NOT FOR PUBLICATION

RESULTS OF FUNGICIDE TRIALS IN THE HUDSON VALLEY 1985

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FINAL REPORT 1985

PREFACE

The following report summarizes data we have collected from fungicide tests during the past season. I wish to thank the chemical companies that provided the chemicals and the support which made these trials possible. In addition to the companies listed on pages 18 and 19 as suppliers of products we tested, we are also indebted to the following companies for supplying chemicals used in maintaining various test orchards at the Hudson Valley Lab during 1985: Agway, Milton, NY; Chevron Chemical Company, Ortho Division; Ciba-Geigy Corporation; Dow Chemical; DuPont Agrichemicals; ELANCO; FMC Agricultual Chemicial Group, Milton, NY; Mobay Chemical Company; Rohm and Haas Chemical Company; and Stauffer Chemical Company.

The first few pages of this report provide details of weather and apple scab ascospore discharge data collected at the Hudson Valley Laboratory. Both the graphic on page 2 and the table on pages 3-4 show the cumulative apple scab ascospore discharge throughout the season. This year we also monitored spore dischage with a Burkard 7-day volumetric spore trap. The Burkard data included on the table on pages 3-4. Of the total number of scab ascospores caught with the Burkard spore trap during the 1985 season, 54% were caught during a split wetting period on 2 May and more than 80% were caught prior to bloom. The Burkard data suggests scab pressure peaked much earlier than one would suspect from ascospore maturity counts. The failure of the Burkard to trap many spores after May 2 is probably due to the growth of the grass groundcover which may have interfered with scab spores getting into the air from the overwintering leaves. Although we had a considerable number of primary infection periods, the combination of dry prebloom weather and the small numbers of spores getting airborn after pink contributed to the lighter-than-expected scab disease pressure in our plots this season. Much of the disease noted in the control plots resulted from secondary disease spread.

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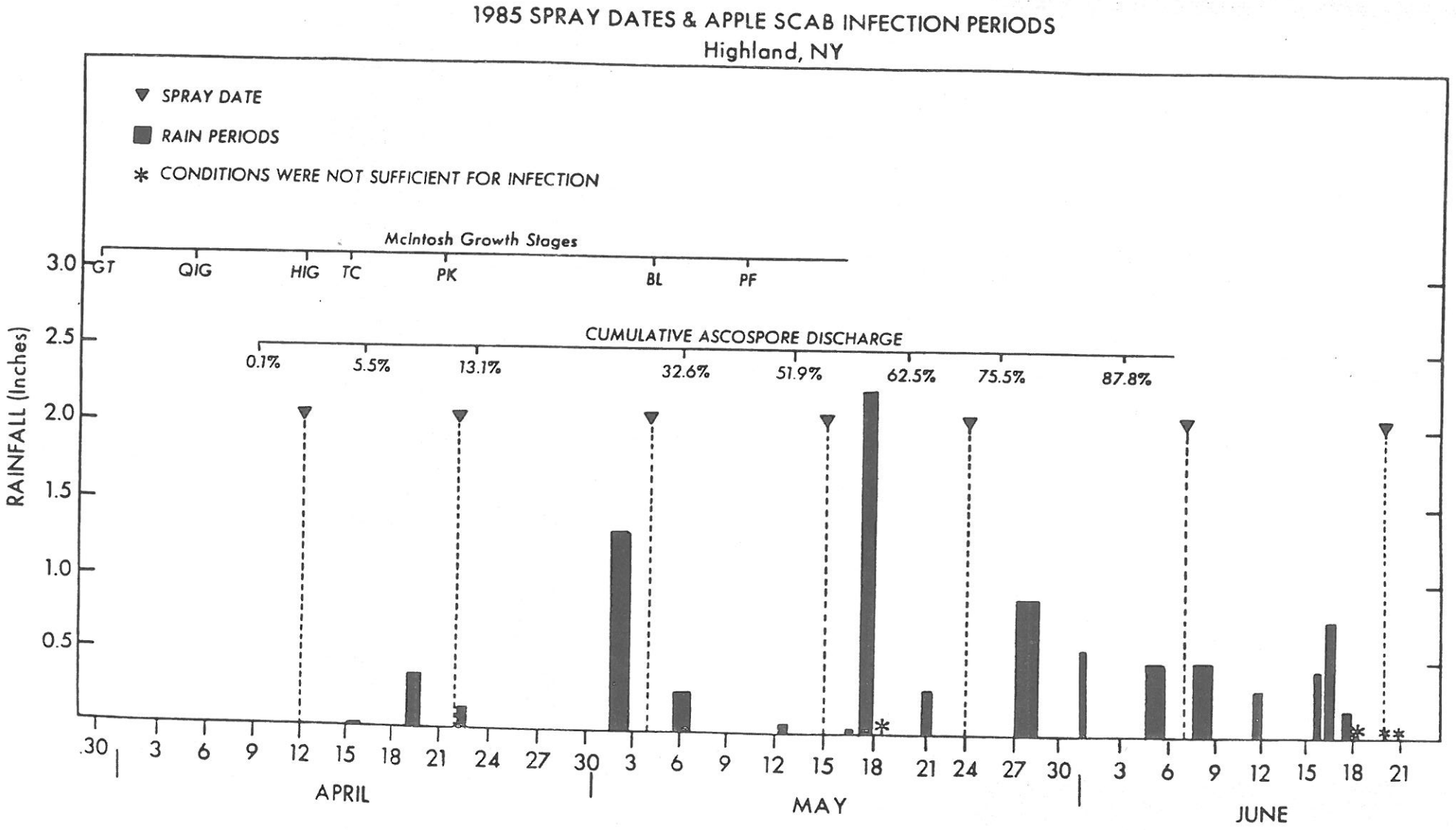
1985 SPRAY DATES & APPLE SCAB INFECTION PERIODS
Highland, NY
SPRAY DATE
RAIN PERIODS
* CONDITIONS WERE NOT SUFFICIENT FOR INFECTION
McIntosh Growth Stages
GT
QIG
HIG
TC
PK
BL
PF
CUMULATIVE ASCOSPORE DISCHARGE
0.1%
5.5%
13.1%
32.6%
51.9%
62.5%
75.5%
87.8%
RAINFALL (Inches)
3.0
2.5
2.0
1.5
1.0
0.5
30
3 6 9 12 15 18 21 24 27 30
APRIL
3 6 9 12 15 18 21 24 27 30
MAY
3 6 9 12 15 18 21
JUNE

