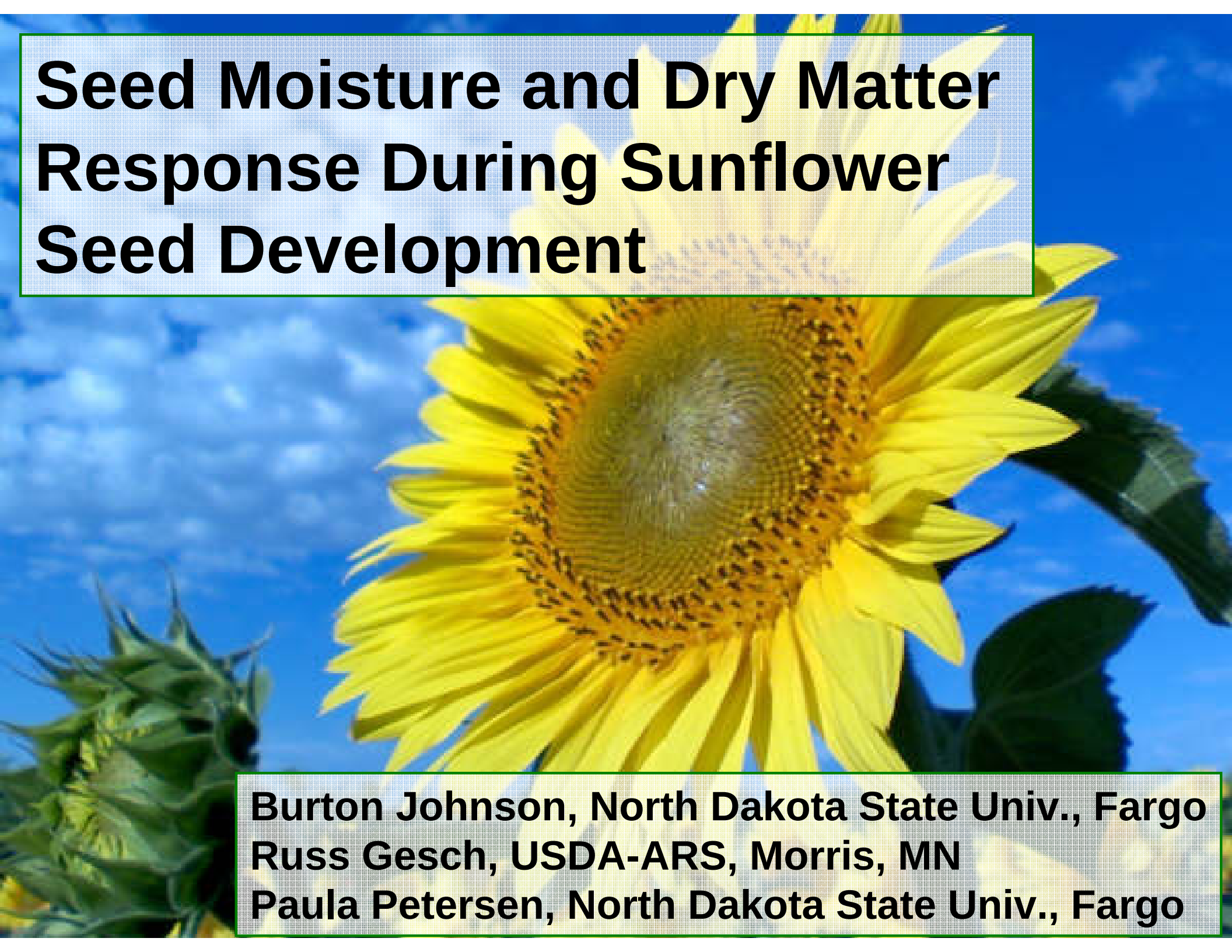


Seed Moisture and Dry Matter Response During Sunflower Seed Development

Burton Johnson, North Dakota State Univ., Fargo
Russ Gesch, USDA-ARS, Morris, MN
Paula Petersen, North Dakota State Univ., Fargo

The objective was to determine when physiological maturity occurs during sunflower seed development.

