

Spider Mites

The rain and moderate temperatures have limited spider mite numbers in corn and soybeans this year, although there are always some present in fields. Current and projected weather conditions do not favor an increase in spider mite populations, however growers and field scouts should keep a close eye on fields, especially those that have been treated for western bean cutworms.

Two species of spider mites, the Banks grass mite and twospotted spider mite, commonly feed on Nebraska corn. Banks grass mites feed almost exclusively on grasses, including corn and sorghum. Twospotted spider mites not only feed on many species of grasses, but also on soybeans, fruit trees and a variety of vegetables and ornamental plants. Although these two species are somewhat similar in appearance, they differ in several biological characteristics and in their susceptibility to pesticides.

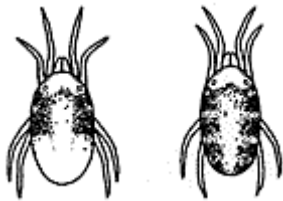


Fig. 1 Left - twospotted spider mite
Right - banks grass mite

Banks grass mites usually appear earlier in the season, feed mostly on the lower leaves of the corn plant, and in Nebraska are moderately susceptible to many of the commonly used miticides. On the other hand, twospotted spider mites tend to appear in mid to late season, increase rapidly, feed over the entire plant, and often are not consistently controlled by available pesticides.

The most useful characteristics for identification are the overall shape of the body and the pattern of pigmentation spots on the back (*see figure 1*). The dark green spots on both species are caused by food particles that accumulate in their gut. Because of differences in gut structure, these pigment spots accumulate in slightly different patterns. In Banks grass mites the pigments accumulate along both edges of the body near the rear and along the sides of the

body. In twospotted spider mites, the pigments accumulate along the sides of the body in two distinct spots and do not extend back more than halfway on the body. The Banks grass mite is also slightly less robust than the twospotted spider mite and is slightly flatter from top to bottom. Mites damage crops by piercing plant cells with their mouthparts and sucking the plant juices.

The first evidence of mite feeding, which can usually be seen on the top of the leaf, is a yellow or whitish spotting of the leaf tissues in areas where the mites are feeding on the lower leaf surface. Because many other things can cause similar discoloration, it is important to check leaves closely to make sure mites are actually causing the damage. Leaf discoloration caused by mite feeding can be easily identified by checking the undersurface of leaves for the presence of mites, eggs and webbing. Both Banks grass mites and twospotted spider mites produce webbing, and a fine network of silken webs will likely be associated with mite colonies. A magnifying glass or 10X hand lens is helpful in examining plants for mites.

The economic injury level indicated in the table provides a method for deciding when to treat, taking into account the value of corn. This table works for both twospotted spider mites and Banks grass mites.

The first row refers to the expected value of the crop (\$/acre), determined by multiplying the expected yield (bu/acre), by the expected crop price (\$/bu). For example, if the expected yield is 200 bu/acre and the expected price is \$1.50/bu, then the value per acre is \$300.

Table I. Economic injury level for the Banks grass mite or twospotted spider mite on corn, based on the percentage of infested leaves per plant and percentage of total leaf area damaged.

Control cost/acre	Market value per acre (\$)										
	200	250	300	350	400	450	500	550	600	650	700
<i>Percent infested leaves per plant/Percent of total leaf area damaged</i>											
\$5	15/8	12/6	10/5	8/5	7/4	7/3	6/3	5/6	5/3	5/2	4/2
\$10	29/16	24/13	20/10	17/9	15/8	13/7	12/6	11/6	10/5	9/5	8/4
\$15	44/23	35/19	29/16	25/13	22/12	20/10	18/9	16/9	15/8	14/7	13/7
\$20	59/31	47/25	39/21	34/18	29/16	26/14	24/13	21/11	20/10	18/10	17/9
\$25	74/39	59/31	49/26	42/22	37/20	33/17	29/16	27/14	25/13	23/12	21/11

Deciding whether to treat involves two steps. First, determine the percentage of leaves infested with mites (an infested leaf has one or more live mites). Compare that number with the first number in the table. If the field average is less than the table value, you don't need to treat, but

do continue to monitor the field. If the field average exceeds the table value, then estimate the percentage of total leaf area damaged by mites. If the field average exceeds the table value, it is likely that treating for spider mites will increase yield above the cost of treatment. Also, note that control costs are a factor in this table. Depending on the product chosen, the critical values may change greatly. For example, under the column \$300 market value, the critical value for percent infested leaves varies from 20%, if control costs are \$10, to 49% if control costs are \$25.

