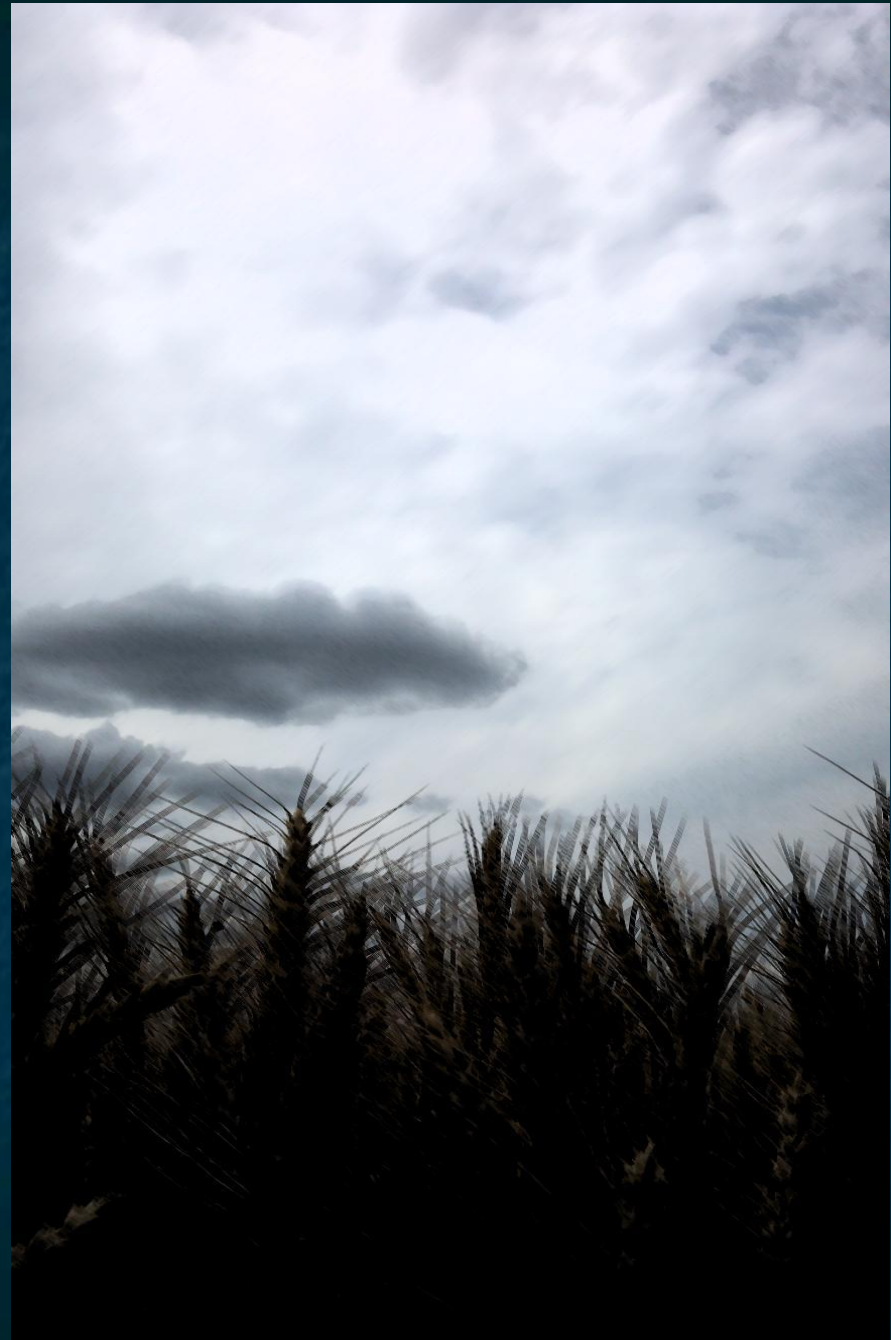


Wheat

lessons from 2015

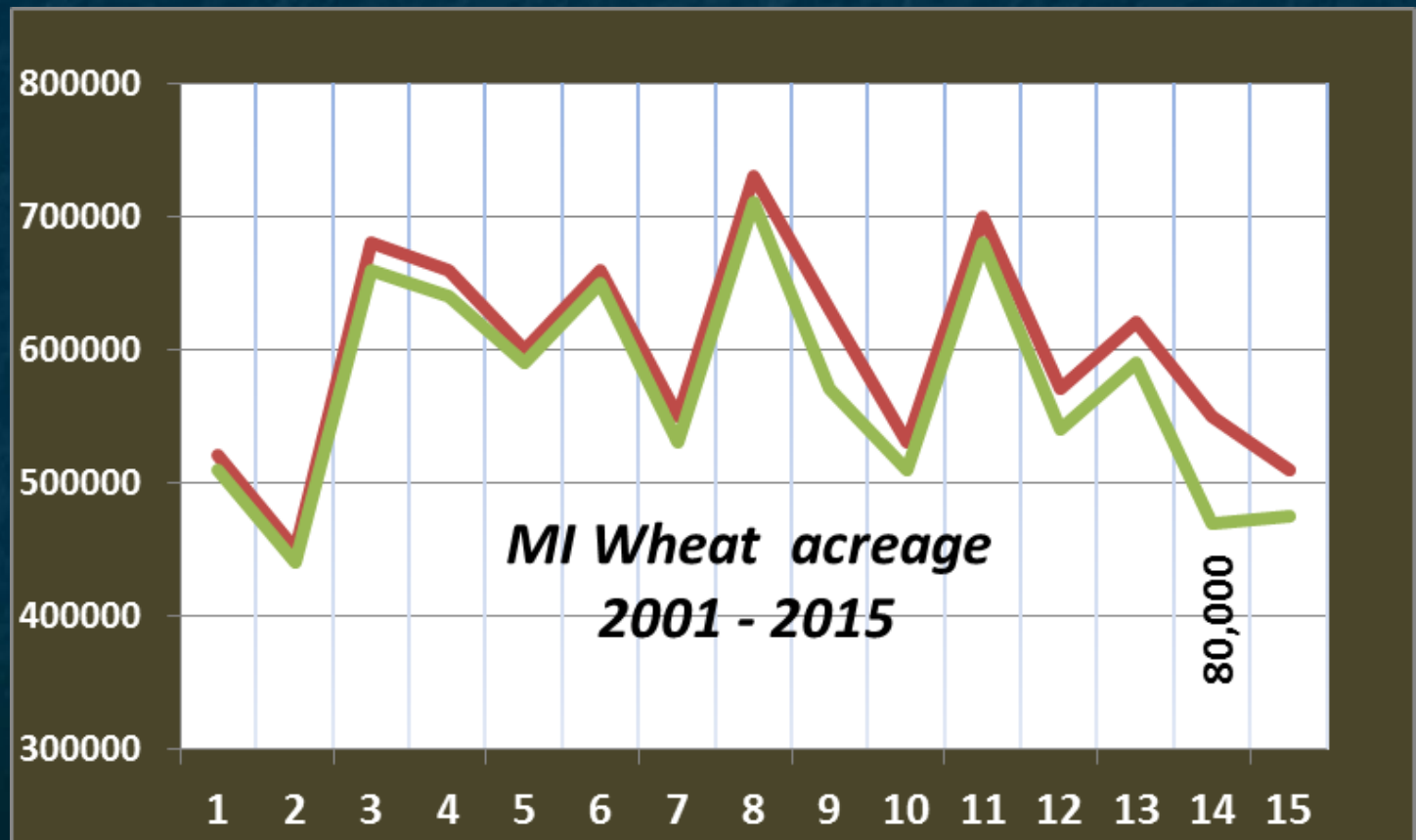
Martín Nagelkirk

MSU Extension



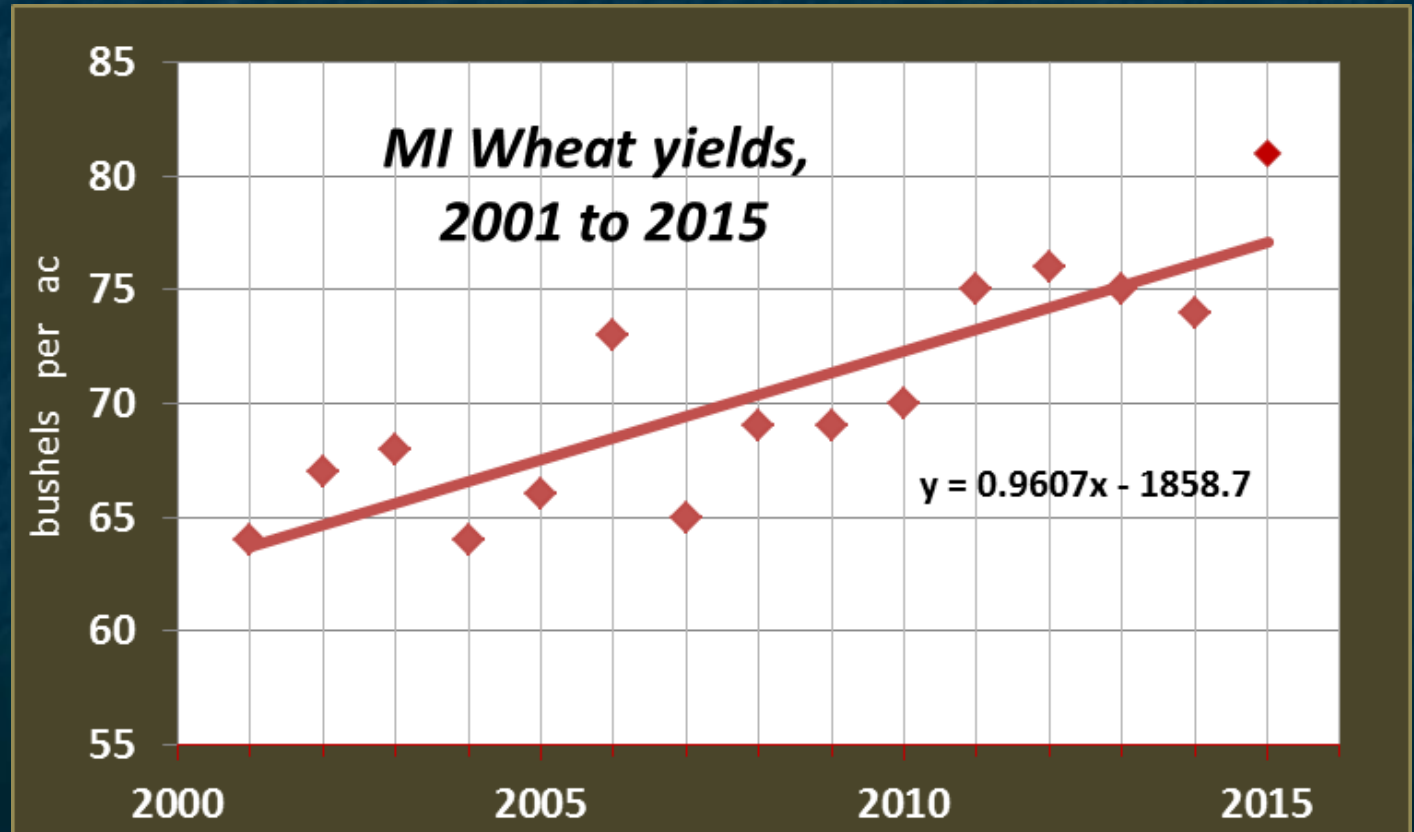
Wheat acreage

- planted vs. harvested



Wheat yield – new record 2015

- despite late planting
- dry spring
- cool summer



Growing season

- dry conditions in April and May
- relatively moderate temperatures
- near adequate rainfall in June & July
- Micro deficiency - Mn





2016 crop



early seeded wheat





Two trials

- Response to increasing inputs
- Timing of fungicides for fusarium head blight



Trial:

- Response to increasing inputs on selected wheat varieties

A trial conducted in concert with MCIA

Response of wheat varieties to intensive management inputs Deckerville, MI, 2015

As in past years, a trial was established in collaboration with MCIA to measure the response of various varieties to selected inputs. The varieties included the soft white variety, Jupiter, and four soft red varieties: Red Devil, Red Dragon, Sunburst and Whale. The five treatments - in addition to the untreated control - are listed in the table. The treatments represent an escalating progression of inputs involving fungicides (Prostar at 6.5 oz/ac applied at flowering; Boscalo at 2 oz/ac applied at first joint), applying 45 lbs/ac nitrogen (N) in addition to a base rate of 95 lbs/ac N, and a growth regulator (Palisade applied at 11 oz./ac at first joint). Fungicide applications included the use of an NIS at 0.125 %.

