EVALUATION OF FUNGICIDES APPLIED AT PLANTING FOR CONTROL OF POWDERY SCAB ON POTATO, 2003

Researchers: Richard Zink, Robert Davidson, and Andrew Houser, Colorado State University, SLVRC

Location: Lynn McCullough's Farm, Center, CO
Cultivar: Cherry Red, whole seed
Objective: To evaluate the efficacy of various fungicide treatments in preventing powdery scab on potato.
Treatments:
1. Omega @ 1.5 pt./A (IF)
2. Omega @ 3.0 pt./A (IF)
3. Quadris @ 2.5 pt./A (IF)
4. Quadris @ 5.0 pt./A (IF)
5. Manex @ 5.0 qt./A (IF)
6. Manex @ 10.0 qt./A (IF)
7. ZnSu @ 5.0 lb. Zn/A (IF)
8. Evolve @ 1.0 lb./cwt (On seed)
9. Omega @ 1.5 pt./A (IF) + Manex @ 5.0 qt./A (IF)
10. Omega @ 1.5 pt./A (IF) + Manex @ 10.0 qt./A (IF)
11. Omega @ 3.0 pt./A (IF) + Manex @ 5.0 qt./A (IF)
12. Omega @ 3.0 pt./A (IF) + Manex @ 10.0 qt./A (IF)
13. Quadris @ 2.5 pt./A (IF) + Manex @ 5.0 qt./A (IF)
14. Quadris @ 2.5 pt./A (IF) + Manex @ 10.0 qt./A (IF)
15. Omega @ 1.5 pt./A (IF) + Quadris @ 2.5 pt./A (IF) + Manex @ 5.0 qt./A (IF)
16. Omega @ 3.0 pt./A (IF) + Quadris @ 5.0 pt./A (IF) + Manex @ 10.0 qt./A (IF)
17. Evolve @ 1.0 lb./cwt (On seed) + Omega @ 3.0 pt./A (IF) + Quadris @ 5.0 pt./A (IF) + Manex @ 10.0 qt./A (IF)
18. Control, no treatment

Application: In-furrow (IF) treatments were applied using an R & D CO_2 charged backpack sprayer at 35 PSI, with one XR 8002VS nozzle, at 10 gallons/acre. On seed treatments were applied directly to whole seed and planted within twenty-four hours.

Planted: May 16, 2003
Plot Design: Randomized
Plot Size: 1 - 15 foot row per treatment per replication
Plant Spacing: 12 inches
Row Spacing: 34 inches
Replications: Four
Irrigation: Center pivot sprinkler, rate based on ET
Fertilizer: 40N-125P-120K-19S-3Zn preplant, 110N topdress
Herbicide: Dual II Magnum, 1.3 pt./A + Sencor DF, 4.0 oz./A
Insecticide: Provado, 3.75 oz./A + Perm Up, 6.4 oz./A
Fungicide: Kocide 4.5LF, 2.0 pt./A + Ridomil Gold EC, 4.3 oz./A + Quadris, 6.4 oz./A + Bravo WS, 14.9 oz./A
Vine Killer: Beat Vines on September 4, 2003
Harvested: September 16, 2003