Labeled products for spider mite control on corn include dimethoate (several formulations), Comite 6.55EC and Capture 2EC. Dimethoate has performed reasonably well in Nebraska against Banks grass mites, but not twospotted spider mites. If twospotted spider mites are present, either Comite or Capture would provide better control. See the Department of Entomology web site on spider mite control or product labels for specific rates and restrictions. With the exception of Comite, pesticides do not kill mite eggs, and there is a possibility of re-infestation of the fields as eggs hatch out. Since many of their natural enemies were probably killed by the initial pesticide application, these populations may build up rather quickly and should be monitored carefully. Corn is unlikely to benefit from treatment for spider mites after the dent stage.

Twospotted spider mites also may develop on soybeans. No research has been conducted that would allow calculation of an economic injury level for twospotted spider mites on soybeans. Iowa State University Extension specialists have suggested that control may be warranted when infested plants have substantial spotting or leaf yellowing and live mites, but before mites cause browning and leaf drop. Damage from mites may be confused with that caused by drought and several foliar diseases, so be sure to base treatment decisions on the presence of mites, rather than just apparent injury symptoms.

Fields may be spot treated if the infestation is localized, but check other areas for mites (especially downwind of infestation) and extend treatments into these areas if large numbers of mites are found. Although late season infestations may accelerate soybean senescence and increase pod shattering, use caution when evaluating whether to treat with pesticides because many of the pesticides used for mite control have 21-28 day preharvest intervals. Products to use in soybeans include dimethoate (several formulations) and Lorsban 4E at ½ to 1 pt per acre. See the Entomology web site or product labels for specific rates and restrictions. For more information see the UNL Cooperative Extension publication, [Spider Mite Management in Corn and Soybeans](#), G1167.

Contributing Authors:

Keith J. Jarvi, Editor & IPM Extension Assistant
Charles A. Shapiro, Ext. Soils Specialist
William L. Kranz, Ext. Irrigation Specialist
Stevan Knezevic, Integrated Weed Mgmt. Spec.
Tom Hunt, Extension Entomologist