1985 SPRAY DATES, INFECTION PERIODS, AND APPLE SCAB ASCOSPORE DISCHARGE DATA
Hudson Valley Laboratory, Highland, NY

Sprays applied		Pond block: hours	McIntosh growth	Cumm % scab spores	Wetting period					Mill's prediction		Cedar rust
Block[1]	Date	post-inf.[2]	stage	discharged[3]	Start Date	Start Time	Duration hrs	Avg. temp	Rain (inches)	% of season's spore catch[4]	1°	2°	inf. per.
			GT (3/30)										
			QIG (4/5)	0.1 (4/9)									
M-26	4/12		HIG (4/12)										
					4/15	1500	18	56	0.01	1.6	M	-	Yes
				5.5 (4/16)									
Pond	4/18	58 (4/15)	Early TC										
					4/19	1300	18	54	0.34	15.9	M	-	Yes
M-26	4/22		Early PK		4/22	1500	16	63	0.13	9.2	M	-	Yes
				13.1 (4/23)									
					5/ 2	0530	Split wetting with 3.5 hrs drying						
					5/ 2	1600	29	46	1.30	54.1	M	-	Yes
M-26	5/ 4		Bloom										
Pond	5/ 5	62 (5/ 2)	Bloom										
				32.6 (5/ 6)	5/ 6	0500	22	61	0.23	5.8	H	-	Yes
					5/12	1600	12	67	0.04	2.0	L	-	Yes
				51.9 (5/13)									
Both	5/15	62 (5/12)	PF (5/10) (90%)										
					5/16	2000	12	58	0.02	0.2	L	M	Yes
					5/17	1830	17.5	57	2.22	4.7	M	H	Yes
					5/19	0330	5.5	46	0.05	0.5	-	-	No
				62.5 (5/20)									
					5/21	1430	14	61	0.29	2.0	M	H	Yes
Both	5/24	65 (5/21)											
					5/27	1700	30.5	61	0.88	4.0	H	H	Yes
				75.5 (5/28)									
					6/ 1	0000	8.5	66	0.55	0.0	L	M	Yes
				87.8 (6/ 3)									
Pond	6/4	76 (6/ 1)											
					6/ 5	0900	25	54	0.48	0.2	H	H	Yes
					END OF PRIMARY SCAB SEASON								
M-26	6/ 7				6/ 8	0630	27	59	0.49		-	H	-

1985 SPRAY DATES, INFECTION PERIODS, AND APPLE SCAB ASCOSPORE DISCHARGE DATA (cont)

Spray Block	Spray Date	Wetting periods: Start Date	Start Time	Duration hrs	Avg temp	Rain inches	Mill's prediction 2°
		6/12	0600	8	62	0.30	L
		6/15	2300	12	61	0.41	M
		6/16	1930	13.5	62	0.72	H
		6/17	2300	11	66	0.15	H
		6/18	1600	2	78	0.02	-
Pond	6/19						
M-26	6/20	6/20	1530	1.5	68	0.01 (HAIL)	-
		6/21	0230	4.5	51	<0.01	-
		6/24	0730	4	73	0.03	-
		6/27	1000	3	59	0.02	-
		6/28	0215	55	60	1.04	H
		7/ 5	2230	9	66	0.01	M
		7/ 6	1530	17.5	68	0.12	H
Pond	7/ 9	7/ 9	1630	14	70	2.09	H
M-26	7/11						
		7/12	1815	12.5	60	0.79	M
		7/14	2230	9	71	0.54	M
		7/21	1945	13	68	1.45	H
		7/26	0530	6.5	76	0.44	L
		7/26	1800	12	71	0.14	H
Pond	7/30						
M-26	8/2&3	7/31	1000	16.5	63	1.59	H
		8/ 7	1945	16.5	68	1.34	H
		8/15	2230	15	74	0.08	H
		8/25	0400	31	71	0.84	H

[1]'Both' indicates both the Pond Block and the M.26 orchard were sprayed on the same day. [2]Dates in parentheses indicate the date of the infection period used to determine the postinfection interval . [3]Determined from perithecial squash mounts on the dates indicated in parenthesis. [4]Determined by counting spores trapped on a Burkard volumetric spore trap and determining the proportion of the season's total discharged during each infection period.

1985 MAXIMUM AND MINIMUM TEMPERATURES AND PRECIPITATION
Hudson Valley Laboratory, Highland, NY

All readings were taken at 0800 on the dates indicated

	April			May			June			July			August			September		
Date	Max	Min	Precip	Max	Min	Precip	Max	Min	Precip	Max	Min	Precip	Max	Min	Precip	Max	Min	Precip
1	37	32	0.56	85	53		73	63	0.55	79	56		66	60	1.59	67	61	
2	48	35	0.01	79	50	0.03	74	49		81	59		76	52		72	60	
3	47	27		54	42	1.01	85	59		79	64		77	51		82	57	
4	48	35	0.09	54	30	0.30	77	48		81	59		81	55		82	68	
5	58	42		71	46		77	53		83	59		84	58		90	74	
6	79	53		73	55	0.19	61	53	0.48	85	64	0.01	85	59		90	77	
7	65	42		69	55	0.04	72	45		85	63	0.12	81	60		91	76	
8	57	31	0.77	68	46		75	55	0.11	82	58		81	65	1.34	85	76	
9	50	24		60	29		66	52	0.38	79	59		82	63	0.38	85	73	0.41
10	44	22		69	47		74	59		83	65	2.09	87	60		79	68	1.09
11	47	31		85	58		82	52		84	62		86	66		81	56	0.40
12	58	30		87	62		78	59	0.26	82	54		86	60		64	50	
13	64	40		85	63	0.04	76	51	0.04	80	56	0.09	78	53		62	50	
14	55	40	0.01	87	57		63	49		82	61		83	63	0.01	61	49	
15	52	42		77	50		69	44		86	69	0.54	92	73		69	48	
16	64	51		66	51		78	59	0.41	84	65	0.03	92	72	0.06	72	52	
17	75	36		66	56	0.02	75	58	0.72	84	56		77	58	0.02	75	47	
18	55	31		75	50	2.24	78	63	0.15	80	60		84	58		74	57	
19	67	40		66	44	0.08	81	58	0.02	86	64		82	64		78	61	
20	72	45	0.34	63	45		76	54		86	70		76	66		83	63	
21	60	45		82	57		76	49	0.01	90	62		79	60		85	66	
22	86	52		79	45	0.29	79	50		87	66	1.45	79	54		82	61	
23	89	55	0.13	73	48		80	62		84	55		80	54		72	61	
24	69	44		72	45		83	65	0.02	76	48		80	54		75	63	0.03
25	53	46		79	47		82	51	0.01	80	58		80	64	0.29	81	57	0.24
26	68	52	0.01	81	51		73	50		84	66	0.32	74	65	0.55	69	56	
27	78	49	0.01	79	58		66	55		82	64	0.25	85	72		70	58	0.53
28	62	39	0.01	84	62	0.36	65	54	0.25	83	55		84	74		82	62	2.51
29	65	45	0.01	63	52	0.52	64	55	0.76	83	59		83	66		71	56	
30	66	39		70	47		68	56		82	62		74	63		73	56	0.01
31				73	57					85	62		75	66	0.95			