North Dakota State University, Fargo Dept. of Plant Sciences

USDA-ARS North Central Soil Conservation Research Lab, Morris, MN

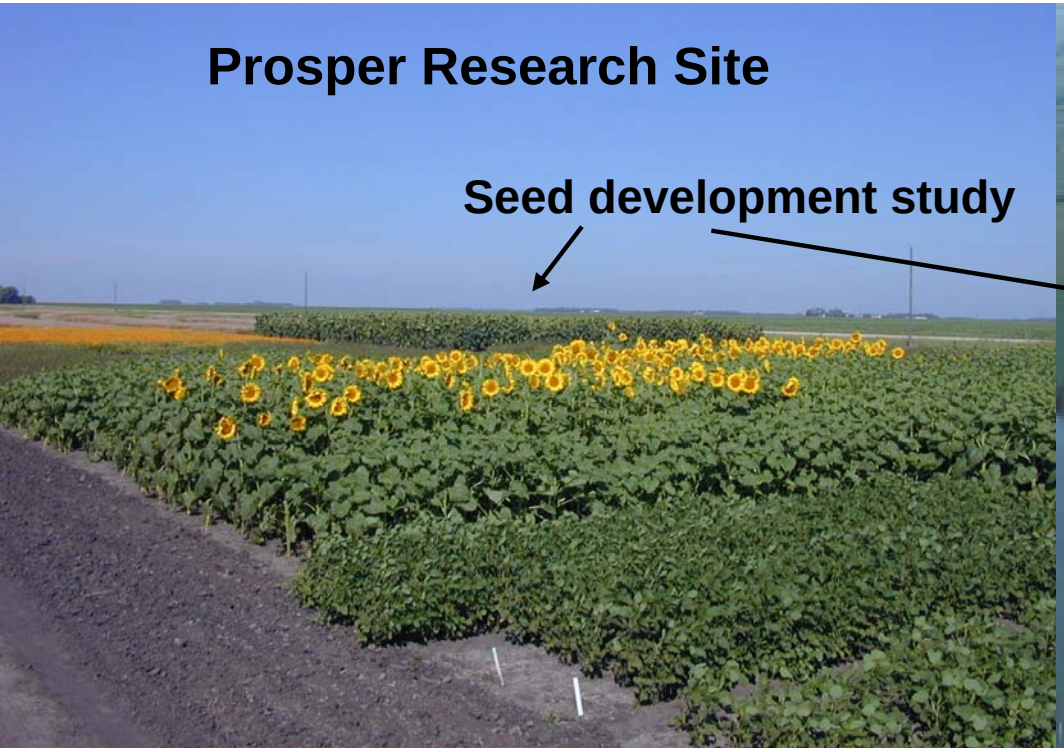
Prosper Research Site

Swan Lake Research Site

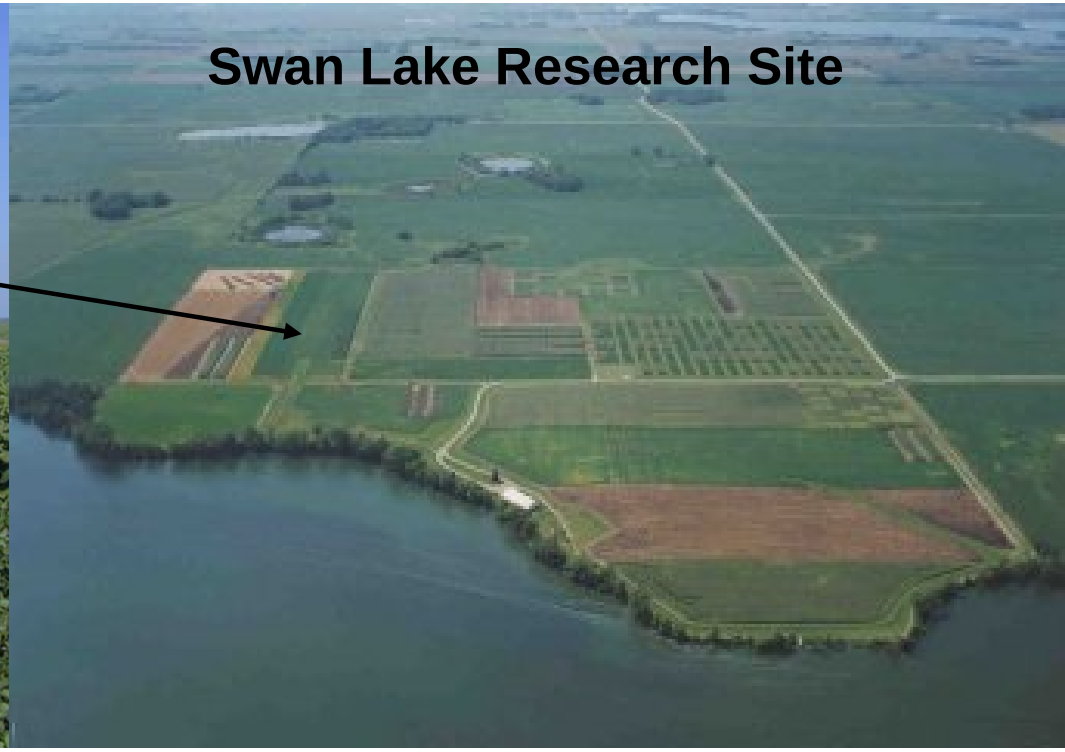
North Dakota State University, Fargo Dept. of Plant Sciences