The yields of all varieties increased several bushels by applying either Boscalo at the time of flowering (treatment 2) or an additional 45 lbs/ac N at Palisade (treatment 3). When both Boscalo and the extra N was applied (treatment 4), yield improvement ranged from 11 to 17 bu/ac. Across all varieties, yields improved by an average of 13 bu/ac. When an early application of Boscalo was added to this combination for additional protection against fungal diseases, the yields of all varieties consistently improved, but by only an average of 3 bu/ac. In the absence of plant lodging, the addition of Palisade to the combination of Boscalo and extra N did not significantly affect yields. However, Palisade did reduce plant height of Jupiter, Red Devil, Red Dragon, Sunburst, and Whale by 2, 4, 4, 1 and 2 inches respectively.

For additional information, contact Martin
Boggs (maboggs@msu.edu)

BACKGROUND	
Location	JGDM Farms Deckerville, MI
Soil Type	Cape silt loam
Previous crop	dry beans
Variety	various
Fall tillage	22 in 9-16-3-5
Planting date	Oct. 15
Seeding rate	1.2 mils
Harvest date	July 15, 15
PLOT DESIGN	
Design	randomized split block
Replications	5x
Plot area	15 x 65 ft
Treatment area	17 x 65 ft
Harvest area	15 x 60 ft
VARIABLES	
Varities	Jupiter, Red Devil, Red Dragon, Sunburst, Whale
Nitrogen rate	95 or 140 lbs/ac as 25% UAN
Fungicide variable	Prostar 6.5 oz/ac w/ 42ai, 15 gal/ac; NIS
Fungicide variable	Prostar 200 ac w/ 40ai 12 gal/ac; NIS
Growth Regulator	Palisade, 11 oz ac 40ai 12 gal/ac

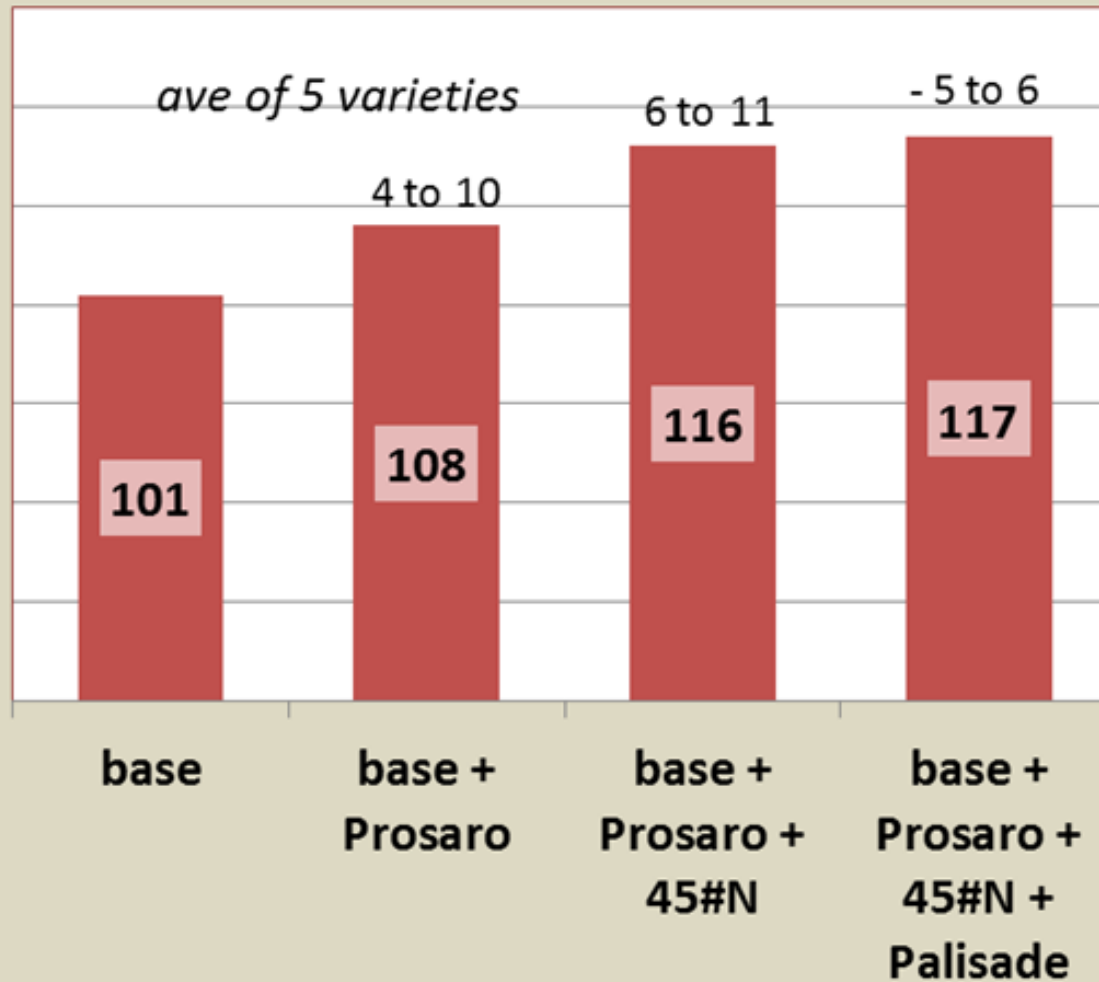
Response of soft winter wheat varieties to selected inputs, Deckerville, MI, 2015