APPLE (Malus domestica 'McIntosh', 'Cortland',
'Golden Delicious', 'Paulared', 'Rome')
Scab; Venturia inaequalis
Powdery mildew; Podosphaera leucotricha
Cedar apple rust; Gymnosporangium juniperi-virginianae
Leafspot; Physalospora obtusa, Alternaria species

CONTROL OF APPLE DISEASES USING FUNGICIDES ON AN EXTENDED SCHEDULE, 1985:

Fungicides were evaluated using trees of five cultivars propagated on M.26 rootstock and planted in 1978. Treatments were replicated three times in plots containing one tree of each cultivar except that Paulared was present in only two of the replicates. Fungicides were sprayed to runoff (ca 2805 liters/ha or 400 gal/A) using a handgun at 2758-3448 kPa (400-500 psi). Our objective was to apply sprays on a regular 10-day schedule during the primary scab season. Spray dates and corresponding McIntosh growth stages were 12 Apr (half-inch green), 22 Apr (early pink); 4 May (bloom), 15 May (petal fall), 24 May; 7, 20 Jun; 11 Jul; and 2-3 Aug. A total of three light, six moderate, and three severe Mill's infection periods were recorded during the primary apple scab season. An additional 18 secondary scab infection periods occurred between 8 Jun and 25 Aug. Apple scab pressure was light in this orchard because of dry weather conditions during the early part of the primary scab season and light over-wintering inoculum. Cedar apple rust galls were suspended on poles at a height of one meter above the Golden Delicious tree in each plot on 2, 9, 17, and 28 May, but cedar apple rust pressure was light. Seedling Rome trees grown in the greenhouse and showing abundant powdery mildew sporulation were placed beneath the Cortland trees in two of the three replicates on April 30 and again on May 12 during periods of high relative humidity. Using potted trees as powdery mildew inoculum sources may have contributed to the moderately high powdery mildew pressure in this test.

Foliar diseases failed to develop on cluster leaves because of the dry prebloom weather. Apple scab and powdery mildew were evaluated in early summer and again late in the season. Evaluation dates are given in the data tables. Foliar disease data were collected by observing all leaves on 20 terminals per tree. Leaves were considered infected if any identifiable scab lesions were observed on the leaf or the petiole. Many lesions appeared inactivated by the fungicides as compared to normal lesions on control trees. The data from the several cultivars were combined in split-plot analyses whenever appropriate, and in some cases these combined analyses provided better statistical separations between treatments than the analyses of individual cultivars. No cedar apple rust developed on Golden Delicious. The incidence of rust on Rome foliage was recorded on 25 Jul. Incidence of leafspots caused by Alternaria species and Physalospora obtusa was recorded for Cortland during the 12 Aug evaluations. Fruit data were collected from 100 Cortland fruit per tree at on 23 Sep and from 100 Golden Delicious fruit per tree on 25 Sep. Fruit finish on the latter cultivar was rated on a scale of 1-5 where 1 = very smooth finish, 2 = some enlarged lenticels, 3 = slight russetting between lenticels, 4= moderate russetting, and 5 = severe russetting.

Incidence of foliar scab in June was less than 1% in all plots treated with ergosterol-biosysthesis-inhibitor scab fungicides but reached 3-5% in plots treated with contact fungicides. Scab and mildew incidence increased during the summer because of the extended, 3-week spray intervals used after the primary scab season.. Fruit scab was found on 79% of control fruit but less than 0.5% of fruit from any of the fungicide treatments. Cedar apple rust infection occurred on only 13.5% of Rome terminal leaves in the control, was less than 1% for all other treatments, and caused no fruit infections. All the fungicide treatments provided good suppression of mildew, but treatments involving UBI A-815, Topas MZ 61, Bayleton, the high rate of DPX H6573, or Rubigan & Ortho X-77 provided the best mildew control. However, the latter treatment caused excessive russetting on Golden Delicious. In addition to the numerical finish ratings presented in the table, we noted that fruit treated with Baycor & Captan or with Dithane & Bayleton tended to have a very smooth, waxy cuticle whereas the cuticle on fruit from other treatments felt rougher. Treatments involving a contact fungicide generally provided better control of leafspotting fungi than did treatments consisting of EBI fungicides alone.

EARLY SEASON LEAF SCAB EVALUATIONS
M.26 Orchard, Hudson Valley Laboratory, Highland, NY