USDA-ARS North Central Soil Conservation Research Lab, Morris, MN

Prosper Research Site



Swan Lake Research Site



Experimental Design

RCB with 4 replicates

Main plot hybrid (3)

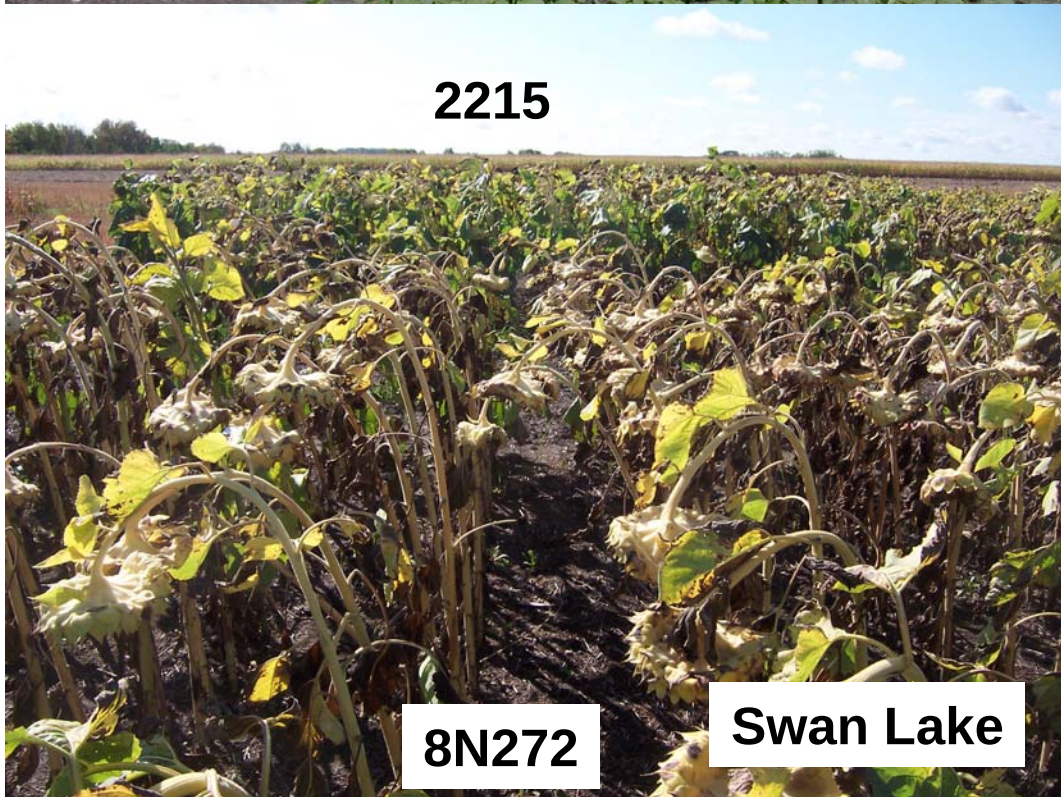
- **Mycogen 8N272**
  - **– NuSun**
- **Croplan 378**
  - **– High oleic**
- **Red River Commodities 2215**
  - **– nonoilseed**

Subplot (9)

- **Harvest date**

Subsubplot (3)

