

# POTATO EYES



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## Pest Alert: Grasshoppers

The USDA's Animal & Plant Health Inspection Service predicts that the extreme grasshopper population seen in Nebraska last year will repeat this year.

Grasshoppers will be hatching in June and feeding in rangeland during early summer. If cool, wet conditions continue in June, the population could be reduced. Later in the summer, grasshoppers are likely to move into cropland.

*Alexander D. Pavlista*



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- Late Blight Treatments Comparison

## *Approved In Nebraska*

### **Acrobat MZ, Curzate M-8, Tattoo C Section 18**

### **Matrix Section 3 Registrations**

#### **New Herbicide for Potato**

Matrix has a Section 3 (full registration) in Nebraska now. Its use on potatoes in the state is legal. However, a supply of Matrix is not commercially available in Nebraska at this time. If you get some, you can use it.

Matrix is a broad-spectrum herbicide produced by DuPont Corp. It can be applied both pre and post emergence to potato and weeds and application may be either ground or sprinkler but not by air. The rate per application is 1-1½ oz/acre, not to exceed 2 oz per season. Within 7 days of application, about ½ inch of rain or irrigation is needed to activate Matrix in the soil. For postemergence application to weeds, a nonionic surfactant is needed. Some of the weeds controlled are foxtails, vol. wheat, crabgrass, pigweeds, kochia, mustards, and some control of hairy nightshade. Check the label for further details.

#### **Emergency Use Late Blight Chemicals**

The Emergency Use Registration (Section 18) request on Acrobat MZ, Curzate M-8 and Tattoo C for late blight control received verbal approval by the US-EPA on June 12. Nebraska's request for approval "piggy-backed" on that from New York and was based on information supplied to the Nebraska EPA in February which was submitted to Washington, DC, thereafter.

Before using these chemicals, distributors or growers must contact the Department of Agriculture in Lincoln to get a permit. Call 402 - 471 - 2394. State "I'm requesting a permit to treat for late blight with (name one of these products)". The switchboard will direct your call accordingly.

# Late Blight Treatments Comparison

Last February while requesting the Section 18 on Acrobat MZ, Curzate M-8 and Tattoo C for late blight control, there was a lack of North American data comparing the relative efficacy of these products, and to Ridomil prepacks and protectants. Recently, I obtained from the manufacturers – AgrEvo, Amer. Cyanamid, Ciba and DuPont – data from US and Canadian trials comparing these products. The following highlights some of the characteristics of these products and summarizes the efficacy data.

## Conclusions from the 1995 data are:

1. There was no significant differences between Acrobat MZ, Curzate M-8 and Tattoo C for late blight control based on these trials.

2. Ridomil prepacks were as effective as these new products even in the presence of US-8 strain and metalaxyl resistance in the Michigan and North Dakota trials.

3. The protectants, Bravo and the EBDCs, worked equally well when applied early, every 5-7 days and repeatedly (7 times) during the season.

4. Other products such as Champ (copper hydroxide) and SuperTin (triphenyltin hydroxide), worked well in Michigan and British Columbia trials.

The decision as to what to use for late blight control will depend on management (weather conditions and method of application), treatment cost (frequency of application and product costs) and product availability.

## Acrobat MZ –

This product contains 9% dimethomorph (a cinnamic acid derivative) plus 60% mancozeb. The systemic, dimethomorph, inhibits cell wall formation by the late blight fungus and acts as an anti-sporulation agent. It is locally systemic. The recommended rate is 2.25 lb Acrobat MZ/acre in a minimum of 20 gal/A by ground and 5 gal/A by air. The product may be applied up to 5 times per season and the interval between applications are not to exceed 10 days. Do not apply if rain is expected within 3 hours after application. Do not apply within 14 days of harvest.

## Curzate M-8 Wettable Powder –

The systemic ingredient in this product is 8% cymoxanil which is combined with 64% mancozeb. Cymoxanil has a multi-site activity on the fungus; it inhibits synthesis of nucleic and essential amino acids. All late blight strains are susceptible. The current recommended rate is 1.25 lb. Curzate M-8/acre, but an increase to 1.5 lb/A is being considered by DuPont. The product is not to be applied

more than 5 times in a season and the labeled interval is 7 days between application. It cannot be applied within 14 days of harvest. Ground application should be with 20 to 100 gal/A (run-off) and aerial application should be with at least 5 gal/A. Proposed 1996 label changes are to add more (0.5 to 0.75 lb) mancozeb and to allow sprinkle application (chemigation).

Very Important Note – If the carrier water has a pH greater than 7, an acidifying agent is to be added to bring the pH down to 5.5-6.5. The product must be applied to growing plants, not to dying ones.

## Tattoo C –

This product is 30.5% propamocarb hydrochloride plus 30.5% chlorothalonil (Bravo's active ingredient). The mode of action of propamocarb-HCl (a carbamate) is inhibition of phospholipid and fatty acid syntheses. Its actions interfere with cell membrane formation of the fungus resulting in poor growth of the spore's germination tube and mycelial mass, and in poor formation of sporangia and oospores. The chlorothalonil (Bravo) interferes with zoospore germination. The recommended rate is 2.3 pints Tattoo C/acre using 20-30 gal/A by ground or at least 5 gal/A by air. Application intervals between applications should be 10 to 14 days. A limit of 5 applications per season is allowed. The spray may drift and therefore wind speed at application should not exceed 10 miles/hr.

## Trial Data from North America

The following tables summarize 1995 data from trials conducted in British Columbia, California, Michigan, New York, North Dakota, Oregon, and Washington.