Treatment	Jupiter			Red Devil			Red Dragon			Sunburst			Whale			Average		
	yield bu/ac	height inches	seed wt. lb/ac	yield bu/ac	height inches	seed wt. lb/ac	yield bu/ac	height inches	seed wt. lb/ac	yield bu/ac	height inches	seed wt. lb/ac	yield bu/ac	height inches	seed wt. lb/ac	yield bu/ac	height inches	seed wt. lb/ac
1. Untreated control	99	0.0	3.8	102	0.1	3.6	101	0.2	3.8	101	0.3	3.8	101	0.2	3.6	101	0.2	3.8
2. Prostar	101	0.1	3.8	105	0.2	3.6	103	0.1	3.8	102	0.2	3.8	102	0.1	3.6	102	0.1	3.8
3. 45 lb N	100	0.0	3.8	104	0.1	3.6	102	0.2	3.8	100	0.2	3.8	100	0.1	3.6	100	0.1	3.8
4. Prostar, 45 lb N	103	0.1	3.8	108	0.2	3.6	105	0.1	3.8	103	0.2	3.8	103	0.1	3.6	103	0.1	3.8
5. Prostar, 45 lb N, Prostar	102	0.0	3.8	106	0.1	3.6	104	0.2	3.8	102	0.2	3.8	102	0.1	3.6	102	0.1	3.8
6. Prostar, 45 lb N, Palisade	102	0.1	3.8	106	0.2	3.6	104	0.1	3.8	102	0.2	3.8	102	0.1	3.6	102	0.1	3.8
mean	101	0.0	3.8	105	0.1	3.6	103	0.1	3.8	102	0.2	3.8	102	0.1	3.6	102	0.1	3.8

