



EXTENSION

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Last Regular Newsletter for 2007

This will be the last regular weekly newsletter for 2007. Other letters may follow if something unusual occurs or if we have further information to pass on to you. Later we will send out a survey asking for information on how we can make the newsletter better, and for documentation of our efforts. Thank you for subscribing to the letter. (KJ)

Crop Insect Update

Most insect populations are on the decline, especially soybean aphids. Bean leaf beetle populations may have increased somewhat over the last week so keep scouting soybeans for pod feeding. See last week's newsletter for threshold information. (KJ)

Crop Protection Clinics Set

Area Crop Protection Clinics have already been set for 2008. Northeast area clinics will be held in O'Neill on January 10, Norfolk on January 11th, and Fremont on January 23. Hope to see you there. (KJ)

Determining the Last Irrigation Date

Recent rains have brought about a situation where soil water contents are above normal for this time of year. In addition, the 2007 growing season has resulted in above normal growing degree days and crops are reaching maturity quicker. That means that the last irrigation of the season will occur earlier. In order to reduce irrigation costs and conserve water, start planning for when you want to apply that last irrigation of the season.

Because of the difference in application amount, furrow irrigators need to decide soon while pivot irrigators can delay the decision and take advantage of any rainfall. With the range in maturities grown across the state, the best way to determine if more irrigation is needed is to go through a step-by-step procedure.

Step 1. Determine the crop stage of growth for each field. Develop a field average growth stage by evaluating the crop at four to five locations just as you do when scouting for insects. *Table 1* gives some targets to look for. Depending on the maturity range and planting date, there likely will be a range in maturities across a county.

Step 2. The toughest part is estimating how much water remains in the soil. An excellent discussion of how to use the hand-feel method is presented in an USDA-NRCS publication, *Estimating Soil Moisture*, available at local Natural Resources Conservation Service offices. In fields where soil water sensors are installed, they should be used to determine how much water is left in the soil.

Using the hand-feel method can require a lot of practice to get it right. Begin by squeezing the soil as if making a fist; if a wet outline of the ball of soil remains on your hand, the soil is very near field capacity or 100% of available soil water content. As the soil dries, the wet outline disappears and the soil will crumble when pressure is applied to the ball of soil with your thumb. At 50% available water content, sandy soils tend to form a ball, but crumble when your hand pressure is released. Silt loams will tend to stick together after pressure is released. Clay loams will stick together and form a short ribbon when the soil is squeezed between your thumb and forefinger. The NRCS publication does a good job of showing how the soil looks at different soil water contents.

Step 3. Multiply the active root zone depth in feet by the total soil available water capacity and the current percent soil water content. For example, a sandy loam soil, 4 feet deep can hold up to 5.6 inches of plant available water (4 x 1.4 inches per foot). If the average current percent soil water content is 75%, then 4.2 inches of plant available water remains in the soil (0.75 x 5.6 inches).

Step 4. Subtract the minimum balance from the current available water content to get the remaining useable water in the soil. Crops need adequate water to maturity to ensure that the grain is filled to full size. To prevent yield losses, the soil water content should be kept above the 40% of available soil water level as the crop nears maturity. So, the minimum balance for a sandy loam soil would be 2.2 inches (0.4 x 5.6 inches). The remaining useable water for this sandy loam soil is 2.0 inches (4.2 – 2.2 inches).

Step 5. Determine the amount of water needed to carry the crop through to maturity. *Table 1* summarizes the estimated crop water requirements for corn, grain sorghum and soybean. Each year and variety will be slightly different so field scouting is an important part of making a final decision. For example, if corn is near the full dent stage in much of your area. The crop water requirement to reach maturity is around 2.5 inches and typically requires about 13 days.

Step 6. Finally, subtract the depth of water needed to take the crop to maturity (*Step 5*) from the remaining useable water (*Step 4*). If the result is positive, no further irrigation is needed. If not, keep track of crop water use rates and effective rainfall. Irrigate only if rainfall does not meet crop needs. In the example

Table 1. Normal water requirements for corn, grain sorghum and soybeans between various stages of growth and maturity in Nebraska.

Growth stage	Days to maturity	Water use to maturity (in inches)
Corn		
Blister (R2)	45	10.5
Dough (R4)	34	7.5
Full dent (R5)	24	5.0
¼ milk line	19	3.75
½ milk line	13	2.25
¾ milk line	7	1.0
Physiological maturity (R6)	0	0.0
Grain Sorghum		
Half bloom (Stage 6)	34	9.0
Soft dough (Stage 7)	23	5.0
Hard dough (Stage 8)	12	2.0
Physiological maturity (Stage 9)	0	0.0
Soybeans		
Full pod development (R4)	37	9.0
Beginning seed fill (R5)	29	6.5
Full seed fill (R6)	18	3.5
Leaves begin to yellow (R6.5)	10	1.9
Beginning Maturity (R7)	0	0.0

above, an additional 0.5 inches of water would be needed to take the crop to maturity without significant stress ($2.0 - 2.5 = -0.50$ inches).