DATA

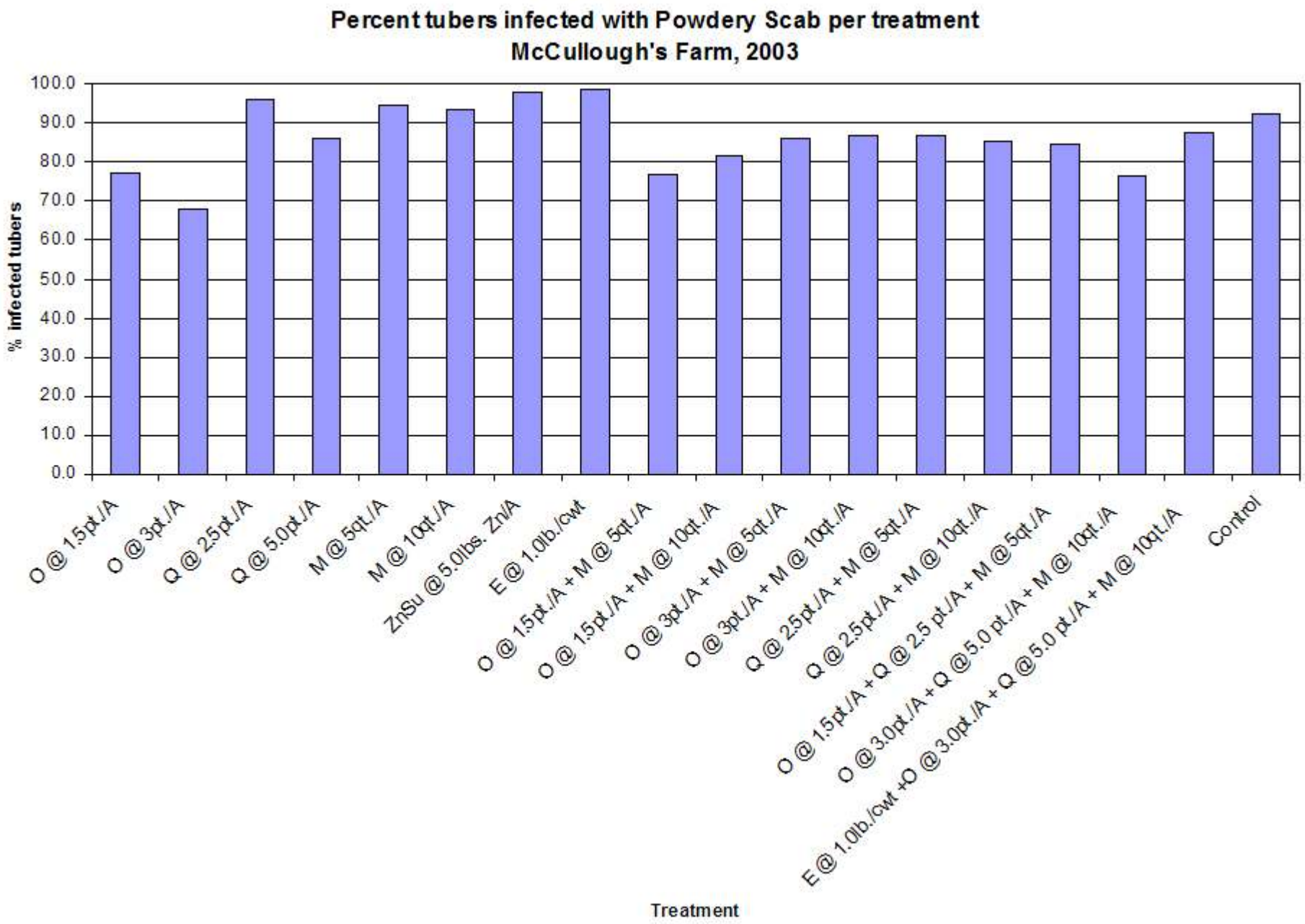
Disease: Mean percent of the number of tubers showing one or more powdery scab lesions at harvest multiplied by the severity of the lesions, where 1 = not severe and 5 = very severe.

