthy" green to a grayish-tinged green that may eventually die and bleach to a straw color.

Silk Clipping by Insects. Although technically not defined as silk emergence failure, severe silk clipping by insects such as corn rootworm beetle or Japanese beetle nonetheless can interfere with the success of pollination by decreasing or eliminating viable or receptive exposed silk tissue. Fortunately, unless the beetle activity is nonstop for days, continued elongation of silks from the husk will expose undamaged and receptive silk tissue at the rate of about one inch or more per day.

Related References

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This "Silk Emergence" article was originally published in 2001, but was revised July, 2007. The article also contains photos, which can be viewed at: <http://www.kingcorn.org/news/timeless/silks.html>, pages 1-4.

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