

NOT FOR PUBLICATION

1982

Results of Fungicide and Nematicide Evaluations
on Apples, Peaches, and Prunes

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Fall Fruit Tour
Sept. 8, 1982

1982 Apple Scab and Cedar-Apple Rust
 Infection Periods and Fungicide Application Dates
 Hudson Valley Laboratory, Highland, N.Y.

Protectant schedule	Spray Dates		McIntosh growth stage	Cumm. % scab spores discharged	Wetting periods			Avg. temp.	Inches rain	Potential Infection Periods		
	Post-Inf. schedule	Date			Time	Duration	Start Date			1°	2°	Cedar-Apple Rust
April 26			GT	4/15(2.1%)	April 21	0600	4	47	0.03	-	-	-
			Early TC	4/23(3.9%)	April 26	1100	24	57	1.06	H	-	-
May 4	April 30		TC		April 28	0000	9	43	0.07	-	-	Yes
			Pink	5/3 (6.9%)	May 3	0600	3	49	0.01	-	-	-
May 13	May 17		Late bloom; 4-5 term. lvs. PF	5/17(12.1%)	May 12	1900	15	55	0.02	L	M	Yes
May 24	May 26		6-8 term. lvs.		May 18	1500	4	65	0.02	-	-	-
					May 19	1800	17	64	0.16	M	H	Yes
May 30				5/27(24.4%)	May 20	1500	10	66	0.42	L	M	Yes
					May 22	1300	71	51	0.57	H	H	Yes
June 9	June 9				May 28	2200	20	63	1.43	H	H	Yes
					May 30	0200	6	59	Tr	-	L	Yes
					May 31	0300	15	64	0.51	M	H	Yes
				6/3 (42.1%)	June 2	0900	9	68	0.57	L	M	Yes
					June 3	1900	12	56	0.02	L	M	Yes
					June 5	0200	55	56	4.12	H	H	Yes
					June 7	1900	6	53	0.01	-	-	-
					June 12	2200	38	51	1.38	H	H	Yes
				6/16(85.9%)	June 16	0000	11	69	0.64	L	M	Yes
					June 19	2130	9	62	0.03	L	M	Yes
					June 21	0530	55	58	0.12	-	-	-
	June 23				June 22	2300	10	58	0.56	-	M	-
					June 28	1600	42	69	0.73	-	H	-

Protectant schedule	Spray Dates		McIntosh growth stage	Cumm. % scab spores discharged	Wetting periods			Potential Infection Periods	
	Post-Inf. schedule	Date			Time	Duration	Avg. temp.	Inches rain	Mill's Chart
June 29									
July 15		July 24	0200		2	57	Tr	-	-
		July 12	0600		8	75	0.68	-	M
August 3		July 20	0400		11	69	1.58	-	H
		July 27	2000		28	68	1.31	-	H
		July 31	1800		15	65	0.07	-	H
		August 2	1900		15	66	0.07	-	H
		August 5	1300		3	80	0.21	-	-
		August 9	0100		11	71	1.21	-	H
		August 9	1500		18	70	0.14	-	H
		August 11	0500		5	62	0.01	-	L

Table 1: Apple Sab on McIntosh

Treatment and rate/100 gallons	% cluster leaves infected ³	% Terminal leaves infected ⁴		
		Leaf position		Entire terminal
		5-9	10-14	
PROTECTANT SCHEDULE¹				
1. Check	22.2 e	98.4 d	92.6 d	86.2 d
2. Captan 50W ²	0 a	Tr a	Tr a	Tr a
3. Topsin M 70W 2 oz +Dithane M45 80W 12 oz	0 a	2.7 ab	1.6 ab	1.2 ab
4. Dikar 77W ²	0.1 a	2.5 ab	0.3 ab	0.7 a
5. Topsin M 70W 2 oz +Baycor 50W 1 oz	2.0 abc	2.7 ab	2.6 ab	1.7 ab
6. Baycor 50W 1 oz	12.5 de	27.6 c	15.8 c	16.1 c
7. Baycor 50W 2 oz	3.8 bc	3.5 ab	0 a	1.7 ab
8. Baycor 300EC 3.2 fl. oz	0.4 ab	0.1 a	0 a	0.1 a
9. NY35 30F 13.3 fl. oz	0 a	0 a	0 a	0 a
10. NY35 30F 6.7 fl. oz	0 a	0 a	0 a	0 a
11. NY35 30F 3.3 fl. oz	-	-	-	-
POST-INFECTION SCHEDULE				
12. NY35 30F 3.3 fl. oz	-	-	-	-
13. NY35 30F 6.7 fl. oz	0 a	0 a	0.1 ab	0.1 ab
14. NY35 30F 13.3 fl. oz	0.1 a	0 a	0 a	Tr a
15. Baycor 50W 4 oz	6.0 cd	10.4 b	3.8 b	4.8 b

