



Tissue tests for dicamba and other variables

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Tissue tests for dicamba injury

- Concept:
 - One suspects a soybean field has drift injury
 - Leaf samples are collected and sent to a lab to check for dicamba
 - Results come back with indisputable proof that dicamba was applied
 -
 - Said no one ever

Sample analysis

Date Received : 2016-06-22

Package Id : 20160622-001

16PE009150

Description: Vegetation

Date Collected: 2016-06-21

101

Analyte

Result

Dicamba

ND ppb

Glyphosate

ND ppb

16PE009151

Description: Vegetation

Date Collected: 2016-06-21

102

Analyte

Result

Dicamba

1.10 ppb

Glyphosate

ND ppb

16PE009152

Description: Vegetation

Date Collected: 2016-06-21

103

Analyte

Result

Dicamba

6.80 ppb

Glyphosate

ND ppb

How to interpret plant tissue results













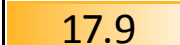


















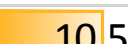

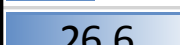


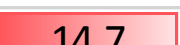


- To start: (page 108 in 2018 ND weed control guide)
 - Contact analytic lab before starting
 - They will have good instructions
 - Collect tissues soon after suspected incident
 - Collect from the top of the plant (actively growing portion)
- COLLECT A CHECK SAMPLE (do this first)
 - Go to an area that wasn't affected to collect a sample for comparison
 - May want to consider collecting several samples in-between
- Send samples to lab as quickly as possible

How to interpret plant tissue results

- Profit
- The number you get back is a concentration
- The tissue analysis **may or may not** indicate a higher level of herbicide in affected area compared to check
 - Many things affect how a herbicide is degraded or moved in a plant
 - Visual evidence is usually more indicative than tissue analysis
- The tissue test can tell you if a herbicide is present, but it is difficult to determine what concentration will cause yield loss

Example

Table 1. Field pea injury, leaf residue levels, and yield following dicamba and glyphosate applications

Treatment	Rate	Phytotoxicity		Residue Level 10 DAT		Residue Level 20 DAT		Yield	Protein
		10 DAT	20 DAT	Dicamba	Glyphosate	Dicamba	Glyphosate		
	fl oz/a	%	%	ppb	ppb	ppb	ppb	%	%
Check		0	0	0	0	0	0	0.90	29.74
Dicamba	0.05	 1	 0.3	 3.1	0	 2.4	 5.9	0.89	29.62
Dicamba	0.25	 5.5	 3.4	 8.7	0	 8.9	0	0.88	29.81
Dicamba	0.5	 12	 6.9	 11.4	0	 17.9	0	0.86	29.84
Glyphosate	0.1	 0.6	 0.6	 0.4	0	0	0	0.89	29.89
Glyphosate	0.5	 0.8	 1.3	 0.3	 3.3	0	0	0.91	30.13
Glyphosate	1	 3.4	 2.8	 0.8	0	0	 5.2	0.88	29.92
Glyphosate + dicamba	0.1 + 0.05	 1.4	 0.9	 2.7	 4.7	 3.1	0	0.92	29.85
Glyphosate + dicamba	0.5 + 0.25	 13	 8.1	 10.5	0	 11.7	0	0.82	29.81
Glyphosate + dicamba	1 + 0.5	 26.6	 17.1	 18.4	 14.7	 17.0	 4.5	0.73	29.90
LSD (0.05)		5.2	3.0	5.2	NS	6.3	NS	0.06	NS