Materials and rate of formulated product per 100 liters (100 gal)	% Terminal leaves with scab: McIntosh 18 Jun	Cortland 19 Jun	Grand mean: Mc & Cort combined
1. Control	38.3 e	23.0 d	30.4 e
2. Benlate 50W 15 g (2 oz) & Manzate 200 80W 90 g (12 oz)	2.9 cd	0.2 ab	1.2 c
3. Dithane M-45 80W 240 g (2 lb) thru 24 May; Dithane M-45 80W 180 g (1.5 lb) 7 Jun to EOS[1] *plus Bayleton 50W 3.7 g (0.5 oz) 22 Apr - 20 Jun[2].	5.2 d	1.1 cd	2.8 d
4. Rubigan 1EC 11.7 ml (1.5 fl oz) & Ortho X-77 31.1 ml (4 fl oz) [3]	0.2 ab	Tr. a	0.1 ab
5. Rubigan 1EC 11.7 ml (1.5 fl oz) & Manzate 200 80W 90 g (12 oz)	0.1 ab	Tr. a	Tr. a
6. RH-3866 40W 9.4 g (1.25 oz) & Dithane M-45 80W 180 g (1.5 lb) thru 24 May; Dithane M-45 80W 180 g (1.5 lb) 7 Jun to EOS	0. a	0. a	0. a
7. RH-3866 40W 18.7 g (2.5 oz) thru 24 May; Dithane M-45 80W 180 g (1.5 lb) 7 Jun to EOS	Tr. ab	0. a	Tr. a
8. DPX H6573 20DF 2.3 g (0.31 oz) & Manzate 200 80W 90 g (12 oz)	0.9 bc	Tr. a	0.3 abc
9. DPX H6573 20DF 3.1 g (0.41 oz)	0.1 ab	Tr. a	0.1 ab
10. DPX H6573 20DF 4.7 g (0.63 oz)	0. a	0. a	0. a
11. DPX H6573 20DF 4.7 g (0.63 oz) 24 Apr - 24 May; Benlate 50W 15 g (2 oz) & Manzate 200 80W 90 g (12 oz) 7 Jun to EOS	0.4 ab	0.1 ab	0.2 abc
12. Baycor 50W 30 g (4 oz) thru 24 May; Baycor 50W 15g (2 oz) 7 Jun to EOS	0.5 ab	Tr. a	0.2 ab
13. Baycor 50W 30 g (4 oz) & Captan 50W 120 g (1 lb) thru 24 May; Baycor 50W 15 g (2 oz) & Captan 50W 120 g (1 lb) 7 Jun to EOS	0. a	0. a	0. a
14. Topas MZ 61 61W 120 g (1 lb)[4]	0.6 ab	0.7 bc	0.7 bc
15. UBI A-815 50W 22.5 g (3 oz) & Manzate 200 80W 90 g (12 oz)	Tr. ab	0. a	Tr. a
16. UBI A-815 50W 30 g (4 oz)	Tr. ab	0. a	Tr. a

Means within columns followed by the same letter do not differ significantly (DMRT, P=0.05). The arcsine square root percentage transformation was used for statistical analysis.

[1]EOS = end of season [2]6 applications starting at pink [3]The first two sprays were applied using Charger E instead of Ortho X-77 [4]The first two sprays were applied as a tank mix of Topas 50W and Manzate 200 80W.

LATE SEASON LEAF SCAB EVALUATIONS
M.26 Orchard, Hudson Valley Laboratory, Highland, NY

Materials and rate of formulated product per 100 liters (100 gal)	% terminal leaves infected with scab			Grand means: all 3 cultivars combined
	McIntosh 20 Aug	Cortland 12 Aug	Rome 25 Jul	
1. Control	89.8 c	59.8 e	73.7 c	82.7 d
2. Benlate 50W 15 g (2 oz) & Manzate 200 80W 90 g (12 oz)	4.8 ab	2.0 abc	0.9 b	2.3 abc
3. Dithane M-45 80W 240 g (2 lb) thru 24 May; Dithane M-45 80W 180 g (1.5 lb) 7 Jun to EOS[1] *plus Bayleton 50W 3.7 g (0.5 oz) 22 Apr - 20 Jun[2]	10.2 b	3.6 bcd	1.1 b	4.3 bc
4. Rubigan 1EC 11.7 ml (1.5 fl oz) & Ortho X-77 31.1 ml (4 fl oz)[3]	6.8 ab	6.5 cd	2.5 b	5.1 bc
5. Rubigan 1EC 11.7 ml (1.5 fl oz) & Manzate 200 80W 90 g (12 oz)	2.2 a	2.8 abc	0.5 ab	1.7 ab
6. RH-3866 40W 9.4 g (1.25 oz) & Dithane M-45 80W 180 g (1.5 lb) thru 24 May; Dithane M-45 80W 180 g (1.5 lb) 7 Jun to EOS	5.5 ab	5.5 bcd	0.5 ab	3.3 bc
7. RH-3866 40W 18.7 g (2.5 oz) thru 24 May; Dithane M-45 80W 180 g (1.5 lb) Jun 7 to EOS*	3.8 ab	2.9 abc	0.9 b	2.4 abc
8. DPX H6573 20DF 2.3 g (0.31 oz) & Manzate 200 80W 90 g (12 oz)	2.4 a	2.2 abc	0.6 ab	1.6 ab
9. DPX H6573 20DF 3.1 g (0.41 oz) 2.2 a	4.4 bcd	1.3 b	2.5 bc	
10. DPX H6573 20DF 4.7 g (0.63 oz) 1.8 a	3.1 abc	0.5 ab	1.7 ab	
11. DPX H6573 20DF 4.7 g (0.63 oz) 24 Apr - 24 May; Benlate 50W 15 g (2 oz) & Manzate 200 80W 90 g (12 oz) 7 Jun to EOS	6.6 ab	1.6 ab	0.9 b	5.5 bc
12. Baycor 50W 30 g (4 oz) thru 24 May; Baycor 50W 15g (2 oz) 7 Jun to EOS	3.6 ab	3.8 bcd	1.2 b	2.7 bc
13. Baycor 50W 30 g (4 oz) & Captan 50W 120 g (1 lb) thru 24 May; Baycor 50W 15 g (2 oz) & Captan 50W 120 g (1 lb) 7 Jun to EOS	1.1 a	0.5 a	0. a	0.3 a
14. Topas MZ 61 61W 120 g (1 lb)[4] 6.0 ab	4.0 cd	0.9 b	3.3 bc	
15. UBI A-815 50W 22.5 g (3 oz) & Manzate 200 80W 90 g (12 oz)	2.2 a	2.1 abc	2.1 b	2.2 abc
16. UBI A-815 50W 30 g (4 oz)	6.3 ab	9.0 d	2.6 b	5.7 c

Means within columns followed by the same letter do not differ significantly (DMRT, P=0.05). The arcsine square root percentage transformation was used for statistical analysis.

[1]EOS = end of season [2]6 applications starting at pink [3]The first two sprays were applied using Charger E instead of Ortho X-77 [4]The first two sprays were applied as a tank mix of Topas 50W and Manzate 200 80W.