Numbers within columns followed by the same letter are not significantly different (Duncan's Multiple Range Test, $P \leq 0.05$).

¹Treatments on the protectant schedule were applied April 26, May 4, 13, 24, 30, June 9, 18, 29, July 15 and August 3. Post-infection treatments were applied April 30, May 17, 26, June 9, 23, July 23. Other sprays applied to all treatments and the rate per acre were, Pydrin 2.4EC 8 oz May 3; Sevin 50W 3 lb May 26; Guthion 50W 1.6 lb May 20, June 22, July 7, and August 2; Phosphamidon 8E 16 fl. oz June 22; Plictran 50W 1 lb June 29 and July 15 (no Plictran applied to Dikar plots).

²Captan and Dikar were applied at the rate of 2 lb/100 gallons from the first spray through the May 30 spray, and at 1 lb/100 gallons after May 30.

³Data taken from 20 clusters/replicate (4 single-tree reps) on June 30.

⁴Data taken from 20 terminals/replicate on August 18.

Table 2: Apple Scab - All Varieties

Treatment and rate/100 gallons	% terminal leaves infected ³				% Golden Delicious cluster leaves infected ⁴
	McIntosh	Cortland	Rome Beauty	Golden Delicious	
PROTECTANT SCHEDULE¹					
1. Check	86.2 d	88.8 f	88.3 e	29.7 c	37.7 b
2. Captan 50W ²	Tr a	3.0 bcde	0.8 abcd	1.6 b	Tr a
3. Topsin M 70W 2 oz +Dithane M45 80W 12 oz	1.2 ab	8.4 e	1.3 bcd	0.6 ab	0.1 a
4. Dikar 77W ²	0.7 a	4.1 de	2.4 d	0.6 ab	0 a
5. Topsin M 70W 2 oz +Baycor 50W 1 oz	1.7 ab	3.3 cde	1.0 abcd	0.2 ab	0.6 a
6. Baycor 50W 1 oz	16.1 c	9.4 e	1.6 cd	0.1 ab	2.4 a
7. Baycor 50W 2 oz	1.7 ab	1.4 abcd	0.2 abc	0.2 ab	0 a
8. Baycor 300EC 3.2 fl oz.	0.1 a	0.1 a	0.2 abc	Tr a	1.6 a
9. NY35 30F 13.3 fl. oz	0 a	0.4 abc	-	-	-
10. NY35 30F 6.7 fl. oz	0 a	0.1 ab	0 a	0.1 ab	0 a
11. NY35 30F 3.3 fl. oz	-	-	Tr ab	0.2 ab	0.1 a
POST-INFECTION SCHEDULE					
12. NY35 30F 3.3 fl. oz	-	-	0.1 abc	Tr a	0 a
13. NY35 30F 6.7 fl. oz	0.1 ab	Tr a	0.2 abc	0.6 ab	3.0 a
14. NY35 30F 13.3 fl. oz	Tr a	0.4 abc	-	-	-
15. Baycor 50W 4 oz	4.8 b	4.7 de	0.3 abcd	Tr a	2.4 a

Numbers within columns followed by the same letter are not significantly different (Duncan's Multiple Range Test, $P \leq 0.05$).