7/27/2004

CROP WATER USE SUMMARY

Ending on 7/26/2004

GDD @ Matur.=Acum. GDD at Maturity

--Station--	-Crop--	-Emerg		Accum	----Past-----			--Future--		---Stage---	GDD @
		mon/da	-GDD-		week	3days	day	3days	week		
AINSWORTH	Alfalfa	4	1	2303.	0.23	0.25	0.27	0.27	0.27	Full Cov	3000.
AINSWORTH	Corn	5	10	1195.	0.26	0.28	0.30	0.30	0.29	16leaves 4	2600.
AINSWORTH	Corn	5	10	1195.	0.26	0.28	0.30	0.30	0.29	16leaves 4	2700.
AINSWORTH	Corn	5	10	1195.	0.26	0.28	0.30	0.30	0.29	16leaves 4	2800.
AINSWORTH	Corn	5	1	1310.	0.26	0.28	0.30	0.30	0.29	Silks--HMAX	2700.
AINSWORTH	Grass	4	1	2303.	0.17	0.18	0.20	0.19	0.18	Full Cover	3000.
AINSWORTH	Potato	5	25	1381.	0.21	0.22	0.24	0.24	0.22	Tuberization	2400.
AINSWORTH	Soybean	5	25	1053.	0.21	0.24	0.26	0.26	0.26	FullBloom	2550.
AINSWORTH	Soybean	6	5	915.	0.19	0.21	0.23	0.24	0.24	BegBloom	2550.
AINSWORTH	Wheat	4	1	2303.	0.00	0.00	0.00	0.00	0.00	Mature	1800.
BRUNSWICK	Alfalfa	4	1	2450.	0.27	0.26	0.30	0.29	0.27	Full Cov	3000.
BRUNSWICK	Corn	5	10	1290.	0.29	0.28	0.33	0.32	0.30	Silks--HMAX	2600.
BRUNSWICK	Corn	5	10	1290.	0.29	0.28	0.33	0.32	0.30	Silks--HMAX	2700.
BRUNSWICK	Corn	5	10	1290.	0.29	0.28	0.33	0.32	0.30	Silks--HMAX	2800.
BRUNSWICK	Corn	5	1	1402.	0.29	0.28	0.33	0.32	0.30	Silks--HMAX	2700.
BRUNSWICK	Grass	4	1	2450.	0.18	0.17	0.20	0.19	0.17	Full Cover	3000.
BRUNSWICK	Potato	5	25	1448.	0.23	0.22	0.26	0.24	0.21	Tuberization	2400.
BRUNSWICK	Soybean	5	25	1126.	0.26	0.25	0.30	0.29	0.27	FullBloom	2550.
BRUNSWICK	Soybean	6	5	977.	0.23	0.23	0.28	0.26	0.25	FullBloom	2550.
BRUNSWICK	Wheat	4	1	2450.	0.00	0.00	0.00	0.00	0.00	Mature	1800.
CENTRALCITY	Alfalfa	4	1	2588.	0.18	0.15	0.21	0.22	0.22	Full Cov	3000.
CENTRALCITY	Corn	5	10	1387.	0.20	0.16	0.23	0.25	0.24	Silks--HMAX	2600.
CENTRALCITY	Corn	5	10	1387.	0.20	0.16	0.23	0.25	0.24	Silks--HMAX	2700.
CENTRALCITY	Corn	5	10	1387.	0.20	0.16	0.23	0.25	0.24	Silks--HMAX	2800.
CENTRALCITY	Corn	5	1	1526.	0.20	0.16	0.23	0.25	0.24	Blister 6	2700.