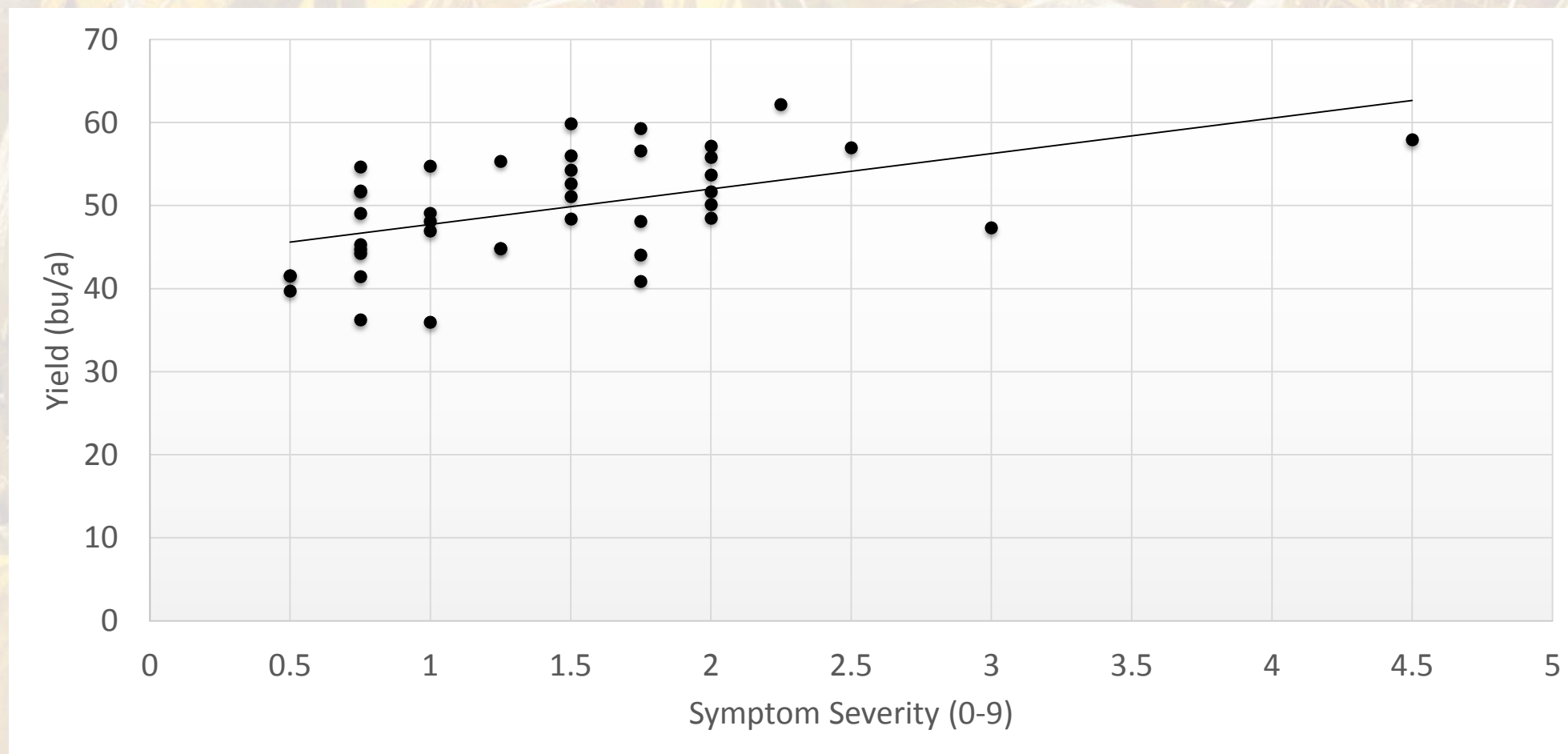
Soy

- Soy
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lea
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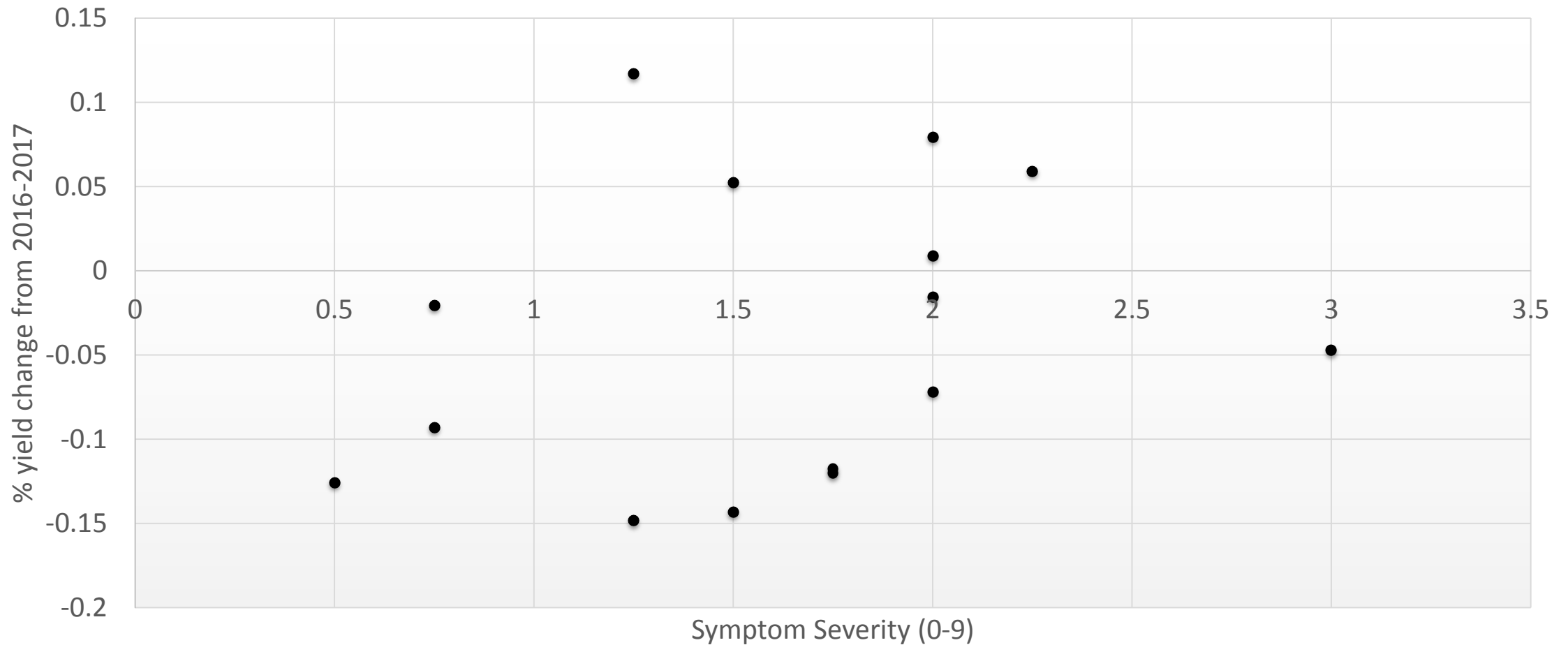


of

Did severity of leaf cupping cause yield loss?



Change in yield (%) from 2016 to 2017



Drift injury in soybeans

1.4 oz dicamba = ~4 oz/a of Extendimax

Treatment	Rate	Injury	Var 1 Yield	Var 2 Yield	Var 2 Leaf Residue
	fl oz/a	20 DAT	bu/a	bu/a	ppb dicamba
Check		0.0	48.2	34.0	0.0
Glyphosate	0.025	0.0	46.5	34.5	.
Glyphosate	0.25	0.0	51.8	36.3	.
Glyphosate	2.5	3.8	50.7	33.0	.
Dicamba	0.014	0.0	41.7	30.3	0.7
Dicamba	0.14	7.5	50.4	29.4	2.9
Dicamba	1.4	47.5	23.3	1.0	5.0
Glyphosate + Dicamba	0.025 + 0.014	0.0	42.7	31.9	.
Glyphosate + Dicamba	0.25 + 0.14	10.0	43.3	29.0	.
Glyphosate + Dicamba	2.5 + 1.4	58.8	22.3	0.8	.
LSD (0.05)		5.2	9.9		

Tests ongoing

- Germination of harvested seeds
- Herbicide residue screening of harvested seeds



Questions?