¹ Treatments on the protectant schedule were applied April 26, May 4, 13, 24, 30, June 9, 18, 29, July 15 and August 3. Post-infection treatments were applied April 30, May 17, 26, June 9, 23, July 23. Other sprays applied to all treatments and the rate per acre were, Pydrin 2.4EC 8 oz May 3; Sevin 50W 3 lb May 26; Guthion 50W 1.6 lb May 20, June 22, July 7, and August 2; Phosphamidon 8E 16 fl. oz June 22; Plictran 50W 1 lb June 29 and July 15 (no Plictran applied to Dikar plots).

² Captan and Dikar were applied at the rate of 2 lb/100 gallons from the first spray through the May 30 spray, and at 1 lb/100 gallons after May 30.

³ Data taken from 20 terminals/replicate (4 single-tree reps) on August 18, 16, 20, and 19 for McIntosh, Cortland, Rome Beauty, and Golden Delicious, respectively.

⁴ Data taken from 20 clusters/replicate on June 30.

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Table 3: Powdery Mildew and Cedar Apple Rust

Treatment and rate/100 gallons	% terminal leaves with powdery mildew		% terminal leaves with cedar apple rust ⁵					
	Paulared ³	Cortland ⁴	Golden Delicious	Rome Beauty				
PROTECTANT SCHEDULE¹								
1. Check	22.8	d	12.0	d	39.0	d	27.2	d
2. Captan 50W ²	26.8	d	13.5	d	17.1	c	26.2	d
3. Topsin M 70W 2 oz +Dithane M45 80W 12 oz	6.5	bc	7.5	c	0.8	b	3.3	c
4. Dikar 77W ²	0.8	a	2.6	ab	0.2	ab	1.8	b
5. Topsin M 70W 2 oz +Baycor 50W 1 oz	5.1	bc	2.8	ab	Tr	ab	0	a
6. Baycor 50W 1 oz	2.4	ab	4.5	bc	0	a	0	a
7. Baycor 50W 2 oz	2.8	abc	3.4	ab	0	a	0	a
8. Baycor 300EC 3.2 fl. oz	0.6	a	1.4	a	0	a	0	a
9. NY35 30F 13.3 fl. oz	-		2.3	ab	-		-	
10. NY35 30F 6.7 fl. oz	5.4	bc	4.2	abc	0	a	0	a
11. NY35 30F 3.3 fl. oz	4.5	bc	-		0	a	0	a
POST-INFECTION SCHEDULE								
12. NY35 30F 3.3 fl. oz	7.9	c	-		0	a	0	a
13. NY35 30F 6.7 fl. oz	4.8	bc	14.5	d	0	a	0	a
14. NY35 30F 13.3 fl. oz	-		4.2	abc	-		-	
15. Baycor 50W 4 oz	4.6	bc	4.6	bc	Tr	ab	0	a

Numbers within columns followed by the same letter are not significantly different (Duncan's Multiple Range Test, $P \leq 0.05$).

¹Treatments on the protectant schedule were applied April 26, May 4, 13, 24, 30, June 9, 18, 29, July 15 and August 3. Post-infection treatments were applied April 30, May 17, 26, June 9, 23, July 23. Other sprays applied to all treatments and the rate per acre were, Pydrin 2.4EC 8 oz May 3; Sevin 50W 3 lb May 26; Guthion 50W 1.6 lb May 20, June 22, July 7, and August 2; Phosphamidon 8E 16 fl. oz June 22; Plictran 50W 1 lb June 29 and July 15 (no Plictran applied to Dikar plots).

²Captan and Dikar were applied at the rate of 2 lb/100 gallons from the first spray through the May 30 spray, and at 1 lb/100 gallons after May 30.

³Data taken from 20 terminals/replicate (3 single-tree reps) on August 13.

⁴Data taken from 20 terminals/replicate (4 single-tree reps) on August 26.

⁵Data taken from 20 terminals/replicate (4 single-tree reps) on August 19-20.

