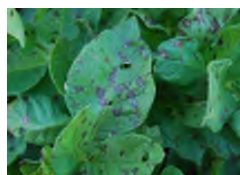


Potential for Foliar Applications of Chlorothalonil and Mancozeb to Increase Incidence of White Mold of Potato

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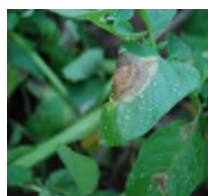
Major Foliar Potato Diseases in Southern Idaho



Early Blight/Brown Leaf Spot



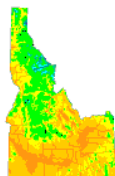
White Mold



Late Blight

Disease Management with Fungicides

- Protectant approach
 - Begin near row closure
 - 10-14 days
 - 4-6 applications
- Target early blight and white mold
 - Late blight secondary
 - Standard protectants (chlorothalonil, EBDC) important
- Can the application of protectant fungicides increase white mold incidence?



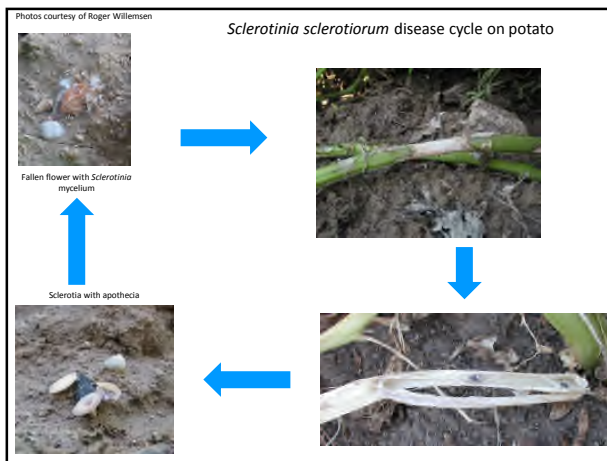
Fungicide Management for White Mold

- Single application most effective at 70-100% bloom (Shepody and Ranger Russet)
 - Atallah and Johnson, 2006 (Plant Dis. 90:755-758)
- Two applications more effective than one (Russet Burbank and Western Russet)
- Boscalid (Endura), fluazinam (Omega), and fluopyram (Luna) most effective
- Applications at first trash similar in efficacy to flower-related timing
 - Miller et al., unpublished reports



Effect of Fungicides on Non-Target *Sclerotinia*

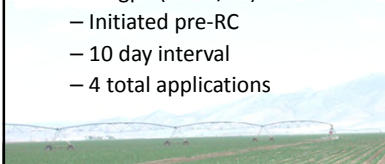

- Chlorothalonil application = greater infection by *Sclerotinia minor* in peanut
 - Beute et al., 1975; Plant Dis. Rep. 59:697-701
 - Porter, 1980; Plant Dis. 64:394-395
- Chlorothalonil increased virulence of *Sclerotinia minor*
 - Hau and Beute, 1983; Phytopathology 73:475-479
- Some fungicides detrimental to *Coniothyrium minitans*, a parasite of *Sclerotinia sclerotia*.
 - Partridge et al., 2006; Plant Dis. 90:1407-1412





Trial 1


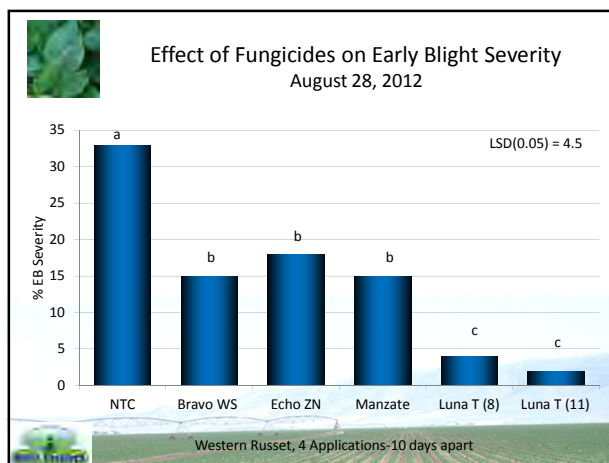
- Western Russet
 - 36" row spacing, 12" seed spacing
 - 350 N, 136 P, 280 K
- 4 replications, RCBD
- Applications made by ground
 - 13 gpa (122 L/ha)
 - Initiated pre-RC
 - 10 day interval
 - 4 total applications

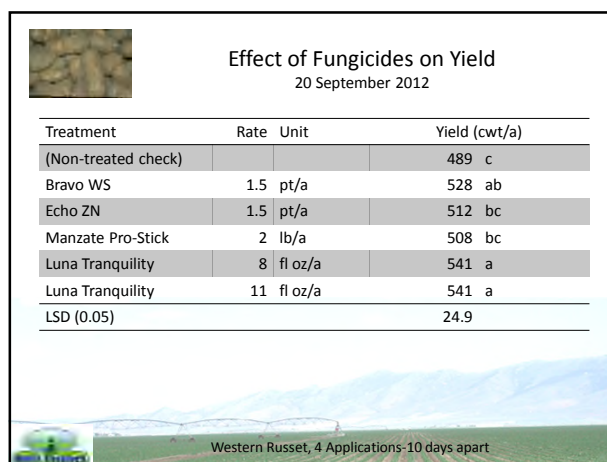
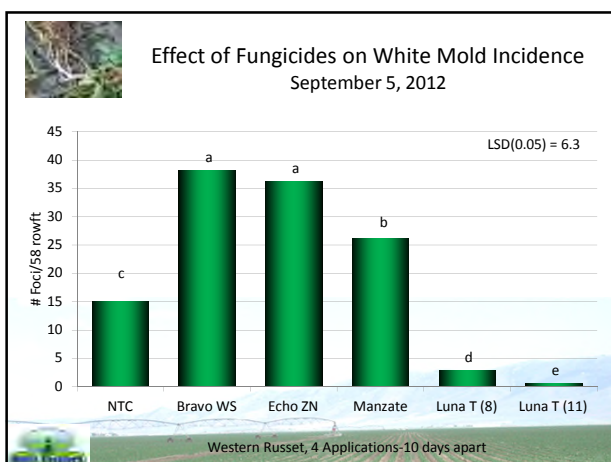