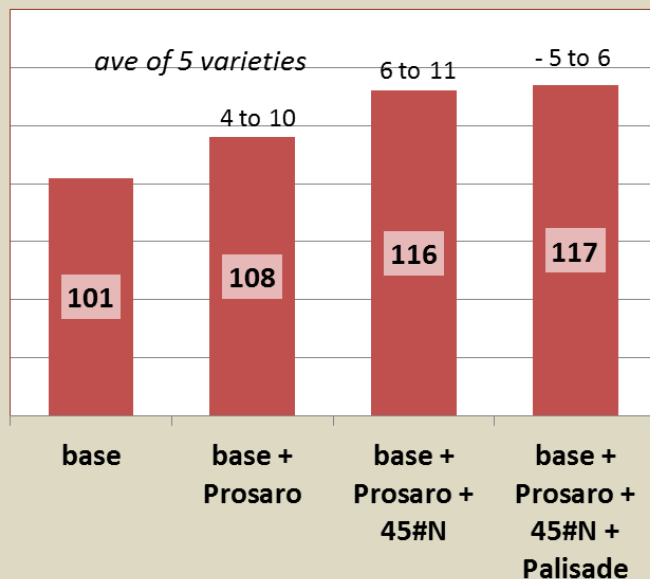
Response of soft winter wheat varieties to selected inputs, Deckerville, MI, 2015

treatment	Jupiter	R Devil	R Drag.	Sunbst	Whale	<i>average</i>
	yield bu/ac;	yield bu/ac;	yield bu/ac;	yield bu/ac;	yield bu/ac;	yield bu/ac;
1. untreated control	99	102	104	101	101	101
2. Prosaro	104	108	108	110	111	108
3. 140 # N	106	113	113	109	109	110
4. Prosaro, 140# N	112	119	115	116	117	116
5. Prosaro, 140# N, Prioior	116	122	117	120	120	119
6. Prosaro, 140# N Palisade	110	118	113	121	123	117
<i>average</i>	108	114	112	113	114	112

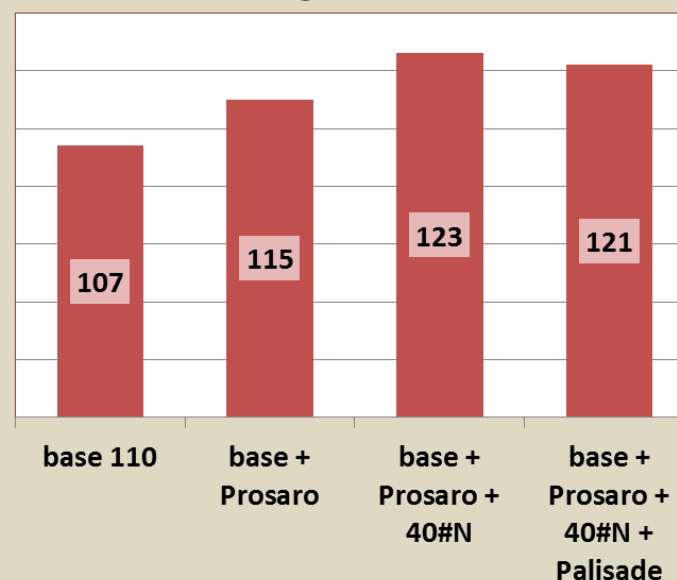
Response to increasing inputs - Deckerville, 2015



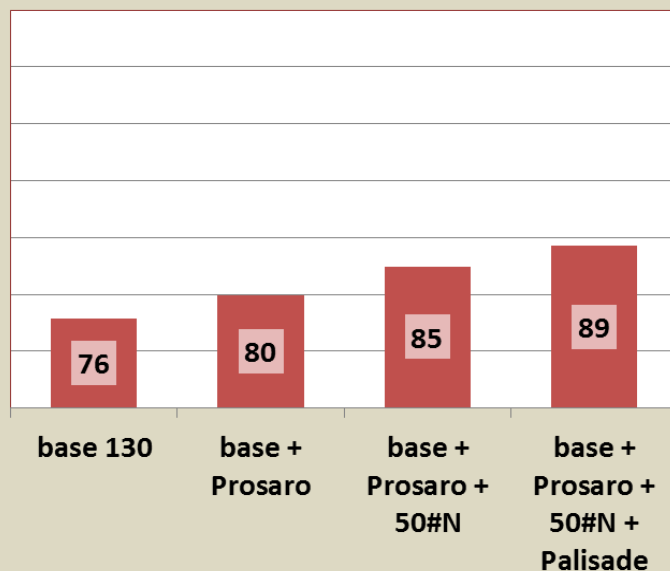
**Response to increasing inputs -
Deckerville, 2015**