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Table 4: Mean Number Mites per Leaf

Treatment and rate/100 gallons	June 25, ¹ McIntosh ¹		August 24 - Paulared ¹		
	ERM ²	TSM ³	ERM	TSM	Amb ⁴
<u>PROTECTANT SCHEDULE</u> ⁵					
1. Check	3.6	0.2	2.4	1.8 a	0.30 ab
2. Captan 50W ⁶	4.0	0.3	4.3	5.2 ab	0.18 ab
3. Topsin M 70W 2 oz +Dithane M45 80W 12 oz	1.1	0	3.8	1.0 a	0.07 b
4. Dikar 77W ⁶	Tr	Tr	1.0	10.5 b	0.35 a
5. Topsin M 70W 2 oz +Baycor 50W 1 oz	1.3	0.2	4.8	0.7 a	0.03 b
6. Baycor 50W 1 oz	1.0	Tr	6.3	0.2 a	0.0 b
7. Baycor 50W 2 oz	1.1	Tr	7.0	1.5 a	0.09 ab
8. Baycor 300EC 3.2 fl. oz.	0.6	0.1	1.9	0.1 a	0.0 b
9. NY35 30F 13.3 fl. oz	0.6	0.3	-	-	-
10. NY35 30F 6.7 fl. oz	4.5	0	3.6	0.5 a	0.03 b
11. NY35 30F 3.3 fl. oz	-	-	2.0	0.2 a	0.01 b
<u>POST-INFECTION SCHEDULE</u>					
12. NY35 30F 3.3 fl. oz	-	-	3.0	1.5 a	0.04 b
13. NY35 30F 6.7 fl. oz	0.7	0.1	2.4	0.5 a	0.03 b
14. NY35 30F 13.3 fl. oz	3.4	0.1	-	-	-
15. Baycor 50W 4 oz	1.1	0.1	9.1	1.9 a	0.01 b

Numbers within columns followed by the same letter are not significantly different (Waller-Duncan's Exact Bayesian K-ratio LSD rule, $P \leq 0.05$).

¹ Counts were made by brushing mites from 25 leaves per tree from each of 3 single-tree replicates.

² European red mite.

³ Twospotted spider mite.

⁴ Amblyseius fallacis.

⁵ Treatments on the protectant schedule were applied April 26, May 4, 13, 24, 30, June 9, 18, 29, July 15 and August 3. Post-infection treatments were applied April 30, May 17, 26, June 9, 23, July 23. Other sprays applied to all treatments and the rate per acre were, Pydrin 2.4EC 8 oz May 3; Sevin 50W 3 lb May 26; Guthion 50W 1.6 lb May 20, June 22, July 7, and August 2; Phosphamidon 8E 16 fl. oz June 22; Plictran 50W 1 lb June 29 and July 15 (no Plictran applied to Dikar plots).

⁶ Captan and Dikar were applied at the rate of 2 lb/100 gallons from the first spray through the May 30 spray, and at 1 lb/100 gallons after May 30.

A fungicide trial for control of black knot (*Dibotryon morbosum*) in Stanley prunes was conducted during 1981. The majority of knots developing from 1981 infections were not visible before spring of 1982. Measurement and counting of knots will be completed during pruning this winter. The 1981 treatments and yield data for 1982 are shown in the following table:

Material & rate/100 ¹ gallons	Mean yield per tree (lb) ²	Mean trunk diameter in mm. ³
1. Check	0.2 c	67.3
2. Captan 50W 2 lb	56.4 ab	61.7
3. Benlate 50W 4 oz + Captan 50W 1 lb	31.2 bc	72.7
4. Zineb 75W 2 lb (prebloom) Zineb 75W 1 lb + Captan 1 lb (white bud thru cover sprays) Captan 50W 2 lb (preharvest)	82.4 a	61.5
5. Topsin M 4F 11.2 fl. oz.	2.0 c	59.0
6. Carbamate 76W 2 lb (prebloom) Carbamate 76W 1 lb + Kolospray 81W 3 lb Kolospray 81W 6.2 lb (preharvest)	52.1 ab	67.0
7. Dichlone 50WP 4 oz (prebloom thru cover sprays) Kolospray 81W 6.2 lb (preharvest).	52.4 ab	65.3

Numbers within columns followed by same letter are not significantly different (Waller-Duncan's Exact Bayesian K-ratio LSD rule, $P \leq 0.05$).

¹ 1981 fungicide treatments were applied April 16 (prebloom), 22 (whitebud), 28 (bloom), May 5 (petal fall), 14, 27, June 5 and 16.

² Prunes were harvested August 30-31, 1982; data taken from 3 replicates.