The last irrigation decision is always an important one. By following these steps and determining how much water the crop still needs, you can minimize the amount of irrigation water applied to the field, save on energy costs, and have good yields. (WK)

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8/29/2007

CROP WATER USE SUMMARY

Ending on 8/28/2007

GDD @ Matur.=Acum. GDD at Maturity

--Station--	Crop	mon	da	Accum -GDD-	---Past-----			--Future--		---Stage----	GDD @ Matur
					week	3days	day	3days	week		
					inches	per	day			---Descrip--	
AINSWORTH	Corn	5	5	2273.	0.13	0.20	0.08	0.12	0.14	beg Dent 8	2600.
AINSWORTH	Corn	5	19	2085.	0.14	0.21	0.09	0.14	0.17	beg Dent 8	2600.
AINSWORTH	Soybean	5	22	2028.	0.12	0.18	0.07	0.11	0.11	Beg Mature	2500.
AINSWORTH	Soybean	6	5	1876.	0.14	0.20	0.08	0.13	0.15	Full Seed	2500.
AINSWORTH	Potato	5	15	2756.	0.00	0.00	0.00	0.00	0.00	Mature	2500.
AINSWORTH	Potato	5	30	2508.	0.01	0.02	0.03	0.02	0.01	Mature	2500.
AINSWORTH	Wheat	4	5	3437.	0.00	0.00	0.00	0.00	0.00	Mature	1800.
AINSWORTH	Grass	4	5	3437.	0.09	0.13	0.05	0.08	0.10	Full Cover	4000.
AINSWORTH	Alfalfa	4	5	3437.	0.13	0.20	0.08	0.13	0.16	Full Cov	4000.
BRUNSWICK	Corn	5	5	2392.	0.12	0.16	0.04	0.08	0.10	fullDent 9	2600.
BRUNSWICK	Corn	5	19	2184.	0.14	0.19	0.06	0.11	0.14	beg Dent 8	2600.
BRUNSWICK	Soybean	5	22	2118.	0.11	0.13	0.03	0.06	0.06	Beg Mature	2500.
BRUNSWICK	Soybean	6	5	1950.	0.14	0.18	0.05	0.10	0.12	Full Seed	2500.
BRUNSWICK	Potato	5	15	2827.	0.00	0.00	0.00	0.00	0.00	Mature	2500.
BRUNSWICK	Potato	5	30	2564.	0.01	0.00	0.02	0.01	0.00	Mature	2500.
BRUNSWICK	Wheat	4	5	3597.	0.00	0.00	0.00	0.00	0.00	Mature	1800.
BRUNSWICK	Grass	4	5	3597.	0.08	0.11	0.03	0.06	0.08	Full Cover	4000.
BRUNSWICK	Alfalfa	4	5	3597.	0.14	0.18	0.05	0.11	0.15	Full Cov	4000.
CENTRALCITY	Corn	5	5	2479.	0.12	0.16	0.09	0.10	0.07	fullDent 9	2600.
CENTRALCITY	Corn	5	19	2264.	0.15	0.21	0.13	0.14	0.14	beg Dent 8	2600.
CENTRALCITY	Soybean	5	22	2201.	0.09	0.10	0.05	0.05	0.04	Beg Mature	2500.
CENTRALCITY	Soybean	6	5	2009.	0.15	0.20	0.12	0.13	0.12	Full Seed	2500.
CENTRALCITY	Potato	5	15	2901.	0.00	0.00	0.00	0.00	0.00	Mature	2500.