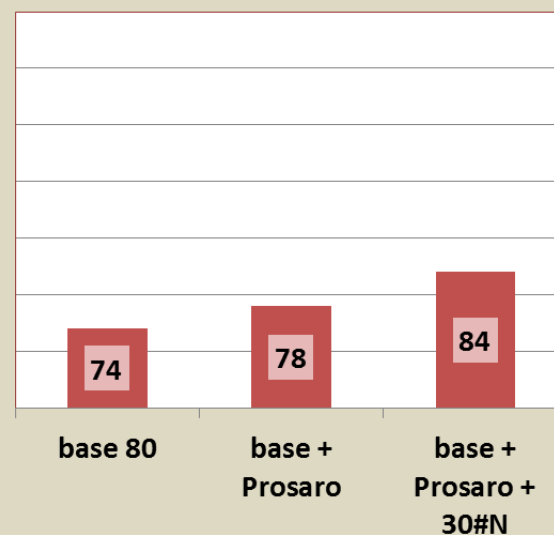
**Response to increasing inputs -
Kingston, 2015**



**Response of increasing input -
Monroe, 2015**



**Response to increasing inputs -
Hillman, 2015**



Application timing for Fusarium head scab 2014-2015

What is the best fungicide application timing to minimize head blight?

Martin Nagelkerk, Michigan State University Extension |
Martin Chilvers, Michigan State University, Plant Pathology

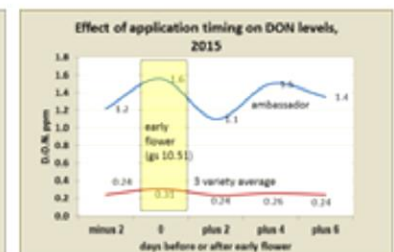
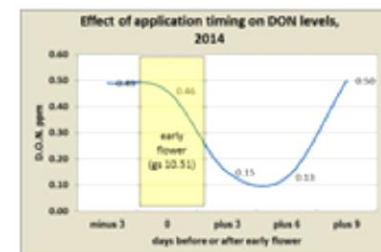
As part of a multi-state research study funded by the US Seed Initiative, a field trial was conducted in 2014 and 2015 to measure the effect of various application timings on the level of Fusarium head blight (FHB) and mycotoxin (DON). The trials were initiated, in part, to see if the standard recommendation that fungicide targeting FHB should be applied when the first anthers appear – a time referred to as “early flowering” or *anthesis*, growth stage 10.51.

The variety used in 2014 was Ambassador, a variety susceptible to PMS. In 2015, two soft white winter varieties (Ambassador, ~~Open~~ 9242) and two soft red varieties (Pioneer 25R34, and Whale) were grown. 009242 and P25R34 were selected because of their reduced susceptibility to PMS.

The fungicide used in both seasons was **Zoxon**. It was applied at 6.5 g/L, along with a NIS at 0.125 %, using a tractor-mounted boom sprayer and Turbo **Tek** **400** bodies with 11001 nozzles. In 2004, the product was applied at three day intervals beginning at heading (3 days prior to early **Souad Tek** s.e. 10.5). During 2015, **Zoxon** was applied at 2 day intervals beginning at heading (2 days prior to early flower).

Dry conditions at the trial sites limited the amount of fusarium that infected the wheat, especially during 2014. Nevertheless, differences in fusarium damaged kernels and disease index did occur (data not shown), as well as DON levels. The charts below illustrate the DON levels as the application timing of **Scout** went from pre-flower to several days after early flowering (10° days).