EARLY SEASON MILDEW EVALUATIONS
M.26 Orchard, Hudson Valley Laboratory, Highland , NY

Materials and rate of formulated product per 100 liters (100 gal)	% Terminal leaves with powdery mildew		Grand means: Cortland & Paulared combined
	Cortland 1 Jul	Paulared 8 Jul	
1. Control	15.6 g	15.7 b	15.6 e
2. Benlate 50W 15 g (2 oz) & Manzate 200 80W 90 g (12 oz)	1.6 ef	1.0 a	1.2 bcd
3. Dithane M-45 80W 240 g (2 lb) thru 24 May; Dithane M-45 80W 180 g (1.5 lb) 7 Jun to EOS[1] *plus Bayleton 50W 3.7 g (0.5 oz) 22 Apr - 20 Jun[2]	0.5 abcdef	0.1 a	0.3 ab
4. Rubigan 1EC 11.7 ml (1.5 fl oz) & Ortho X-77 31.1 ml (4 fl oz) [3]	0. a	0.1 a	Tr. a
5. Rubigan 1EC 11.7 ml (1.5 fl oz) & Manzate 200 80W 90 g (12 oz)	1.4 def	0.7 a	1.0 bcd
6. RH-3866 40W 9.4 g (1.25 oz) & Dithane M-45 80W 180 g (1.5 lb) thru 24 May; Dithane M-45 80W 180 g (1.5 lb) 7 Jun to EOS	1.7 f	0.7 a	1.2 bcd
7. RH-3866 40W 18.7 g (2.5 oz) thru 24 May; Dithane M-45 80W 180 g (1.5 lb) 7 Jun to EOS	0.2 abc	0. a	Tr. a
8. DPX H6573 20DF 2.3 g (0.31 oz) & Manzate 200 80W 90 g (12 oz)	1.2 cdef	3.0 a	1.7 cd
9. DPX H6573 20DF 3.1 g (0.41 oz)	1.1 cdef	0.9 a	0.9 bcd
10. DPX H6573 20DF 4.7 g (0.63 oz)	0.8 bcdef	1.3 a	1.0 bcd
11. DPX H6573 20DF 4.7 g (0.63 oz) 24 Apr - 24 May; Benlate 50W 15 g (2 oz) & Manzate 200 80W 90 g (12 oz) 7 Jun to EOS	0.3 abcde	0.6 a	0.4 abc
12. Baycor 50W 30 g (4 oz) thru 24 May; Baycor 50W 15g (2 oz) 7 Jun to EOS	1.4 cdef	0.7 a	1.0 bcd
13. Baycor 50W 30 g (4 oz) & Captan 50W 120 g (1 lb) thru 24 May; Baycor 50W 15 g (2 oz) & Captan 50W 120 g (1 lb) 7 Jun to EOS	2.1 f	1.9 a	2.0 d
14. Topas MZ 61 61W 120 g (1 lb)[4]	0.1 ab	0.7 a	0.2 ab
15. UBI A-815 50W 22.5 g (3 oz) & Manzate 200 80W 90 g (12 oz)	0.2 abcd	0.4 a	0.2 ab
16. UBI A-815 50W 30 g (4 oz)	0.0 a	0.3 a	Tr. a

Means within columns followed by the same letter do not differ significantly (DMRT, P=0.05). The arcsine square root percentage transformation was used for statistical analysis.

[1]EOS = end of season [2]6 applications starting at pink [3]The first two sprays were applied using Charger E instead of Ortho X-77 [4]The first two sprays were applied as a tank mix of Topas 50W and Manzate 200 80W.

LATE SEASON MILDEW EVALUATIONS
M.26 Orchard, Hudson Valley Laboratory, Highland, NY

Materials and rate of formulated product per 100 liters (100 gal)	% Terminal leaves infected with mildew			Grand means: all 3 cultivars combined
	Cortland 12 Aug	Paulared 12 Aug	Rome 25 Jul	
1. Control	51.3 d	13.9 d	35.2 g	32.4 g
2. Benlate 50W 15 g (2 oz) & Manzate 200 80W 90 g (12 oz)	5.6 abc	1.2 abc	3.5 def	3.1 def
3. Dithane M-45 80W 240 g (2 lb) thru 24 May; Dithane M-45 80W 180 g (1.5 lb) 7 Jun to EOS[1] *plus Bayleton 50W 3.7 g (0.5 oz) [2]	4.0 abc	1.1 abc	1.6 abcde	2.0 abcd
4. Rubigan 1EC 11.7 ml (1.5 fl oz) & Ortho X-77 31.1 ml (4 fl oz)[3]	3.8 abc	0.6 abc	0.2 a	1.1 abc
5. Rubigan 1EC 11.7 ml (1.5 fl oz) & Manzate 200 80W 90 g (12 oz)	4.7 abc	1.1 abc	1.0 abcd	2.0 abcd
6. RH-3866 40W 9.4 g (1.25 oz) & Dithane M-45 80W 180 g (1.5 lb) thru 24 May; Dithane M-45 80W 180 g (1.5 lb) 7 Jun to EOS	8.5 bc	2.3 bc	7.3 f	5.6 f
7. RH-3866 40W 18.7 g (2.5 oz) thru 24 May; Dithane M-45 80W 180 g (1.5 lb) 7 Jun to EOS	3.9 abc	1.1 abc	5.7 ef	3.2 def
8. DPX H6573 20DF 2.3 g (0.31 oz) & Manzate 200 80W 90 g (12 oz)	9.5 c	3.3 c	3.3 cdef	4.9 ef
9. DPX H6573 20DF 3.1 g (0.41 oz)	9.6 c	0.2 ab	2.8 bcdef	2.9 cde
10. DPX H6573 20DF 4.7 g (0.63 oz)	4.0 abc	1.7 abc	0.4 abc	1.8 abcd
11. DPX H6573 20DF 4.7 g (0.63 oz) 24 Apr - 24 May; Benlate 50W 15 g (2 oz) & Manzate 200 80W 90 g (12 oz) 7 Jun to EOS	5.0 abc	1.7 abc	3.8 def	3.4 def
12. Baycor 50W 30 g (4 oz) thru 24 May; Baycor 50W 15g (2 oz) Jun 7 to EOS	5.8 abc	1.2 abc	2.7 bcdef	2.9 cde
13. Baycor 50W 30 g (4 oz) & Captan 50W 120 g (1 lb) thru 24 May; Baycor 50W 15 g (2 oz) & Captan 50W 120 g (1 lb) 7 Jun to EOS	6.2 abc	0.9 abc	1.5 abcde	2.4 bcd
14. Topas MZ 61 61W 120 g (1 lb)[4]	3.2 ab	Tr. a	0.3 ab	0.7 a
15. UBI A-815 50W 22.5 g (3 oz) & Manzate 200 80W 90 g (12 oz)	2.5 a	0.6 abc	0.9 abcd	1.2 abc
16. UBI A-815 50W 30 g (4 oz)	2.7 ab	0.2 ab	0.9 abcd	1.0 ab

Means within columns followed by the same letter do not differ significantly (DMRT, P=0.05). The arcsine square root percentage transformation was used for statistical analysis.

[1]EOS = end of season [2]6 applications starting at pink [3]The first two sprays were applied using Charger E instead of Ortho X-77 [4]The first two sprays were applied as a tank mix of Topas 50W and Manzate 200 80W.