³ Data taken from 3 single-tree reps March, 1982.

Some trees in the experiment died in 1982 because of prune constriction disease (presumably caused by tomato ringspot virus (TmRSV). A long-term experiment was therefore established in this block to determine if herbicides (to control weed hosts of TmRSV) and nematicides (to control the nematode vector of the virus) could be used to decrease the incidence of prune constriction. The following treatments were applied to two-tree plots (Oullins plum and NY56.713.1 prune, both on myrobalan rootstock) interplanted between trees in our black knot trial:

- a. Check.
- b. Check with weed control.
- c. Nemacur-3 15 lb a.i./treated A.
- d. Nemacur-3 (as above) with weed control.
- e. Advantage 4EC 4 lb a.i./treated A.
- f. Advantage 4EC (as above) with weed control.

Trees were planted April 16, 1982 and nematicides were applied April 27 to a 5 x 5 ft area around each tree. Materials were not incorporated. Nematode counts, tree growth, yield, and TmRSV infection will be monitored for several years.

A preplant fumigant and several post-plant nematicides are being evaluated for cost-effective growth responses in several non-bearing apple plantings in the Hudson Valley. Effectiveness of treatments are being evaluating through nematode counts, growth response (trunk diameter and total shoot growth) and yield response over a period of several years. In trial 1, Vorlex at 15, 30, and 40 gallons per acre were applied Aug 28, 1980 to a well-prepared site near Maybrook, NY, from which a 30+ year-old orchard had been removed in 1979. Soil in the top 3-4 inches was very dry at the time of treatment. The fumigant was injected to a depth of 8-10 inches using a John Blue applicator with shanks 8 inches apart. Fumigant was applied in 8 ft bands using a randomized block design spaced to allow four 11-tree replicates for each treatment. Untreated plots were left for controls and for a

Nemacur treatment applied after planting. Jonamac trees on MM.111 rootstock were planted Apr 27-28, 1981, using a tree planter. Nemacur 3EC at 15 lb a.i./treated acre was applied to four replicates on May 18 by spraying a 5 ft x 5 ft area around each tree. Also on May 18, Temik 15G at the rate of 1 oz of formulated material per tree was applied to three trees in every replicate to determine if Temik applied over Nemacur or Vorlex would stimulate additional growth. The Temik was raked into the soil; Nemacur was not incorporated. The first rain following the May 18 treatment was 0.47 inches rain on May 28-29. A soil sample collected May 22, 1980, prior to orchard renovation contained 155 Pratylenchus/100 cc, but mean Pratylenchus populations in untreated plots were only 72 and 38 in soil samples collected from 3 trees per replicate on Jun 16 and Sep 4, 1980. Dry weather during 1980 and 1981 and/or soil tillage during renovation probably contributed to the natural decline in Pratylenchus populations. Tree diameter and shoot growth were measured on three trees per replicate and on the three Temik-treated trees in each replicate on Oct 29, 1981. Three-tree composite nematode samples were taken from the measured trees in each replicate on November 9, 1981. Growth data and nematode count summaries are presented in the table on the next page.

Trials 2 and 3 were described in our 1981 final report and no new data are yet available for these trials.

Trial 4 was established in a block of Starkrimson Delicious on seedling rootstock planted in 1978 but showing poor growth as of 1980. Nemacur-3, Furadan 10G, and Temik 15G were applied to two-tree plots replicated six times on May 19, 1981. Treatments were not incorporated because of heavy sod and weed ground cover. The first precipitation following nematicide applications was 0.47 inch on May 28-29. Growth measurements for all trees and nematode samples from four of the six replicates were collected October 9, 1981 and results are summarized in the table for Trial 4.