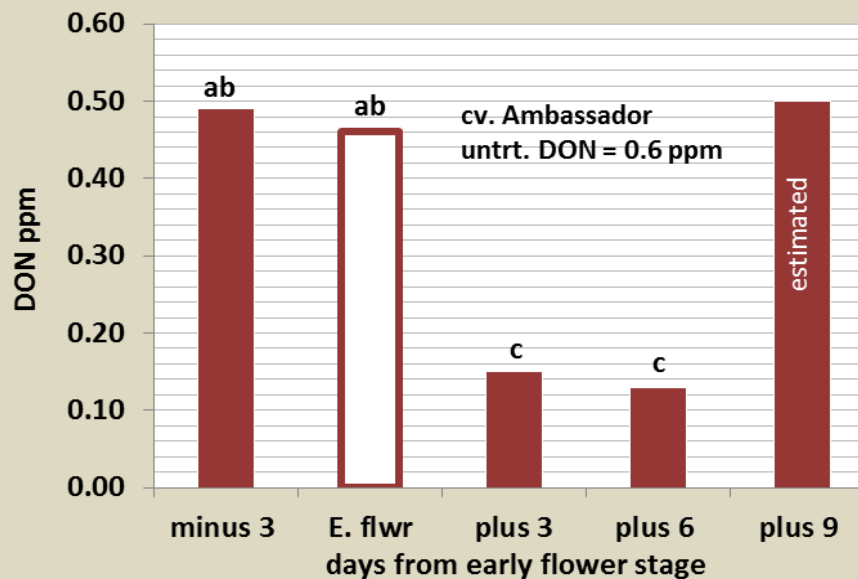
The untreated control treatment in 2014 resulted in a DON level of 0.80 ppm. As can be seen in the chart, all application timings tended to reduce DON levels. However, the greatest reduction in DON occurred when the **Zenox** application was delayed for 5 to 8 days following the standard recommended timing of early flowering. In 2015, the average DON level of the untreated plots was 0.9 ppm and the results are quite similar. The chart below for 2015 separates Ambassador from the other 3 varieties because of its elevated DON levels. As in 2014, it appears that there may be an advantage to delaying application for a couple days beyond the early flower stage. The results also suggest that there may be a much larger application window for reducing DON than once thought.





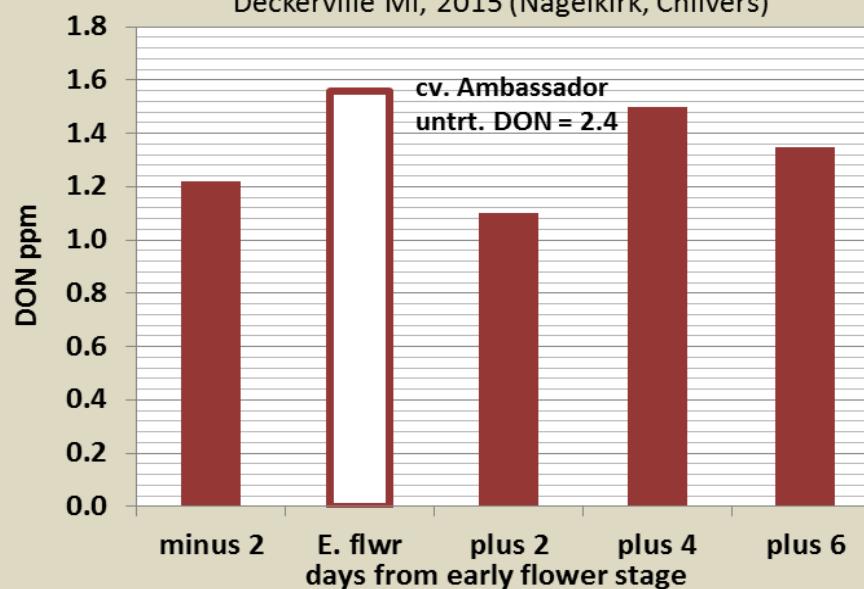
Effect of fungicide timing on DON levels

Deckerville MI, 2014 (Nagelkirk, Chilvers)



Effect of fungicide timing on DON levels

Deckerville MI, 2015 (Nagelkirk, Chilvers)



Fusarium head scab ratings

very susceptible (VS)

susceptible (S)

moderately susceptible (MS)

moderately resistant (MR)

resistant (R) – *does not exist*



Fusarium head scab ratings

Red varieties (examples)

susceptible

P25 R40

Shirley

Hopewell

Red Ruby

mod resistant

25R46

R. Dragon

White varieties (examples)

susceptible (VS)

Ambassador

Caledonia

mod. resist

DynaGro 9242

Ava

Thanks

MI Wheat Program
Nat'l head scab initiative
MI Crop Improvement
Collaborating growers
BASF, DuPont, Bayer

Martín Nagelkirk

810-404-3400

nagelkir@msu.edu