- **Head position**



8N272

2215

378

Photos on 8 Aug 2008

Hybrid

Harvest date – at 3 to 5 d

Head position

Photos on 5 Sept. 2008 Prosper

8N272 2215 378

Head position
for seed harvest

Outer 1/3
Middle 1/3
Center 1/3

Counted out 125 seeds/position/head

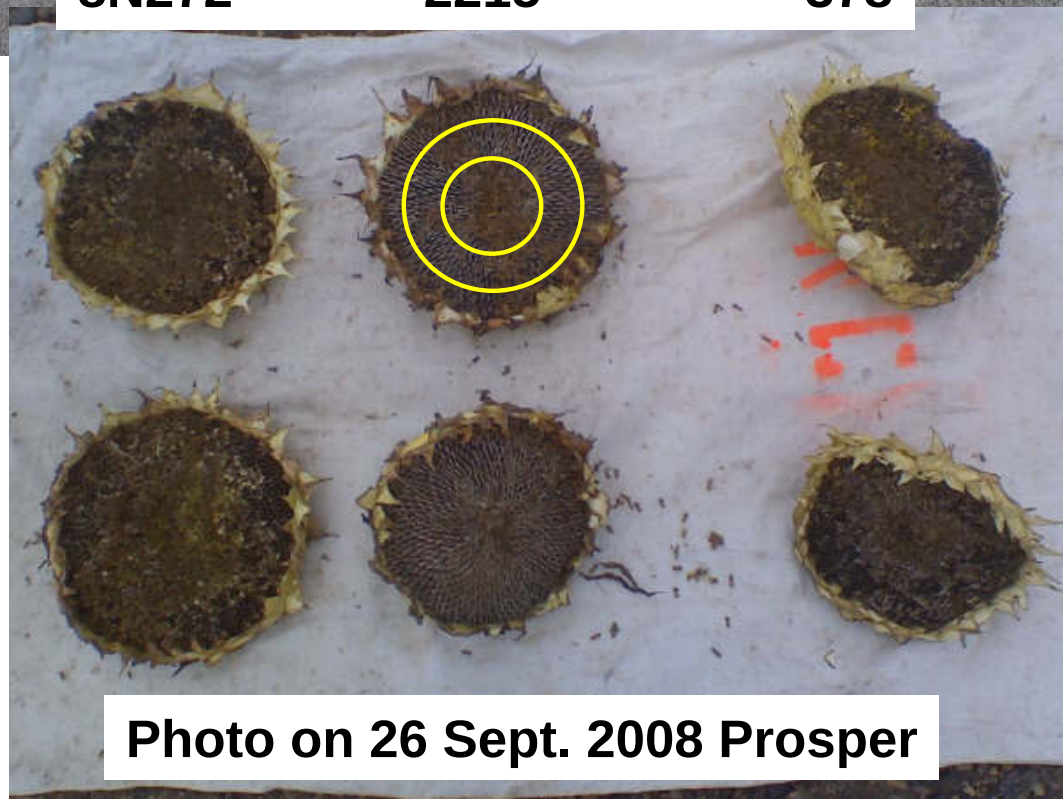


Photo on 26 Sept. 2008 Prosper

Photos on 5 Sept. 2008 Prosper

8N272 2215 378

Head position for seed harvest

Traits evaluated

Outer 1/3
Middle 1/3
Center 1/3

Seed moisture ✓
Seed weight ✓
Seed oil content
See oil composition

Counted out 125 seeds/position/head

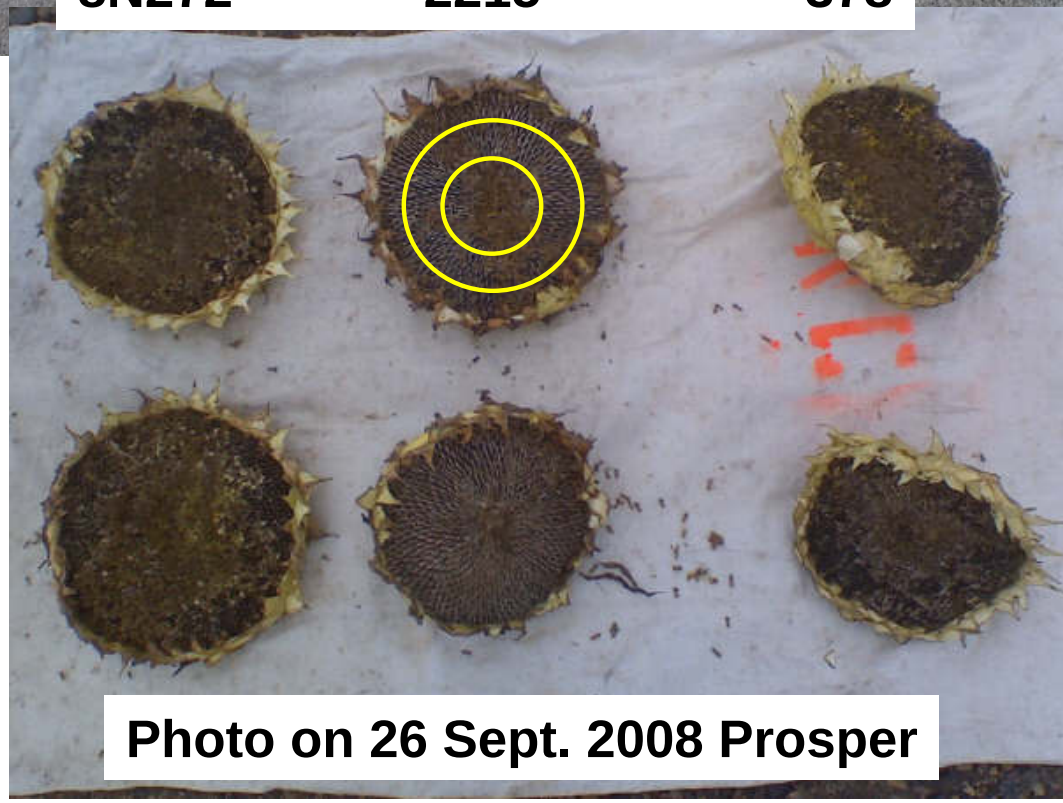


Photo on 26 Sept. 2008 Prosper

Mean seed dry weight (mg/seed) for oilseed hybrid 272 at eight harvest dates at Morris, MN, in 2009.

	Days from R5.1							
Hyb	**20**	**27**	**34**	**39**	**43**	**48**	**54**	**60**
272	21	29	39	42	41	46	48	47

LSD (0.05) Hybrid x Date = 4 for seed weight

Mean seed dry weight (mg/seed) and seed moisture (%) for oilseed hybrid 272 at eight harvest dates at Morris, MN, in 2009.

	Days from R5.1							
Hyb	**20**	**27**	**34**	**39**	**43**	**48**	**54**	**60**
272	21	29	39	42	41	46	48	47
H_2O	76	66	51	47	40	34	22	22

LSD (0.05) Hybrid x Date = 4 for seed weight