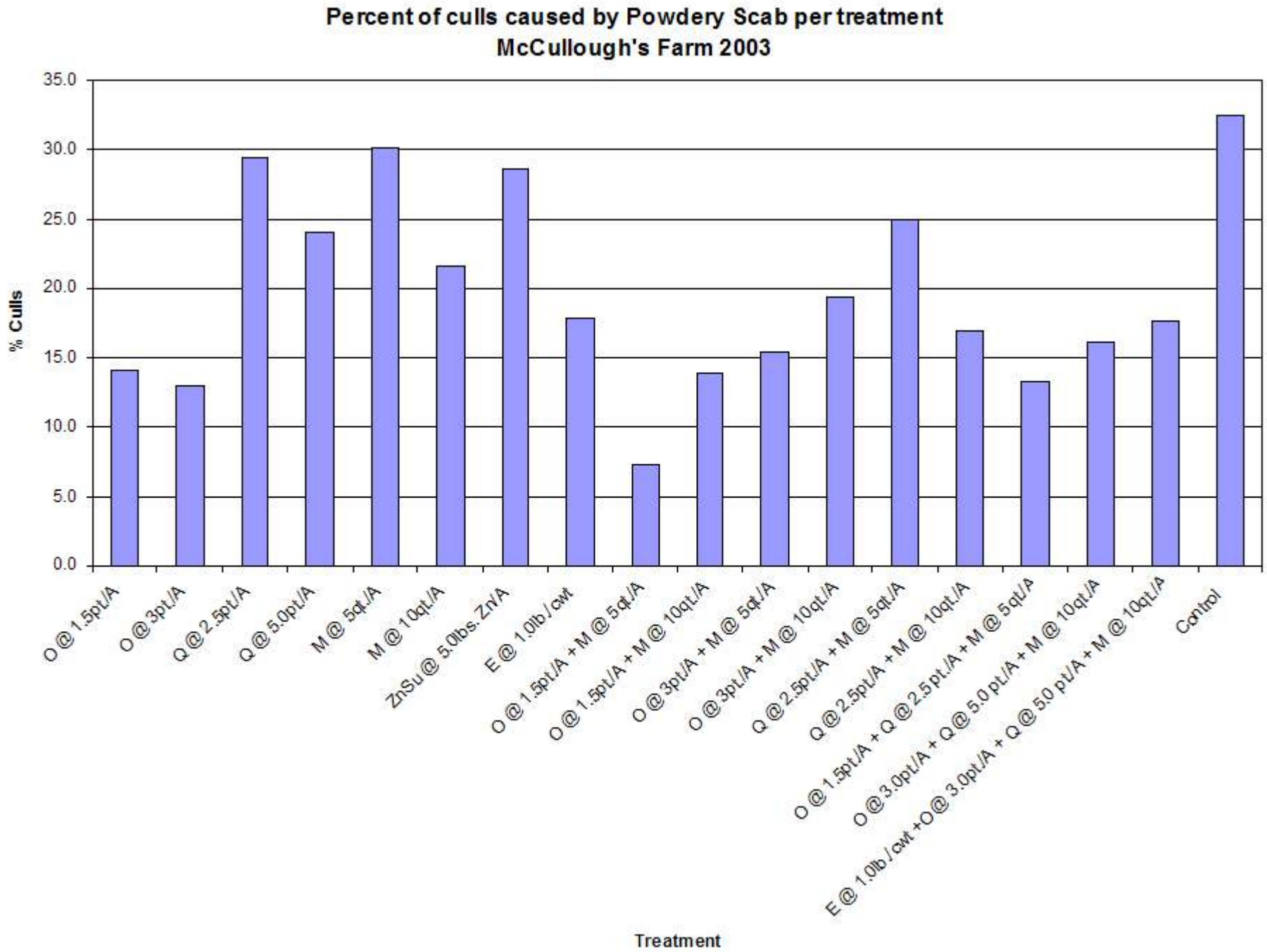
Table 1. Effect of fungicides applied at planting on the incidence of powdery scab on tubers in the cultivar Cherry Red, San Luis Valley, Colorado, 2003