TRIAL 1

Treatment and rate	Fall 1981 growth measurements ¹		Mean no. nematodes/ 100 cc soil ²	
	Mean trunk diam. (mm)	Total shoot length (cm)	Praty- lenchus	All parasitic nematode species
Check	11.3	117.2	22.5 c	88.3 c
Nemacur-3 15 lb a.i./A	12.5	161.0	11.8 b	51.3 b
Temik 15G 1 oz/tree	12.8	177.2	7.3 ab	22.3 a
Vorlex 15 gal/A	11.7	132.5	7.8 ab	19.3 a
Vorlex 30 gal/A	13.5	201.4	7.0 ab	20.8 a
Vorlex 40 gal/A	13.1	179.1	4.5 a	15.0 a
Vorlex 30 gal/A & Temik 15G 1 oz/tree	13.9	229.7	3.8 a	16.0 a
Nemacur-3 15 lb a.i./A & Temik 15G 1 oz/tree	13.0	198.0	3.8 a	26.8 a

Means within columns followed by the same letter are not significantly different (Waller-Duncan's Exact Bayesian K-ratio LSD rule $P \leq 0.05$).

¹Trees measured October 29, 1981.

²Nematode samples collected November 4, 1981.

* * * * *

TRIAL 4

Treatment and rate	Total 1981 shoot growth ¹ per tree (cm)	Mean no. nematodes per 100 cc soil ¹			
		Praty- lenchus	Para- tylenchus	Xiphi- nema	Total parasitic nematodes
Check	4992 a	53.5 b	285.8 a	11.0 b	353.5 a
Nemacur-3 15 lb a.i./A	5294 a	10.8 a	180.8 a	6.3 ab	261.0 a
Furadan 10G 6 lb a.i./A	5026 a	4.8 a	268.8 a	4.0 ab	280.3 a
Temik 15G 1 oz/tree	5382 a	8.5 a	17.0 a	0 a	26.3 a

Means within columns followed by the same letter are not significantly different (Waller-Duncan's Exact Bayesian K-ratio LSD rule $P \leq 0.05$).

¹Growth measurements and nematode samples collected October 9, 1982.

TRIAL 1

Objective: To compare several rates of benzimidazole fungicides and captan-benzimidazole combinations with sterol-inhibitor fungicide treatments.

Fruit:

Variety : Golden Delicious
Harvest date: October 13, 1981
Treatment date: October 20, 1981
Storage between harvest and treatment: 7 days at 36 F
Storage after treatment: 104 days at 36 F in poly bags
Pressure test at harvest (mean for 25 fruit): 14.6 lb.

Inoculum:

Penicillium expansum: 32,000 spores/ml, 23% benomyl-resistant
Source: 5 benomyl-sensitive and 2 benomyl-resistant isolates collected from apple in 1978

Inoculation and treatment methods: Fruit punctured 2-3 mm deep with three nails in a cork; dipped in inoculum 10 seconds; dipped in fungicide 20 seconds.

Observations:

1. The disease pressure was fairly low.
2. Factorial comparisons of the three benzimidazole fungicides at half rate (HR), full rate (FR), and full rate plus captan (FRC) showed no significant differences between materials or between the FR and FRC, but the HR was significantly better than FR and FRC. The reason for this inverse rate response is not known.
3. Captan was no more effective than the check, but effectiveness of captan may have been reduced because the delay between harvest and treatment.

Materials and rate/100 gallons	% fruit decayed after 104 days in storage	
Check	22.4	ef
Benlate 50W 4 oz	3.6	abc
Benlate 50W 8 oz	14.0	cdef
Captan 50W 1 lb	15.8	def
Captan 50W 2 lb	8.3	bcde
Benlate 50W 8 oz + Captan 50W 1 lb	26.2	f
Benlate 50W 8 oz + Captan 50W 2 lb	17.1	def
Tecto 42% 8 fl. oz	5.1	bcd
Tecto 42% 16 fl. oz	7.4	bcd
Tecto 42% 16 fl. oz + Captan 50W 1 lb	8.9	bcde
Topsin M 70W 6 oz	2.3	ab
Topsin M 70W 12 oz	12.4	bcdef
Topsin M 70W 12 oz + Captan 50W 1 lb	15.2	cdef
Vanguard 10W 6 oz	0	a
BFN-8206 50W 4 oz	0	a
BFN-8206 50W 8 oz	0	a

TRIAL 2A

Objective: To determine if diphenylamine (DPA) used to control storage scald interacts with fungicides to increase their effectiveness.