Mean seed dry weight (mg/seed) and seed moisture (%) for oilseed hybrids 272 and 378 at eight harvest dates at Morris, MN, in 2009.

	Days from R5.1							
Hyb	**20**	**27**	**34**	**39**	**43**	**48**	**54**	**60**
272	21	29	39	42	41	46	48	47
H_2O	76	66	51	47	40	34	22	22
378	17	31	35	38	47	48	51	49

LSD (0.05) Hybrid x Date = 4 for seed weight

Mean seed dry weight (mg/seed) and seed moisture (%) for oilseed hybrids 272 and 378 at eight harvest dates at Morris, MN, in 2009.

	Days from R5.1							
Hyb	**20**	**27**	**34**	**39**	**43**	**48**	**54**	**60**
272	21	29	39	42	41	46	48	47
H_2O	76	66	51	47	40	34	22	22
378	17	31	35	38	47	48	51	49
H_2O	80	67	55	50	40	34	34	28

LSD (0.05) Hybrid x Date = 4 for seed weight

Mean seed dry weight (mg/seed) for nonoilseed hybrid 2215 at eight harvest dates at Morris, MN, in 2009.

	Days from R5.1							
Loc	**20**	**27**	**34**	**39**	**43**	**48**	**54**	**60**
Out	87	133	147	153	149	151	158	154
Mid	58	108	119	126	132	136	137	141
In	21	72	81	94	96	101	105	112

LSD (0.05) Loc x Date = 9 for seed weight

Mean seed dry weight (mg/seed) for nonoilseed hybrid 2215 at eight harvest dates at Morris, MN, in 2009.

	Days from R5.1							
Loc	**20**	**27**	**34**	**39**	**43**	**48**	**54**	**60**
Out	87	133	147	153	149	151	158	154
Mid	58	108	119	126	132	136	137	141
In	21	72	81	94	96	101	105	112

