



Integrated Pest & Crop Management

Nitrogen deficiency in 2017 had a long fuse Peter Scharf

Based on a drive across northern Missouri on August 22-23, I would say that we lost quite a bit of corn yield to N deficiency this year. In northeast Missouri (Shelbina to Columbia), about half of the fields were affected, and in northwest Missouri (Corning to Brookfield), it was closer to a quarter. I only saw a few fields where the deficiency was widespread (more than half of what I could see), but it was often a quarter of what I could see or more.

I stopped in about a dozen fields and in all of them found the classic V-shaped burn up the midrib of lower leaves. I don't mind seeing N burn in late August as long as it's not above the knee, but in most cases it was on the leaf below the ear leaf, and in a few cases was even on the ear leaf. I'm pretty sure that this is associated with yield loss—and an amount that you would care about.

It was a sneaky year for N loss. After a dry winter, a couple of big systems in late April and early May saturated the soils. I don't think we lost much N at that time, but it set us up for gradual loss with the normal rains that we had through the rest of May and June. I saw some N stress in May and June, but it was nothing like 2015 (or 2013 or 2010 or 2009 or 2008). I don't think the yield losses we ended up with were anything like those years either. But the yield losses we had mean that those who applied N in-season (either rescue or planned) should come out ahead of most of their neighbors who put all their N down before planting.

A new tool that can help with tracking what is going on with N loss is Planet satellites. Planet launched 88 shoe-box-sized satellites in February. As a result, the frequency of the images that they supply went way up in May and June as those satellites came online. Their Planet Explorer Beta version is available for free (at least for now) and lets you see frequent and recent images (signup required). I have a company, NVision Ag, that predicts yield loss and creates fertilizer control files based on aerial images; this year, nearly all of our products were created from Planet satellite imagery.

Mid-August Planet satellite images show that quite a few fields have N deficiency in northeast Missouri. Frequent imagery will, in the future, help us to catch and correct these deficiencies as they develop.



Corn ear and V-shaped nitrogen burn up the midrib of the ear leaf. Monroe County Missouri, August 23, 2017.



August 19 satellite image of fields with severe N stress in Monroe County, Missouri. Most fields look better than these, but many have visible N stress.

In This Issue

Nitrogen deficiency in 2017 had a long fuse	1
Weather Data for the Week Ending September 30, 2017	2



Weather Data for the Week Ending September 30, 2017

Station	County	Weekly Temperature (°F)						Monthly Precipitation (in.)		Growing Degree Days‡	
		Avg. Max.	Avg. Min.	Extreme High	Extreme Low	Mean	Departure from long term avg.	Sep 1-Sep 30	Departure from long term avg.	Accumulated Since Apr. 1	Departure from long term avg.
Corning	Atchison	80	56	92	47	67	+4	1.80	-1.40	3660	+271
St. Joseph	Buchanan	78	58	89	51	67	+4	1.94	-1.85	3629	+268
Brunswick	Carroll	81	56	91	45	68	+6	0.57	-2.47	3681	+305
Albany	Gentry	78	53	90	43	65	+4	0.91	-2.42	3156	-82
Auxvasse	Audrain	82	56	92	47	68	+5	0.55	-2.91	3500	+43
Vandalia	Audrain	81	55	91	44	68	+6	0.44	-3.13	3427	+67
Columbia-Bradford Research and Extension Center	Boone	80	56	89	47	67	+4	0.78	-2.80	3338	-156
Columbia-Capen Park	Boone	85	54	96	45	67	+4	1.19	-2.41	3447	-69
Columbia-Jefferson Farm and Gardens	Boone	81	57	91	48	69	+6	1.77	-1.72	3546	+18
Columbia-Sanborn Field	Boone	82	60	91	51	70	+6	0.96	-2.63	3833	+163
Columbia-South Farms	Boone	81	58	90	48	69	+6	1.53	-2.08	3573	+62
Williamsburg	Callaway	81	54	91	46	67	+5	2.23	-1.59	3291	-90
Novelty	Knox	79	53	91	44	66	+4	0.22	-3.30	3211	-42
Mosow Mills	Lincoln	83	55	92	44	69	+7	1.01	-2.61	3553	+120
Linneus	Linn	79	55	90	44	67	+5	0.69	-2.61	3356	+90
Monroe City	Monroe	80	54	91	43	67	+5	0.16	-3.49	3378	-11
Versailles	Morgan	79	56	88	46	67	+3	0.55	-3.31	3617	-13
Green Ridge	Pettis	78	58	88	48	68	+5	1.45	-2.98	3512	+47
Unionville	Putnam	77	55	89	46	66	+6	0.71	-3.35	3215	+215
Lamar	Barton	78	59	89	51	68	+4	1.94	-2.77	3660	-97
Butler	Bates	78	58	88	50	68	+4	1.59	-3.05	3543	-92
Cook Station	Crawford	83	53	93	42	67	+5	0.08	-3.91	3455	-75
Round Spring	Shannon	82	53	90	45	66	+4	0.45	-3.30	3361	-75
Mountain Grove	Wright	81	58	89	46	68	+5	0.20	-4.28	3352	-88
Delta	Cape Girardeau	86	57	93	49	70	+5	0.42	-3.10	3783	-112
Cardwell	Dunklin	87	59	91	53	71	+4	0.25	-2.87	4065	-179
Clarkton	Dunklin	87	57	93	47	71	+4	0.26	-2.92	4005	-167
Glendonville	Dunklin	86	59	92	51	71	+5	0.13	-3.07	4063	-81
Charleston	Mississippi	85	60	92	52	71	+5	1.06	-1.99	4071	+41
Hayward	Pemiscot	85	60	90	50	71	+5	0.76	-2.57	4111	-96
Portageville	Pemiscot	86	62	91	53	73	+6	0.76	-2.47	4258	+8
Steele	Pemiscot	87	60	93	51	72	+5	0.79	-2.35	4122	-148

‡Growing degree days are calculated by subtracting a 50 degree (Fahrenheit) base temperature from the average daily temperature. Thus, if the average temperature for the day is 75 degrees, then 25 growing degree days will have been accumulated.