Fruit:

Variety : Delicious
 Harvest date: October 13, 1981
 Treatment date: October 20, 1981
 Storage between harvest and treatment: 7 days at 36 F
 Storage after treatment: 103 days at 36 F followed by 5 days at 60 F.
 Pressure test at harvest (mean for 25 fruit): 16.3 lb

Inoculum:

Penicillium expansum: 34,000 spores/ml, 5% benomyl-resistant
 Source: 5 benomyl-sensitive and 2 benomyl-resistant isolates collected from apple in 1978.

Inoculation and treatment methods: Fruit were punctured 2-3 mm deep using 3 nails mounted in a cork; dipped in inoculum 10 seconds; dipped in treatment solutions 20 seconds.

Observations:

1. Treatment with DPA alone is not included in results because a different formulation and rate of DPA was accidentally used.
2. The Shield-Brite DPA increased the effectiveness of all fungicides in the test.

Material and rate/ 100 gallons	% Decayed fruit ¹							
	After storage at 36 F for						5 days after removal from storage	
	55 days		73 days		103 days			
Check	30.5	c	50.1	e	60.5	e	65.6	f
Captan 50W 2 lb	14.7	b	26.9	d	41.6	d	44.9	e
Benlate 50W 8 oz	10.3	b	15.5	c	19.8	c	24.9	d
Benlate 50W 8 oz & Shield-Brite DPA 2.5 qt ²	0	a	0	a	2.9	b	5.6	c
Tecto 42% 16 fl. oz	8.7	b	13.1	c	14.1	c	19.3	d
Tecto 42% 16 fl. oz & Shield-Brite DPA 2.5 qt	0	a	0	a	0.3	ab	1.0	ab
Vanguard 10G 6 oz	0	a	2.3	b	3.5	b	7.8	c
Vanguard 10G 12 oz	0	a	0	a	0.3	ab	4.9	abc
Vanguard 10G 12 oz & Shield-Brite DPA 2.5 qt	0	a	0	a	0	a	0	a

Numbers within columns and followed by the same letter do not differ significantly (Duncan's Multiple Range Test, $P \leq 0.05$).

¹Data collected from 25 fruit per replicate and 4 replicates per treatment.

²968 ppm.

TRIAL 2B

Objective: To determine if diphenylamine (DPA) used to control storage scald interacts with fungicides to increase their effectiveness.

Fruit:

Variety : Golden Delicious
 Harvest date: October 13, 1981
 Treatment date: March 4, 1982
 Storage between harvest and treatment: 142 days at 36 F in poly bags
 Storage after treatment: 52 days at 36 F in poly bags
 Pressure test at harvest (mean for 25 fruit): 14.6 lb
 Pressure test at treatment (March 4): 8.5 lb

Inoculum:

Penicillium expansum: 26,000 spores/ml, 25% benomyl-resistant
 Source: 6 benomyl-susceptible and 5 benomyl-resistant isolates recovered from apples in 1978.

Inoculation and treatment methods: fruit were punctured 2-3 mm deep using 3 nails mounted in a cork; dipped in inoculum for 15 seconds; allowed to dry; dipped in fungicide 20 seconds.

Observations:

1. DPA caused increased decay in combination with captan, decreased decay with Benlate plus captan, and had no effect with Benlate and Tecto.
2. Fungicide effectiveness and interactions may have been influenced by the long storage period prior to treatment.