LSD (0.05) Loc x Date = 9 for seed weight

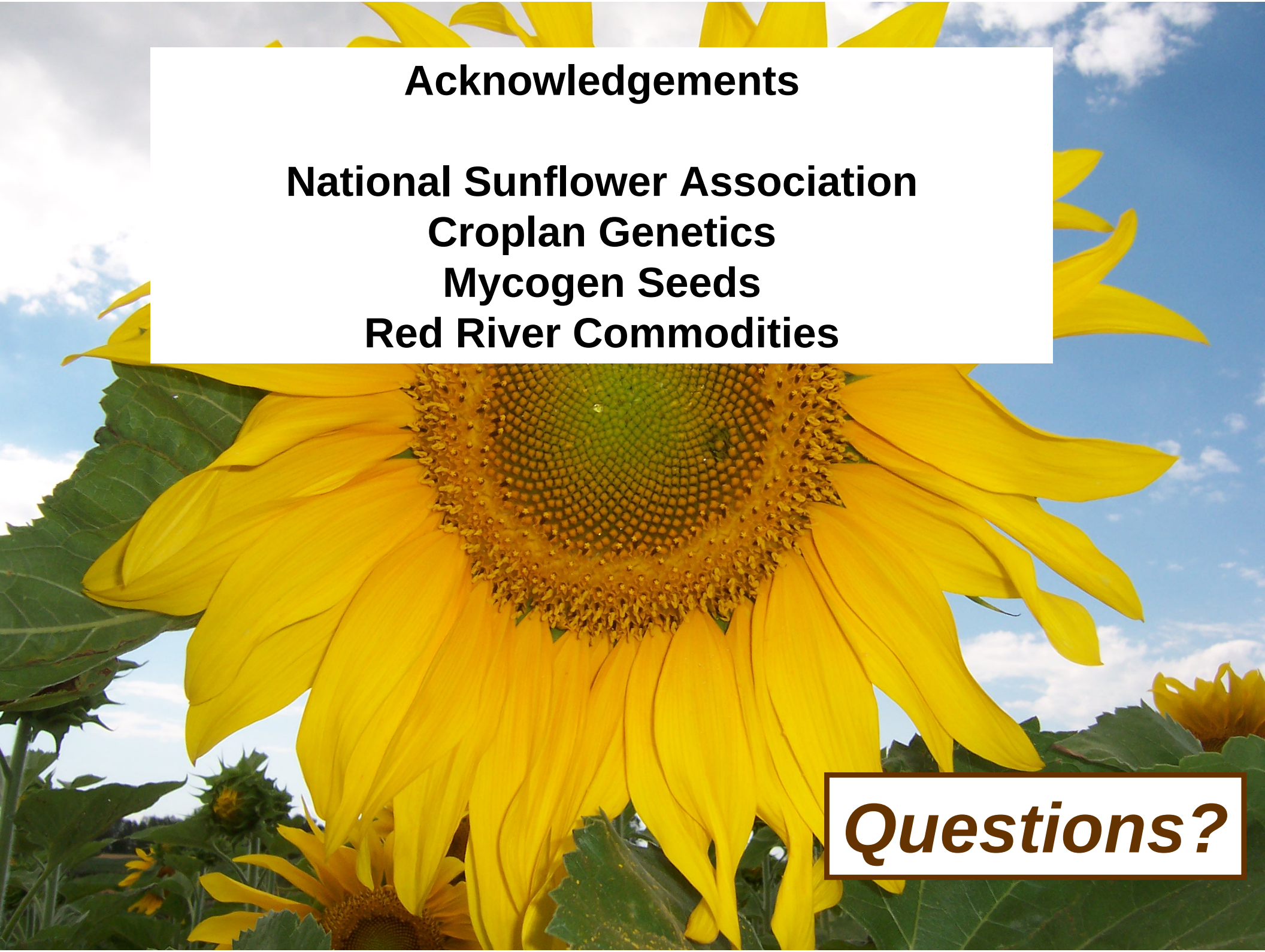
Mean seed moisture (%) for nonoilseed hybrid 2215 at eight harvest dates at Morris, MN, in 2009.

	Days from R5.1							
Loc	**20**	**27**	**34**	**39**	**43**	**48**	**54**	**60**
Out	74	62	54	43	38	26	26	21
Mid	79	65	57	46	44	33	33	27
In	88	72	65	49	55	40	39	35

LSD (0.05) Loc x Date = 9 for seed weight

Summary

- Oilseed
  - Max. seed wt. (MSW) 43 to 48 d from R5.1
  - Seed moisture 34 to 40% at MSW
- Nonoilseed
  - Days to MSW increased from Outer to Inner
  - MSW 39 to 54 d from R5.1
  - Seed moisture 39 to 44% at MSW



Acknowledgements

National Sunflower Association
Croplan Genetics
Mycogen Seeds
Red River Commodities

Questions?