CENTRALCITY	Potato	5	30	2618.	0.00	0.00	0.01	0.00	0.00	Mature	2500.
CENTRALCITY	Wheat	4	5	3699.	0.00	0.00	0.00	0.00	0.00	Mature	1800.
CENTRALCITY	Grass	4	5	3699.	0.09	0.12	0.07	0.08	0.08	Full Cover	4000.
CENTRALCITY	Alfalfa	4	5	3699.	0.15	0.21	0.13	0.15	0.15	Full Cov	4000.
ELGIN	Corn	5	5	2377.	0.14	0.18	0.10	0.12	0.13	fullDent 9	2600.
ELGIN	Corn	5	19	2174.	0.16	0.22	0.12	0.15	0.17	beg Dent 8	2600.
ELGIN	Soybean	5	22	2111.	0.12	0.15	0.08	0.09	0.08	Beg Mature	2500.
ELGIN	Soybean	6	5	1951.	0.15	0.20	0.11	0.14	0.15	Full Seed	2500.
ELGIN	Potato	5	15	2808.	0.00	0.00	0.00	0.00	0.00	Mature	2500.
ELGIN	Potato	5	30	2552.	0.01	0.01	0.02	0.01	0.01	Mature	2500.
ELGIN	Wheat	4	5	3596.	0.00	0.00	0.00	0.00	0.00	Mature	1800.
ELGIN	Grass	4	5	3596.	0.09	0.13	0.07	0.09	0.10	Full Cover	4000.
ELGIN	Alfalfa	4	5	3596.	0.15	0.21	0.12	0.15	0.17	Full Cov	4000.
MEADAGROFARM	Corn	5	5	2606.	0.07	0.06	0.08	0.05	0.02	Full Mat11	2600.
MEADAGROFARM	Corn	5	19	2382.	0.15	0.20	0.17	0.16	0.13	fullDent 9	2600.
MEADAGROFARM	Soybean	5	22	2322.	0.04	0.04	0.04	0.03	0.03	Full Mature	2500.
MEADAGROFARM	Soybean	6	5	2107.	0.14	0.17	0.14	0.12	0.09	Beg Mature	2500.
MEADAGROFARM	Potato	5	15	3073.	0.00	0.00	0.00	0.00	0.00	Mature	2500.
MEADAGROFARM	Potato	5	30	2778.	0.00	0.00	0.00	0.00	0.00	Mature	2500.
MEADAGROFARM	Wheat	4	5	3805.	0.00	0.00	0.00	0.00	0.00	Mature	1800.
MEADAGROFARM	Grass	4	5	3805.	0.09	0.13	0.11	0.10	0.09	Full Cover	4000.
MEADAGROFARM	Alfalfa	4	5	3805.	0.17	0.23	0.21	0.19	0.18	Full Cov	4000.
MONROE	Corn	5	5	2542.	0.12	0.16	0.12	0.09	0.05	fullDent 9	2600.
MONROE	Corn	5	19	2315.	0.18	0.24	0.19	0.18	0.15	fullDent 9	2600.
MONROE	Soybean	5	22	2250.	0.07	0.08	0.05	0.04	0.03	Beg Mature	2500.
MONROE	Soybean	6	5	2048.	0.17	0.22	0.17	0.15	0.12	Beg Mature	2500.
MONROE	Potato	5	15	2971.	0.00	0.00	0.00	0.00	0.00	Mature	2500.
MONROE	Potato	5	30	2681.	0.00	0.00	0.00	0.00	0.00	Mature	2500.
MONROE	Wheat	4	5	3762.	0.00	0.00	0.00	0.00	0.00	Mature	1800.
MONROE	Grass	4	5	3762.	0.10	0.14	0.11	0.11	0.10	Full Cover	4000.
MONROE	Alfalfa	4	5	3762.	0.18	0.25	0.21	0.19	0.18	Full Cov	4000.