Trial 1 Treatments

Product	Active Ingredient	Rate/acre	Rate/ha
(Non-treated check)			
Bravo WS	Chlorothalonil	1.5 pt	1.75 L
Echo ZN	Chlorothalonil + Zn	1.5 pt	1.75 L
Manzate Pro-Stick	EBDC (mancozeb)	2 lb	2.24 kg
Luna Tranquility	Fluopyram + pyrimethanil	8 fl oz	0.58 L
Luna Tranquility	Fluopyram + pyrimethanil	11 fl oz	0.80 L

Application dates:
 July 7
 July 19
 July 27
 August 7

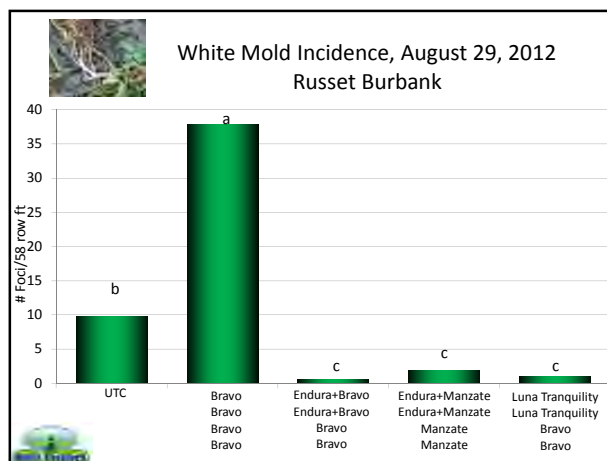
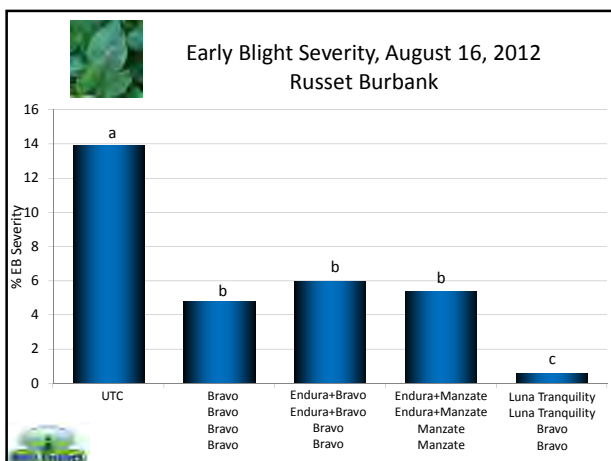



Trial 2

- Russet Burbank
 - 36" row spacing, 12" seed spacing
 - 350 N, 136 P, 280 K
- 4 replications, RCBD
- Applications made by ground
 - 13 gpa (122 L/ha)
 - Initiated pre-RC
 - 14 day interval
 - 4 total applications

Trial 2 Treatments

June 27	July 9	July 24	August 8
(Non-treated check)			
Bravo (1.5 pt)	Bravo (1.5 pt)	Bravo (1.5 pt)	Bravo (1.5 pt)
Endura (5.5 oz) Bravo (1 pt)	Endura (5.5 oz) Bravo (1 pt)	Bravo (1.5 pt)	Bravo (1.5 pt)
Endura (5.5 oz) Manzate (1.5 lb)	Endura (5.5 oz) Manzate (1.5 lb)	Manzate (2 lb)	Manzate (2 lb)
Luna Tranquility (11 oz)	Luna Tranquility (11 oz)	Bravo (1.5 pt)	Bravo (1.5 pt)






Effect of Fungicides on Yield


20 September 2012

Treatment	Yield (cwt/acre)
Non-treated control	541 c
Bravo 4X	556 bc
Endura+Bravo 2X, Bravo 2X	561 abc
Endura+Manzate 2X, Manzate 2X	578 ab
Luna Tranquility 2X, Bravo 2X	588 a
LSD (0.05)	38.1
LSD (0.10)	28.7



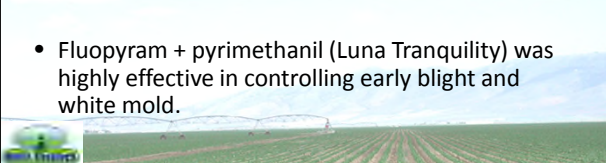
Conclusions

- Sequential applications of chlorothalonil and mancozeb significantly reduced early blight, but significantly increased white mold compared to the NTC.
- Sequential applications of fluopyram + pyrimethanil significantly reduced early blight and white mold.




Conclusions (cont.)

- The boscalid + chlorothalonil (2x) followed by chlorothalonil (2x) significantly reduced both early blight and white mold.
- Disease control with boscalid was similar regardless of the protectant (chlorothalonil or mancozeb) used in the program.
- Fluopyram + pyrimethanil (Luna Tranquility) was highly effective in controlling early blight and white mold.



Summary

- Using protectant fungicides alone can increase white mold incidence compare to using no fungicides in a field setting.
- Including a fungicide with activity against white mold in a spray program appears to negate the effect of increased disease incidence.



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