### Footnotes for Tables –

Product Rates for all data except British Columbia:

Acrobat MZ = 2.25 lb/A, Curzate M-8 = 1.25 lb/A, Tattoo C = 2.5 pt/A, Ridomil MZ72 = 2.5 lb/A, Ridomil-Bravo = 2 lb/A, Bravo 720 = 1.5 pt/A, Bravo Ultrex = 1.4 lb/A, Bravo Zn = 1.5 pt/A, Champ = 1.33 pt/A, Dithane M45 = 2 lb/A, Manzate 200 = 0.5 lb/A, Polyram = 2 lb/A, and SuperTin = 0.16 lb/A.

Asterisks (\*) after treatment indicates that applications started with the first product alternated with the second product.

Numbers in columns followed by the same letter are not significantly different at the 95% probability level.

**NEW YORK (Cornell U.):** Treatments were applied at 7-day intervals, field was inoculated with A2 type.

product	Percent Leaf Area Infected on		
	8/28	9/4	9/12
untreated	12	88	100
Bravo 720	3	18	64
Acrobat MZ	6	32	73
Curzate M-8	1	29	86
Tattoo C /	1	15	57
* Bravo			
Ridomil+Bravo	2	17	61
* Bravo			

**MICHIGAN (MSU):** Treatments were applied on 8/10, 8/17 and 8/21. - Late blight population distribution = 54% Ridomil resistant and 46% sensitive.

product	Percent Leaf Area Infected on		
	8/17	8/28	9/6
untreated	13	84 a	95 a
Acrobat MZ	4	11 c	20 c
Curzate M-8	7	24 c	41 b
Tattoo C	4	13 c	25 c
Champ+Bravo	8	36 b	50 b
Polyram+SuperTin	6	21 c	30 c

**NORTH DAKOTA (NDSU):** Treatments were applied on 6/29, 7/10, 20 and 26. Late blight was first seen on 7/19; strains US-1 (A1 type) and US-8 (A2 type) were present. Late blight-infected seed was used.

product	Percent Leaf Area Infected on			
	7/22	7/26	7/31	8/10
untreated	34	76	99 a	100
Acrobat MZ	7	31	62 b	94
Curzate M-8 /	1	6	43 cd	83
* Manzate 200				
Tattoo C /	2	6	19 d	62
* Bravo 720				
Ridomil MZ72	10	35	72 ab	
Ridomil+Bravo /	4	20	52 bc	83
* Bravo 720				
Bravo 720	6	31	52 bc	
Dithane M45	2	5	18 d	

product	Yield	Marketable
	cwt/A	cwt/A
untreated	40	7
Acrobat MZ	119	52
Curzate M-8	136	91
Tattoo C / Bravo *	175	127
Ridomil+Bravo / Bravo *	89	46

**OREGON (OSU):** Field was inoculated with late blight on 8/17 and treatments were applied on 7/27, 8/10, 17, 24, 31, and 9/7.

product	Percent Leaf Area Infected on		
	9/6	9/13	9/20
untreated	73	97	100
Acrobat MZ	4	63	77
Bravo 720	1	23	55
Dithane M45	7	87	93

**CALIFORNIA (UC Davis):** Treatments were applied 7 times every 5-7 days from 4/22 to 6/1.

product	AUDPC	Yield US#1
untreated	628 a	288 a
Acrobat MZ	24 b	426 b
Curzate M-8	21 b	410 b
Bravo Ultrex	16 b	386 b
Dithane M45	42 b	357 ab
Ridomil MZ72 /	19 b	400 b
* Dithane M45		

**WASHINGTON (WSU):** Treatments were applied on 7/13, 7/27 and 8/10. Product efficacy against late blight is represented as the "Area Under Disease Progress Curve" (AUDPC). Lower numbers correspond to less disease.

product	AUDPC
untreated	368 a
Acrobat MZ	2 c
Curzate M-8	4 c
Tattoo C	5 c
Ridomil MZ /	6 c
* Dithane M45	
Bravo 720	201 b
Bravo Ultrex	9 c

**BRITISH COLUMBIA (UBC):** Treatments applied 7 times about 10 days apart throughout season. Severity assessment of late blight taken on 8/31; range is 0 (no disease) to 5 (worst disease).

product	Late Blight severity
untreated	5.00 a
Acrobat MZ	4.45 b
Acrobat /	1.85 b
* Manzate 200	
Curzate M-8	2.85 b
Tattoo C	2.40 b
Ridomil MZ72 /	1.80 b
* Manzate 200	
Ridomil-Bravo /	2.35 b
* Bravo 500	
Bravo Ultrex	1.90 b
Dithane M45	1.55 b
Maneb 80W	1.85 b
Penncozeb 75DF	2.10 b
Penncozeb 80W	2.20 b
SuperTin /	1.50 b
* Dithane M45	

Rates: Acrobat MZ = 2.25 lb/A, Manzate 200 = 1.3 lb/A with Acrobat and 2 lb/A with Ridomil, Curzate M-8 = 0.9 lb/A, Tattoo C = 3.4 pt/A, Ridomil MZ72 = 2.5 lb/A, Ridomil-Bravo = 2 lb/A, Bravo 500 = 1 pt/A, Bravo Ultrex = 0.7-1.4 lb/A, Dithane M45 = 1.8 lb/A alone and 1.6 lb/A with SuperTin, Maneb 80W = 1-2 lb/A, Penncozeb 75DF = 1-2 lb/A, Penncozeb 80WP = 1-2 lb/A, SuperTin = 0.16 lb/A.

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