NEWPORT	Corn	5	5	2330.	0.16	0.23	0.08	0.12	0.13	fullDent 9	2600.
NEWPORT	Corn	5	19	2125.	0.18	0.26	0.09	0.14	0.17	beg Dent 8	2600.
NEWPORT	Soybean	5	22	2065.	0.14	0.21	0.07	0.09	0.10	Beg Mature	2500.
NEWPORT	Soybean	6	5	1901.	0.17	0.24	0.08	0.13	0.15	Full Seed	2500.
NEWPORT	Potato	5	15	2791.	0.00	0.00	0.00	0.00	0.00	Mature	2500.
NEWPORT	Potato	5	30	2534.	0.01	0.01	0.03	0.02	0.01	Mature	2500.
NEWPORT	Wheat	4	5	3511.	0.00	0.00	0.00	0.00	0.00	Mature	1800.
NEWPORT	Grass	4	5	3511.	0.10	0.15	0.05	0.08	0.10	Full Cover	4000.
NEWPORT	Alfalfa	4	5	3511.	0.16	0.24	0.09	0.13	0.17	Full Cov	4000.
CONCORD (NE)	Corn	5	5	2388.	0.12	0.15	0.08	0.10	0.11	fullDent 9	2600.
CONCORD (NE)	Corn	5	19	2171.	0.14	0.18	0.10	0.13	0.15	beg Dent 8	2600.
CONCORD (NE)	Soybean	5	22	2106.	0.11	0.13	0.06	0.07	0.07	Beg Mature	2500.
CONCORD (NE)	Soybean	6	5	1925.	0.13	0.17	0.09	0.12	0.14	Full Seed	2500.
CONCORD (NE)	Potato	5	15	2783.	0.00	0.00	0.00	0.00	0.00	Mature	2500.
CONCORD (NE)	Potato	5	30	2505.	0.01	0.01	0.03	0.02	0.01	Mature	2500.
CONCORD (NE)	Wheat	4	5	3603.	0.00	0.00	0.00	0.00	0.00	Mature	1800.
CONCORD (NE)	Grass	4	5	3603.	0.08	0.10	0.05	0.07	0.09	Full Cover	4000.
CONCORD (NE)	Alfalfa	4	5	3603.	0.13	0.17	0.09	0.13	0.15	Full Cov	4000.
ONEILL	Corn	5	5	2324.	0.13	0.18	0.06	0.11	0.13	fullDent 9	2600.
ONEILL	Corn	5	19	2122.	0.14	0.20	0.07	0.13	0.16	beg Dent 8	2600.
ONEILL	Soybean	5	22	2061.	0.12	0.16	0.05	0.09	0.09	Beg Mature	2500.
ONEILL	Soybean	6	5	1904.	0.14	0.18	0.06	0.12	0.15	Full Seed	2500.
ONEILL	Potato	5	15	2779.	0.00	0.00	0.00	0.00	0.00	Mature	2500.
ONEILL	Potato	5	30	2528.	0.01	0.01	0.02	0.01	0.01	Mature	2500.
ONEILL	Wheat	4	5	3513.	0.00	0.00	0.00	0.00	0.00	Mature	1800.
ONEILL	Grass	4	5	3513.	0.08	0.11	0.04	0.07	0.09	Full Cover	4000.
ONEILL	Alfalfa	4	5	3513.	0.13	0.18	0.07	0.12	0.16	Full Cov	4000.
ORD	Corn	5	5	2399.	0.12	0.15	0.08	0.10	0.11	fullDent 9	2600.
ORD	Corn	5	19	2193.	0.14	0.19	0.10	0.14	0.15	beg Dent 8	2600.
ORD	Soybean	5	22	2135.	0.10	0.12	0.06	0.07	0.06	Beg Mature	2500.
ORD	Soybean	6	5	1962.	0.13	0.17	0.09	0.13	0.13	Full Seed	2500.
ORD	Potato	5	15	2867.	0.00	0.00	0.00	0.00	0.00	Mature	2500.
ORD	Potato	5	30	2603.	0.00	0.00	0.01	0.01	0.00	Mature	2500.
ORD	Wheat	4	5	3585.	0.00	0.00	0.00	0.00	0.00	Mature	1800.
ORD	Grass	4	5	3585.	0.08	0.11	0.06	0.08	0.09	Full Cover	4000.
ORD	Alfalfa	4	5	3585.	0.13	0.18	0.10	0.14	0.16	Full Cov	4000.
WESTPOINT	Corn	5	5	2482.	0.11	0.15	0.10	0.10	0.07	fullDent 9	2600.
WESTPOINT	Corn	5	19	2264.	0.15	0.20	0.14	0.15	0.15	beg Dent 8	2600.
WESTPOINT	Soybean	5	22	2200.	0.08	0.10	0.06	0.05	0.04	Beg Mature	2500.
WESTPOINT	Soybean	6	5	1998.	0.14	0.19	0.13	0.14	0.12	Full Seed	2500.
WESTPOINT	Potato	5	15	2889.	0.00	0.00	0.00	0.00	0.00	Mature	2500.
WESTPOINT	Potato	5	30	2598.	0.00	0.00	0.01	0.01	0.00	Mature	2500.
WESTPOINT	Wheat	4	5	3700.	0.00	0.00	0.00	0.00	0.00	Mature	1800.
WESTPOINT	Grass	4	5	3700.	0.09	0.12	0.08	0.09	0.09	Full Cover	4000.
WESTPOINT	Alfalfa	4	5	3700.	0.15	0.20	0.15	0.16	0.16	Full Cov	4000.
YORK	Corn	5	5	2526.	0.12	0.16	0.12	0.10	0.06	fullDent 9	2600.
YORK	Corn	5	19	2311.	0.17	0.23	0.18	0.17	0.15	fullDent 9	2600.
YORK	Soybean	5	22	2253.	0.07	0.07	0.04	0.04	0.03	Beg Mature	2500.
YORK	Soybean	6	5	2049.	0.16	0.21	0.16	0.15	0.12	Beg Mature	2500.
YORK	Potato	5	15	2982.	0.00	0.00	0.00	0.00	0.00	Mature	2500.
YORK	Potato	5	30	2693.	0.00	0.00	0.00	0.00	0.00	Mature	2500.
YORK	Wheat	4	5	3735.	0.00	0.00	0.00	0.00	0.00	Mature	1800.
YORK	Grass	4	5	3735.	0.10	0.13	0.11	0.10	0.10	Full Cover	4000.
YORK	Alfalfa	4	5	3735.	0.17	0.23	0.20	0.19	0.18	Full Cov	4000.