LEAFSPOT AND CEDAR APPLE RUST EVALUATIONS
M.26 Orchard, Hudson Valley Laboratory, Highland, NY

Materials and rate of formulated product per 100 liters (100 gal)	% term. leaves with leafspot: Cortland 12 Aug	Rome 25 Jul	% Rome terminal leaves with rust 25 Jul
1. Control	46.3 f	28.1 d	13.5 c
2. Benlate 50W 15 g (2 oz) & Manzate 200 80W 90 g (12 oz)	10.9 abcde	5.4 abc	0.3 ab
3. Dithane M-45 80W 240 g (2 lb) thru 24 May; Dithane M-45 80W 180 g (1.5 lb) 7 Jun to EOS[1] *plus Bayleton 50W 3.7 g (0.5 oz) 22 Apr - 20 Jun[2]	7.9 ab	5.6 abc	0. a
4. Rubigan 1EC 11.7 ml (1.5 fl oz) & Ortho X-77 31.1 ml (4 fl oz)[3]	16.1 de	10.2 c	0. a
5. Rubigan 1EC 11.7 ml (1.5 fl oz) & Manzate 200 80W 90 g (12 oz)	10.6 abcd	4.5 abc	0. a
6. RH-3866 40W 9.4 g (1.25 oz) & Dithane M-45 80W 180 g (1.5 lb) thru 24 May; Dithane M-45 80W 180 g (1.5 lb) 7 Jun to EOS	8.4 abc	2.8 ab	Tr. a
7. RH-3866 40W 18.7 g (2.5 oz) thru 24 May; Dithane M-45 80W 180 g (1.5 lb) 7 Jun to EOS	6.2 a	1.8 a	0.1 ab
8. DPX H6573 20DF 2.3 g (0.31 oz) & Manzate 200 80W 90 g (12 oz)	9.9 abcd	1.7 a	Tr. a
9. DPX H6573 20DF 3.1 g (0.41 oz)	18.1 e	4.6 abc	0.1 a
10. DPX H6573 20DF 4.7 g (0.63 oz)	14.6 cde	4.2 ab	0. a
11. DPX H6573 20DF 4.7 g (0.63 oz) 24 Apr - 24 May; Benlate 50W 15 g (2 oz) & Manzate 200 80W 90 g (12 oz) 7 Jun to EOS	11.2 abcde	6.7 bc	0.6 b
12. Baycor 50W 30 g (4 oz) thru 24 May; Baycor 50W 15g (2 oz) 7 Jun to EOS	14.7 cde	5.4 abc	0. a
13. Baycor 50W 30 g (4 oz) & Captan 50W 120 g (1 lb) thru 24 May; Baycor 50W 15 g (2 oz) & Captan 50W 120 g (1 lb) 7 Jun to EOS	7.6 ab	3.9 ab	0. a
14. Topas MZ 61 61W 120 g (1 lb)[4]	8.3 abc	2.2 ab	0. a
15. UBI A-815 50W 22.5 g (3 oz) & Manzate 200 80W 90 g (12 oz)	8.3 abc	2.9 ab	0. a
16. UBI A-815 50W 30 g (4 oz)	14.0 bcde	6.6 bc	0.5 ab

Means within columns followed by the same letter do not differ significantly (DMRT, P=0.05). The arcsine square root percentage transformation was used for statistical analysis.

[1]EOS = end of season [2]6 applications starting at pink [3]The first two sprays were applied using Charger E instead of Ortho X-77 [4]The first two sprays were applied as a tank mix of Topas 50W and Manzate 200 80W.

FRUIT DISEASE AND FINISH EVALUATIONS
M.26 Orchard, Hudson Valley Laboratory, Highland, NY

Materials and rate of formulated product per 100 liters (100 gal)	% Cortland fruit with apple scab 23 Sep	Golden Del. finish evaluations: Mean finish rating[5]	Golden Del. finish evaluations: % fruit without russet
1. Control	78.5 b	2.36 ab	59.4 ab
2. Benlate 50W 15 g (2 oz) & Manzate 200 80W 90 g (12 oz)	0. a	2.82 abc	28.1 cd
3. Dithane M-45 80W 240 g (2 lb) thru 24 May; Dithane M-45 80W 180 g (1.5 lb) 7 Jun to EOS[1] *plus Bayleton 50W 3.7 g (0.5 oz) 22 Apr - 20 Jun[2]	0. a	2.60 abc	45.3 abcd
4. Rubigan 1EC 11.7 ml (1.5 floz) & Ortho X-77 31.1 ml (4 floz)[3]	0. a	3.66 d	6.3 e
5. Rubigan 1EC 11.7 ml (1.5 floz) & Manzate 200 80W 90 g (12 oz)	0. a	2.63 abc	44.4 abcd
6. RH-3866 40W 9.4 g (1.25 oz) & Dithane M-45 80W 180 g (1.5 lb) thru 24 May; Dithane M-45 80W 180 g (1.5 lb) 7 Jun to EOS	0. a	2.39 ab	61.8 a
7. RH-3866 40W 18.7 g (2.5 oz) thru 24 May; Dithane M-45 80W 180 g (1.5 lb) 7 Jun to EOS	0. a	3.01 c	21.9 de
8. DPX H6573 20DF 2.3 g (0.313 oz) & Manzate 200 80W 90 g (12 oz)	0. a	2.48 ab	51.9 abc
9. DPX H6573 20DF 3.1 g (0.413 oz)	0.2 a	2.43 ab	61.9 a
10. DPX H6573 20DF 4.7 g (0.625 oz)	0. a	2.38 ab	57.8 ab
11. DPX H6573 20DF 4.7 g (0.625 oz) 24 Apr - 24 May; Benlate 50W 15 g (2 oz) & Manzate 200 80W 90 g (12 oz) 7 Jun to EOS	0. a	2.80 abc	28.2 cd
12. Baycor 50W 30 g (4 oz) thru 24 May; Baycor 50W 15g (2 oz) 7 Jun to EOS	0.4 a	2.82 bc	31.4 bcd
13. Baycor 50W 30 g (4 oz) & Captan 50W 120 g (1 lb) thru 24 May; Baycor 50W 15 g (2 oz) & Captan 50W 120 g (1lb) 7 Jun to EOS	0. a	2.32 a	64.6 a
14. Topas MZ 61 61W 120 g (1 lb)[4]	0.1 a	2.54 abc	49.3 abcd
15. UBI A-815 50W 22.5 g (3 oz) & Manzate 200 80W 90 g (12 oz)	0.2 a	2.65 abc	41.8 abcd
16. UBI A-815 50W 30 g (4 oz)	0.4 a	2.72 abc	42.5 abcd

Means within columns followed by the same letter do not differ significantly (DMRT, P=0.05). The arcsine square root percentage transformation was used for statistical analysis.