CENTRALCITY	Grass	4	1	2588.	0.12	0.09	0.13	0.14	0.13	Full Cover	3000.
CENTRALCITY	Potato	5	25	1534.	0.15	0.12	0.17	0.17	0.16	Tuber bulk	2400.
CENTRALCITY	Soybean	5	25	1191.	0.18	0.15	0.22	0.23	0.23	Beg Pod	2550.
CENTRALCITY	Soybean	6	5	1023.	0.16	0.14	0.20	0.21	0.21	FullBloom	2550.
CENTRALCITY	Wheat	4	1	2588.	0.00	0.00	0.00	0.00	0.00	Mature	1800.
ELGIN	Alfalfa	4	1	2415.	0.23	0.22	0.26	0.27	0.27	Full Cov	3000.
ELGIN	Corn	5	10	1241.	0.25	0.24	0.29	0.30	0.30	Silks--HMAX	2600.
ELGIN	Corn	5	10	1241.	0.25	0.24	0.29	0.30	0.30	Silks--HMAX	2700.
ELGIN	Corn	5	10	1241.	0.25	0.24	0.29	0.30	0.30	16leaves 4	2800.
ELGIN	Corn	5	1	1356.	0.25	0.24	0.29	0.30	0.30	Silks--HMAX	2700.
ELGIN	Grass	4	1	2415.	0.16	0.15	0.18	0.18	0.18	Full Cover	3000.
ELGIN	Potato	5	25	1413.	0.20	0.19	0.23	0.23	0.22	Tuberization	2400.
ELGIN	Soybean	5	25	1089.	0.22	0.21	0.25	0.27	0.27	FullBloom	2550.
ELGIN	Soybean	6	5	945.	0.19	0.19	0.23	0.24	0.25	BegBloom	2550.
ELGIN	Wheat	4	1	2415.	0.00	0.00	0.00	0.00	0.00	Mature	1800.
MEADAGROFARM	Alfalfa	4	1	2656.	0.17	0.15	0.21	0.23	0.23	Full Cov	3000.
MEADAGROFARM	Corn	5	10	1419.	0.19	0.17	0.23	0.25	0.25	Silks--HMAX	2600.
MEADAGROFARM	Corn	5	10	1419.	0.19	0.17	0.23	0.25	0.25	Silks--HMAX	2700.
MEADAGROFARM	Corn	5	10	1419.	0.19	0.17	0.23	0.25	0.25	Silks--HMAX	2800.
MEADAGROFARM	Corn	5	1	1559.	0.19	0.17	0.23	0.25	0.25	Blister 6	2700.
MEADAGROFARM	Grass	4	1	2656.	0.11	0.09	0.13	0.13	0.13	Full Cover	3000.
MEADAGROFARM	Potato	5	25	1526.	0.14	0.12	0.17	0.18	0.16	Tuber bulk	2400.
MEADAGROFARM	Soybean	5	25	1197.	0.17	0.15	0.22	0.23	0.24	Beg Pod	2550.
MEADAGROFARM	Soybean	6	5	1034.	0.15	0.14	0.20	0.21	0.22	FullBloom	2550.
MEADAGROFARM	Wheat	4	1	2656.	0.00	0.00	0.00	0.00	0.00	Mature	1800.
MONROE	Alfalfa	4	1	2614.	0.19	0.16	0.22	0.23	0.23	Full Cov	3000.
MONROE	Corn	5	10	1386.	0.21	0.17	0.25	0.26	0.26	Silks--HMAX	2600.
MONROE	Corn	5	10	1386.	0.21	0.17	0.25	0.26	0.26	Silks--HMAX	2700.
MONROE	Corn	5	10	1386.	0.21	0.17	0.25	0.26	0.26	Silks--HMAX	2800.