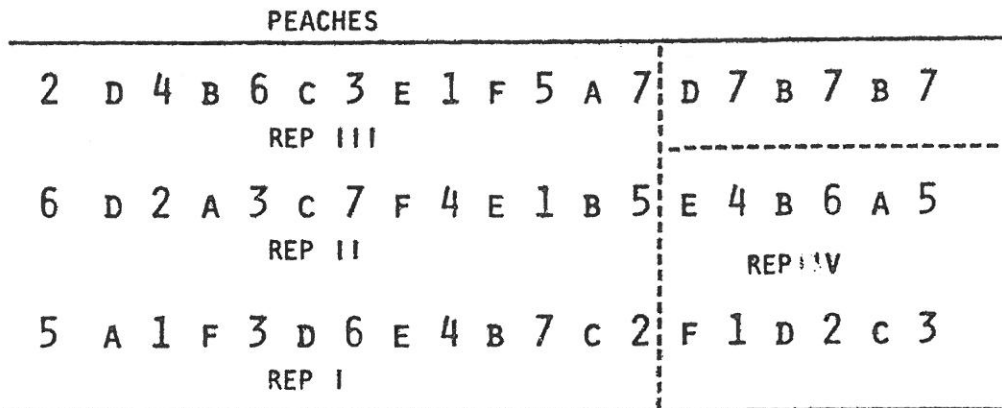
Material and rate/100 gals	% Decayed fruit ¹ following inoculation March 4	
	Stored 26 days	Stored 52 days
Check	2.9 b	48.8 de
Check & No Scald DPA 2.5 qt ²	1.0 ab	56.0 e
Captan 50W 2 lb	0 a	13.0 b
Captan 50W 2 lb & No Scald DPA 2.5 qt	0.3 a	57.0 e
Benlate 50W 8 oz	0 a	15.7 b
Benlate 50W 8 oz & No Scald DPA 2.5 qt	0 a	15.9 b
Benlate 50W 8 oz & Captan 50W 2 lb	0 a	35.6 cd
Benlate 50W 8 oz & Captan 50W 2 lb & No Scald DPA 2.5 qt	0 a	3.0 a
Tecto 42% 16 fl. oz	0.3 a	22.3 bc
Tecto 42% 16 fl. oz & No Scald DPA 2.5 qt	0 a	17.0 b

Numbers within columns followed by the same letter do not differ significantly (Waller-Duncan's Exact Bayesian K-ratio LSD rule $P \leq 0.05$).

¹ Data collected from 25 apples/rep, 4 rep/treatment on March 19 and April 26.

² 2000 ppm.

Prune Plot Map
Hudson Valley Laboratory



Black knot treatments

1. Check
2. Captan
3. Benlate-Captan
4. Zineb-Captan
5. Topsin M
6. Ferbam-sulfur
7. Dichlone

Herbicide-Nematicide Treatments

- A. Check
- B. Check with weed control
- C. Nematicur
- D. Nematicur with weed control
- E. Advantage
- F. Advantage with weed control

1982 APPLE FUNGICIDE TREATMENTS
 HUDSON VALLEY LABORATORY 1978 M-26 PLANTING

REP
IV

REP
III

REP
I

6	C M G R P	13	C M G R P	15	C M G R	10	C M G R P	15	C M G R P
15	C M G R P	7	C M G R P	14	C M G R I2	2	C M G R P	4	C M G R P
9	C M G R P I1	2	C M G R P	5	C M G R	3	C M G R P	7	C M G R P
8	C M G R P	4	M G R P	1	C M G R	14	C M G R P I2	5	C M G R P
5	M G R P	3	C M G R P	6	C M G R	9	C M G R P I1	6	C M G R P
14	C M G R P	13	C M G R P	2	C M G R	13	C M G R P	8	C M G R P
ROAD									
10	C M G R P	9	C M G R I1	13	C M G R P	14	C M G R P I2	5	C M G R P
3	C M G R P	7	C M G R	3	C M G R P	7	C M G R P	10	C M G R P
4	C M G R P	8	C M G R	8	C M G R P	9	C M G R P I1	15	C M G R P
1	P C M G R	10	C M G R	4	C M G R P	1	C M G R P	6	C M G R P

C - Cortland M - Spur McIntosh G - Golden Delicious R - Rome Beauty P - Paula Red

REP
II

POLE
BARN

Treatments:

PROTECTANT SCHEDULE

1. Check
2. Captan 50W
3. Topsin M 70W 2 oz
+Dithane M45 80W 12 oz
4. Dikar 77W
5. Topsin M 70W 2 oz
+Baycor 50W 1 oz
6. Baycor 50W 1 oz

POST-INFECTIO SCHEDULE

7. Baycor 50W 2 oz
8. Baycor 300EC 3.2 fl. oz
9. NY35 30F 13.3 fl. oz
10. NY35 30F 6.7 fl. oz
11. NY35 30F 3.3 fl. oz
12. NY35 30F 3.3 fl. oz
13. NY35 30F 6.7 fl. oz
14. NY35 30F 13.3 fl. oz
15. Baycor 50W 4 oz