[1]EOS = end of season [2]6 applications starting at pink [3]The first two sprays were applied using Charger E instead of Ortho X-77 [4]The first two sprays were applied as a tank mix of Topas 50W and Manzate 200 80W.

[5]Rating system of 1 to 5 (1 = smooth finish , 2 = raised lenticels , 3 to 5 = slight russet to severe russet)

APPLE (Malus domestica 'McIntosh,' 'Golden Delicious')
Scab; Venturia inaequalis
Flyspeck; Schizothyrium pomi
Sooty blotch; Gloeodes pomigena
Cedar apple rust; Gymnosporangium juniperi-virginianae
Leafspot; Physalospora obtusa, Alternaria species

EVALUATION OF EGOSTEROL-BIOSYNTHESIS-INHIBITOR FUNGICIDES ON A POSTINFECTION SCHEDULE, 1985

Fungicides were evaluated on five-year-old McIntosh and two-year-old Golden Delicious trees on M.7 rootstock. Plots consisted of one tree of each cultivar. Plots wre replicated four times in a randomized-block design. Fungicides were sprayed to runoff using a handgun at 2069-2758 kPa (300-400 psi). Our objective was to apply sprays on a postinfection basis during the primary scab season with a minimum of 10 days and a maximum of 14 days between applications, but weather conditions interfered with precise spray timing. Spray dates and corresponding McIntosh growth stages were 18 Apr (early tight cluster); 5 May (bloom), 15 May (petal fall); 4, 19 Jun; 9 and 30 Jul. The first five sprays were applied 58, 62, 62, 65, and 76 hours, respectively, after light to moderate Mill's infection periods. A total of three light, six moderate, and three severe Mill's infection periods were recorded during the primary apple scab season. An additional 18 secondary scab infection periods occurred between 8 Jun and 25 Aug. Because of dry weather conditions during the early part of the primary scab season, apple scab pressure was only moderate in this orchard despite moderate inoculum levels in overwintering leaves.

For McIntosh, data were collected from leaves on 20 clusters per tree on 4 Jun, from all leaves on 20 terminals per tree on 4 Jun and 1 Jul, and from all available fruit (20 to 100 per tree) on 5 Sep. For Golden Delicious, all leaves on 20 terminals per tree were evaluated on 7 Aug. McIntosh fruit finish was evaluated by running finger tips over the surface of each fruit to detect lenticel roughening, and finish was rated on a scale of 1 (smooth finish) to 4 (severely enlarged and/or roughened lenticels). All finish evaluations were done by a single investigator. All the McIntosh fruit harvested for final evaluations were also pressure tested on two faces and individually tested for soluble solids to determine if any of the fungicide treatments might affect fruit maturity.

Differences in foliar scab control between fungicide treatments were evident only for McIntosh terminal leaves rated on 4 Jun. The 4 Jun ratings showed Funginex & Polyram and the low rate of UBI A-815 were less effective than the other fungicide treatments, and the latter treatment also allowed significantly more fruit scab than higher rates of the same formulation. Only the high rate of UBI A-815 controlled flyspeck as well as the Funginex & Polyram treatment. Cedar apple rust failed to develop even on control trees in this trial. Funginex & Polyram caused severely enlarged lenticels on McIntosh fruit. Treatments had no effect on pressure tests or soluble solids of McIntosh fruit at harvest.

DATA FROM 1985 POND-BLOCK POSTINFECTION FUNGICIDE TRIAL
Hudson Valley Laboratory, Highland, NY

Materials and rate of formulated product per 100 liters (100 gal)	% McIntosh cluster leaves with scab	% Terminal leaves with scab			
		McIntosh			Golden Del.
		4 Jun	1 Jul	5 Aug	7 Aug
1. Control	10.3 b	28.4 d	80.5 b	85.7 b	20.2 b
2. RH-3866 40W 18.7 g (2.5 oz)	0.2 a	0.1 a	0. a	0.1 a	0. a
3. Funginex 18.2%EC 62.5 ml (8 fl oz) & Polyram 80W 90 g (12 oz) thru 24 May; Polyram 80W 120 g (1 lb) 7 Jun to EOS[1]	2.3 a	2.7 c	0.2 a	1.2 a	0.8 a
4. UBI A-815 50W 15 g (2 oz)	2.4 a	1.1 b	0.3 a	1.3 a	0.2 a
5. UBI A-815 50W 22.5 g (3 oz)	1.6 a	0.2 a	0.1 a	1.0 a	0.1 a
6. UBI A-815 50W 30 g (4 oz)	0.5 a	Tr. a[2]	0.3 a	1.2 a	Tr. a
7. UBI A-815 30W 25 g (3.33 oz)	1.0 a	0.2 a	0.1 a	1.5 a	0.3 a
8. UBI A-815 30W 37.5 g (5 oz)	1.4 a	0.1 a	0.1 a	1.1 a	0.2 a

Materials and rate of formulated product per 100 liters (100 gal)	% terminal leaves with leafspot		% McIntosh fruit infected			McIntosh fruit finish rating[3]
	McIntosh	Golden Del.	scab	fly speck	sooty blotch	
1. Control	33.4 b	18.1 ab	98.8 c	32.1 c	31.4 c	1.3 a
2. RH-3866 40W 18.7 g (2.5 oz)	8.2 a	10.7 a	0.6 a	5.2 b	2.8 ab	1.6 ab
3. Funginex 18.2%EC 62.5 ml (8 fl oz) & Polyram 80W 90 g (12 oz) thru 24 May; Polyram 80W 120 g (1 lb) 7 Jun to EOS[1]	11.0 a	11.1 a	0.5 a	0.1 a	0.6 a	2.4 c
4. UBI A-815 50W 15 g (2 oz)	10.1 a	23.2 b	4.6 b	10.1 b	2.8 ab	1.5 a
5. UBI A-815 50W 22.5 g (3 oz)	11.9 a	15.5 ab	0.9 a	3.3 ab	1.5 ab	1.4 a
6. UBI A-815 50W 30 g (4 oz)	8.5 a	14.8 ab	Tr. a	10.3 b	1.7 ab	1.5 a
7. UBI A-815 30W 25 g (3.33 oz)	11.0 a	11.3 a	1.5 ab	9.9 b	7.5 b	1.5 ab
8. UBI A-815 30W 37.5 g (5 oz)	9.1 a	20.9 ab	1.2 ab	10.1 b	5.4 ab	1.9 b

Means within columns followed by the same letter do not differ significantly (BET, P=0.05). The arcsine square root percentage transformation was used for statistical analysis.