MONROE	Corn	5	1	1526.	0.21	0.17	0.25	0.26	0.26	Blister 6	2700.
MONROE	Grass	4	1	2614.	0.12	0.10	0.14	0.14	0.14	Full Cover	3000.
MONROE	Potato	5	25	1529.	0.16	0.13	0.18	0.18	0.17	Tuber bulk	2400.
MONROE	Soybean	5	25	1193.	0.19	0.16	0.23	0.24	0.24	Beg Pod	2550.
MONROE	Soybean	6	5	1025.	0.17	0.15	0.21	0.22	0.23	FullBloom	2550.
MONROE	Wheat	4	1	2614.	0.00	0.00	0.00	0.00	0.00	Mature	1800.
CONCORD(NE)	Alfalfa	4	1	2419.	0.24	0.23	0.25	0.26	0.26	Full Cov	3000.
CONCORD(NE)	Corn	5	10	1247.	0.26	0.25	0.27	0.28	0.28	Silks--HMAX	2600.
CONCORD(NE)	Corn	5	10	1247.	0.26	0.25	0.27	0.28	0.28	Silks--HMAX	2700.
CONCORD(NE)	Corn	5	10	1247.	0.26	0.25	0.27	0.28	0.28	16leaves 4	2800.
CONCORD(NE)	Corn	5	1	1356.	0.26	0.25	0.27	0.28	0.28	Silks--HMAX	2700.
CONCORD(NE)	Grass	4	1	2419.	0.17	0.15	0.17	0.17	0.17	Full Cover	3000.
CONCORD(NE)	Potato	5	25	1413.	0.21	0.20	0.22	0.22	0.21	Tuberization	2400.
CONCORD(NE)	Soybean	5	25	1098.	0.22	0.22	0.24	0.25	0.26	FullBloom	2550.
CONCORD(NE)	Soybean	6	5	960.	0.20	0.20	0.22	0.23	0.24	BegBloom	2550.
CONCORD(NE)	Wheat	4	1	2419.	0.00	0.00	0.00	0.00	0.00	Mature	1800.
ONEILL	Alfalfa	4	1	2343.	0.26	0.27	0.33	0.30	0.27	Full Cov	3000.
ONEILL	Corn	5	10	1208.	0.28	0.30	0.36	0.33	0.30	16leaves 4	2600.
ONEILL	Corn	5	10	1208.	0.28	0.30	0.36	0.33	0.30	16leaves 4	2700.
ONEILL	Corn	5	10	1208.	0.28	0.30	0.36	0.33	0.30	16leaves 4	2800.
ONEILL	Corn	5	1	1318.	0.28	0.30	0.36	0.33	0.30	Silks--HMAX	2700.
ONEILL	Grass	4	1	2343.	0.19	0.19	0.23	0.21	0.18	Full Cover	3000.
ONEILL	Potato	5	25	1385.	0.23	0.24	0.28	0.26	0.23	Tuberization	2400.
ONEILL	Soybean	5	25	1056.	0.24	0.25	0.31	0.29	0.27	FullBloom	2550.
ONEILL	Soybean	6	5	921.	0.21	0.23	0.28	0.26	0.25	BegBloom	2550.
ONEILL	Wheat	4	1	2343.	0.00	0.00	0.00	0.00	0.00	Mature	1800.
WESTPOINT	Alfalfa	4	1	2539.	0.20	0.16	0.23	0.23	0.23	Full Cov	3000.
WESTPOINT	Corn	5	10	1346.	0.22	0.18	0.25	0.25	0.25	Silks--HMAX	2600.
WESTPOINT	Corn	5	10	1346.	0.22	0.18	0.25	0.25	0.25	Silks--HMAX	2700.
WESTPOINT	Corn	5	10	1346.	0.22	0.18	0.25	0.25	0.25	Silks--HMAX	2800.
WESTPOINT	Corn	5	1	1459.	0.22	0.18	0.25	0.25	0.25	Silks--HMAX	2700.
WESTPOINT	Grass	4	1	2539.	0.13	0.11	0.15	0.15	0.14	Full Cover	3000.
WESTPOINT	Potato	5	25	1491.	0.17	0.14	0.19	0.19	0.17	Tuber bulk	2400.
WESTPOINT	Soybean	5	25	1166.	0.19	0.16	0.23	0.23	0.24	Beg Pod	2550.
WESTPOINT	Soybean	6	5	1009.	0.18	0.15	0.21	0.22	0.22	FullBloom	2550.
WESTPOINT	Wheat	4	1	2539.	0.00	0.00	0.00	0.00	0.00	Mature	1800.
YORK	Alfalfa	4	1	2624.	0.18	0.15	0.22	0.23	0.23	Full Cov	3000.
YORK	Corn	5	10	1413.	0.19	0.17	0.25	0.26	0.25	Silks--HMAX	2600.
YORK	Corn	5	10	1413.	0.19	0.17	0.25	0.26	0.25	Silks--HMAX	2700.
YORK	Corn	5	10	1413.	0.19	0.17	0.25	0.26	0.25	Silks--HMAX	2800.
YORK	Corn	5	1	1550.	0.19	0.17	0.25	0.26	0.25	Blister 6	2700.
YORK	Grass	4	1	2624.	0.11	0.10	0.14	0.14	0.14	Full Cover	3000.
YORK	Potato	5	25	1537.	0.15	0.12	0.18	0.18	0.17	Tuber bulk	2400.
YORK	Soybean	5	25	1201.	0.18	0.16	0.23	0.24	0.24	Beg Pod	2550.
YORK	Soybean	6	5	1036.	0.16	0.14	0.21	0.22	0.22	FullBloom	2550.
YORK	Wheat	4	1	2624.	0.00	0.00	0.00	0.00	0.00	Mature	1800.
BERESFORD	Alfalfa	4	1	2439.	0.20	0.20	0.25	0.25	0.25	Full Cov	3000.
BERESFORD	Corn	5	10	1269.	0.22	0.22	0.27	0.27	0.27	Silks--HMAX	2600.
BERESFORD	Corn	5	10	1269.	0.22	0.22	0.27	0.27	0.27	Silks--HMAX	2700.
BERESFORD	Corn	5	10	1269.	0.22	0.22	0.27	0.27	0.27	Silks--HMAX	2800.
BERESFORD	Corn	5	1	1377.	0.22	0.22	0.27	0.27	0.27	Silks--HMAX	2700.
BERESFORD	Grass	4	1	2439.	0.14	0.14	0.17	0.16	0.16	Full Cover	3000.
BERESFORD	Potato	5	25	1425.	0.18	0.18	0.21	0.21	0.20	Tuberization	2400.
BERESFORD	Soybean	5	25	1110.	0.19	0.20	0.24	0.24	0.25	FullBloom	2550.
BERESFORD	Soybean	6	5	968.	0.17	0.18	0.22	0.23	0.23	BegBloom	2550.
BERESFORD	Wheat	4	1	2439.	0.00	0.00	0.00	0.00	0.00	Mature	1800.