Cultivar	Percent Incidence	Percent Healthy	% Culls	Severity Index[a]
1. Omega @ 1.5 pt./A (IF)	77.1 ef	22.9	14.2 de	210.4
2. Omega @ 3.0 pt./A (IF)	68.0 f	32.0	13.0 de	119.2
3. Quadris @ 2.5 pt./A (IF)	96.1 abc	3.9	29.4 abc	314.1
4. Quadris @ 5.0 pt./A (IF)	86.3 b-e	13.7	24.1 a-d	238.2
5. Manex @ 5.0 qt./A (IF)	94.7 abc	5.3	30.1 ab	332.1
6. Manex @ 10.0 qt./A (IF)	93.6 a-d	6.4	21.6 a-d	284.0
7. ZnSu @ 5.0 lb. Zn/A (IF)	97.7 ab	2.3	28.6 abc	318.1
8. Evolve @ 1.0 lb./cwt (On seed)	98.6 a	1.4	17.8 b-e	294.5
9. Omega @ 1.5 pt./A (IF) + Manex @ 5.0 qt./A (IF)	76.5 ef	23.5	7.2 e	134.3
10. Omega @ 1.5 pt./A (IF) + Manex @ 10.0 qt./A (IF)	81.8 de	18.2	13.9 de	206.0
11. Omega @ 3.0 pt./A (IF) + Manex @ 5.0 qt./A (IF)	86.2 b-e	13.8	15.4 cde	193.4
12. Omega @ 3.0 pt./A (IF) + Manex @ 10.0 qt./A (IF)	86.6 a-e	13.4	19.4 a-e	240.0
13. Quadris @ 2.5 pt./A (IF) + Manex @ 5.0 qt./A (IF)	86.7 a-e	13.3	25.0 a-d	286.8
14. Quadris @ 2.5 pt./A (IF) + Manex @ 10.0 qt./A (IF)	85.6 b-e	14.4	16.9 b-e	286.5
15. Omega @ 1.5 pt./A (IF) + Quadris @ 2.5 pt./A (IF) + Manex @ 5.0 qt./A (IF)	84.5 cde	15.5	13.3 de	215.8
16. Omega @ 3.0 pt./A (IF) + Quadris @ 5.0 pt./A (IF) + Manex @ 10.0 qt./A (IF)	76.4 ef	23.6	16.1 b-e	201.9
17. Evolve @ 1.0 lb./cwt (On seed) + Omega @ 3.0 pt./A (IF) + Quadris @ 5.0 pt./A (IF) + Manex @ 10.0 qt./A (IF)	87.4 a-e	12.6	17.6 b-e	241.5
18. Control, no treatment	92.4 a-d	7.6	32.5 a	322.0
LSD(P=0.05)	12.13	NS	14.28	NS

[a] Severity Index = mean percent of the number of affected tubers, Tubers from five plants/treatment/replication multiplied by the severity of the lesions, where 1 = not severe and 5 = very severe.

Richard T. Zink, Associate Professor, Colorado State University


Percent tubers infected with Powdery Scab per treatment
McCullough's Farm, 2003
% infected tubers
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
O @ 1.5pt./A
O @ 3pt./A
Q @ 2.5pt./A
Q @ 5.0pt./A
M @ 5qt./A
M @ 10qt./A
ZnSu @ 5.0lbs. Zn/A
E @ 1.0lb./cwt
O @ 1.5pt./A + M @ 5qt./A
O @ 1.5pt./A + M @ 10qt./A
O @ 3pt./A + M @ 5qt./A
O @ 3pt./A + M @ 10qt./A
Q @ 2.5pt./A + M @ 5qt./A
Q @ 2.5pt./A + M @ 10qt./A
O @ 1.5pt./A + Q @ 2.5 pt./A + M @ 5qt./A
O @ 3.0pt./A + Q @ 5.0 pt./A + M @ 10qt./A
E @ 1.0lb./cwt +O @ 3.0pt./A + Q @ 5.0 pt./A + M @ 10qt./A
Control
Treatment


Percent of culls caused by Powdery Scab per treatment
McCullough's Farm 2003
% Culls
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
O @ 1.5pt/A
O @ 3pt/A
Q @ 2.5pt/A
Q @ 5.0pt/A
M @ 5qt/A
M @ 10qt/A
ZnSu @ 5.0lbs. Zn/A
E @ 1.0lb / cwt
O @ 1.5pt/A + M @ 5qt/A
O @ 1.5pt/A + M @ 10qt/A
O @ 3pt/A + M @ 5qt/A
O @ 3pt/A + M @ 10qt/A
Q @ 2.5pt/A + M @ 5qt/A
Q @ 2.5pt/A + M @ 10qt/A
O @ 1.5pt/A + Q @ 2.5 pt/A + M @ 5qt/A
O @ 3.0pt/A + Q @ 5.0 pt/A + M @ 10qt/A
E @ 1.0lb / cwt + O @ 3.0pt/A + Q @ 5.0 pt/A + M @ 10qt/A
Control
Treatment

Effect of fungicides applied at planting on the incidence of powdery scab on tubers of the cultivar Cherry Red, McCullough's Farm, 2003