MANAGEMENT OF FRESH WHEAT RESIDUE FOR IRRIGATED WINTER CANOLA

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Objectives

- Determine how five different WW residue management practices affect WC health and yield.
- Determine the cause(s) for decline in WC vigor and yield as affected by WW residue management.
- Test methods to retain WW residue without adversely affecting WC.
- Disseminate results of research through field days, grower meetings, an extension bulletin, and a scientific journal articles.

Theories

- Straw produces toxic compounds.
- Decomposing straw immobilizes nitrogen.
- Excess straw interferes with drill performance.
- Excess straw keeps soils too wet and cool.
- Straw shades WC seedlings and interferes with photosynthesis.
- Straw serves as a food base for soil-borne pathogens, increasing disease, especially for Pythium and Rhizoctonia.
- Elongated hypocotyl in tall WW stubble makes WC more susceptible to winter damage.

Irrigated Winter Canola Experiment

- Treatments (established on fresh irrigated winter wheat stubble):
  - Burn + double disk
  - Chop stubble + moldboard plow
  - Burn + direct seed
  - Direct seed into standing residue
  - Broadcast into not-yet-harvested wheat (new for CY 2014)

- Randomized complete block design with four replicates (i.e., 20 plots). Each plot 100-ft long.


VALMAR
09/09/2013


09/09/2013


10/02/2013


03/17/2014


03/17/2014


03/17/2014


05/01/2014


05/01/2014


Broadcast
into
standing
wheat
05/29/2014


Chopped
+
moldboard
plow
05/29/2014


Burned
+
Direct
Seed
05/29/2014


Burned
+
Direct
seed
05/29/2014

Irrigated winter canola seed yields during the first two years of the fresh wheat stubble management experiment conducted near Odessa, Washington.

	Year		
	2013	2014	2-yr avg.
	Seed yield (lbs/ac)		
Stubble burned + disked	3092	2832	2962
Stubble burned + direct-seeded	3020	2678	2849
Stubble chopped + moldboard plowed	3246	1830	2538
Direct seeded into undisturbed stubble	2988	**	
Broadcast into standing wheat	*	**	
Statistical significance	ns (p = 0.40)	ns (p = 0.06)	ns (p = 0.11)

* The broadcast into standing wheat before harvest treatment was not present in 2013.
** Canola killed by cold temperatures in 2014.
ns = No significant statistical differences at P<0.05.

Disease Conclusions

- Good emergence in bioassays, no effect of residue treatment or tillage.
- Very low level of *Rhizoctonia solani* AG 2-1 in bioassay, no effect of residue treatment or tillage.
- Does rotation with potatoes and fumigation with Vapam every few years reduce this pathogen?


OLIVER


09/02/2014


09/11/2014


10/29/2014


10/29/2014


10/29/2014

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