[1]EOS = end of season [2]Tr. = trace (<0.05%). [3]Rated on a scale of 1 (smooth finish) to 4 (extreme lenticel roughening)

APPLE (Malus domestica 'Delicious', 'Golden Delicious')
Blue mold; Penicillium expansum

EVALUATION OF NEW POSTHARVEST FUNGICIDES FOR CONTROL OF PENICILLIUM BLUE MOLD IN STORED APPLES, 1983-85:

New fungicides were tested in postharvest treatments with Delicious apples in Oct 1983 and with Golden Delicious apples in Oct 1984. In 1983 the Delicious fruit were harvested 6 Oct, treated and moved to storage on 13 Oct and evaluated for decay after 167 days at 2.2 C in regular storage. The Golden Delicious fruit were harvested 8-9 Oct, 1984, stored at 2.2 C until 17 Oct, and then treated and stored again at 2.2 C until evaluated 60 and 90 days later. In both tests, we used four replicates of 25 fruit each for each treatment. Fruit were punctured 2-3 mm deep at three locations on a single face using 3 finishing nails mounted in a cork. Replicates of wounded fruit were placed in wooden baskets, dipped for 20 seconds in inoculum consisting of 50,000 conidia of P. expansum per ml, allowed to dry for approximately 1 hr, dipped in fungicide solutions for 30 seconds, packed wounded-face-up on spring cushion trays, and moved to storage. In the 1983 test, the inoculum consisted of 20% benomyl-resistant conidia and 80% benomyl-sensitive conidia whereas only benomyl-sensitive isolates were used in 1984. The scald inhibitor diphenylamine (Decco's No-Scald DPA) was added to all the 1984 treatment solutions to yield a final concentration of 1000 µg/ml, but diphenylamine was not used in 1983. Before each trial, random samples of 25 fruit were collected for fruit maturity evaluations. The mean pressure test and soluble solids readings, respectively, were 16.0 and 11.1 for the Delicious used in 1983 and 16.3 and 14.2 for the Golden Delicous used in 1984.

The Delicious fruit used for the 1983 trial were harvested at the same time that commercial growers were harvesting this cultivar, but the relative immaturity of the fruit made them highly resistant to decay. Thus the incidence of decay in the control was relatively low and the fruit had to be held unusually long before significant decay developed in the treatments. The fungicides RO 15-1297, UBI A-815, BAS 454 06F, and Funginex would probably be even less effective under more severe disease pressure. In the 1984 trial, significant rate responses were noted with Topas, RH-3866, and Fungaflor 50EC, but not with DPX H6573, Rovral, or Fungaflor 75SP. For all of the compounds tested in 1984, at least one of the tested rates proved as effective as the Benlate standard. Rovral proved very effective in the 1984 trial where it was used in combination with DPA. However, tests in previous years have shown that Rovral is much less effective when combined with ethoxyquin or other DPA formulations or when used alone. None of the treatments tested during the two years were phytotoxic to fruit.

EVALUATION OF NEW POSTHARVEST FUNGICIDES 1983-85
Hudson Valley Laboratory, Highland, NY

Material and rate of formulated product per 100 liters (100 gal)	% fruit with decay after indicated storage period		
	1983-84	1984-85	
	167 days	60 days	90 days
Water control	27.9 c	58.1 e	80.4 e
Benlate 50W 60 g (8 oz)	28.6 c	0.3 ab	1.9 ab
Topas 10W 60 g (8 oz)	ND*	1.9 abcd	5.7 abcd
Topas 10W 45 g (6 oz)	0.5 a	ND	ND
Topas 10W 30 g (4 oz)	ND	7.6 d	17.9 cd
RH-3866 40W 4.75 g (0.63 oz)	ND	0.3 ab	1.9 ab
RH-3866 40W 2.36 g (0.31 oz)	ND	6.1 cd	20.5 d
DPX H6573 40%L 4.9 ml (0.63 fl oz)	0.3 a	0.8 abc	2.7 ab
DPX H6573 40%L 2.4 ml (0.31 fl oz)	ND	1.0 abcd	3.5 abc
Rovral 50W 240 g (2 lb)	ND	0 a	0 a
Rovral 50W 120 g (1 lb)	ND	0.3 ab	1.5 ab
Fungaflor 75SP 65.2 g (8.7 oz)	0 a	0 a	5.9 abcd
Fungaflor 75SP 48.7 g (6.5 oz)	ND	3.0 abcd	7.1 bcd
Fungaflor 50EC 100.0 ml (12.8 fl oz)	ND	0 a	3.5 abc
Fungaflor 50EC 78.1 ml (10.0 fl oz)	ND	3.5 bcd	11.0 bcd
RO 15-1297 500EC 23.4 ml (3 fl oz)	13.9 bc	ND	ND
UBI A815 50W 100 g (13.4 oz)	12.8 bc	ND	ND
BAS 454 06F 25EC 23.4 ml (3 fl oz)	8.6 b	ND	ND
Funginex 50W 120 g (1 lb)	25.5 bc	ND	ND

Means within columns followed by the same letter do not differ significantly (DMRT, P=0.05). The arcsine square root transformation was used for statistical analysis.
*ND = no data

APPLE (Malus domestica)
Root rot (Phytopthora and Pythium sp.)
Replant disease (etiology unknown)

EFFECTS OF FUMIGATION, TEMIK, AND RIDOMIL TREATMENTS ON ESTABLISHMENT OF TREES IN REPLANTED ORCHARDS, 1984-85

Preplant and postplant treatments were applied to commercial nursery trees planted into old-tree sites in two experimental orchards in 1984. Dowfume MC-2 was used to control replant disease and soil populations of Phytopthora and Pythium. Dowfume MC-2 was chosen as the fumigant in this test because the 0.68-kg cans are convenient for treating single-tree sites. Temik was used because some reports suggested this compound may stimulate plant growth even in the absence of nematode populations. The preplant Ridomil dip was used to reduce resident Phytopthora commonly found on nursery stock. No attempt was made to determine if nematodes, replant disease, or root rot fungi were prevalent in the test orchards because we wished to determine if treatments would prove beneficial even in sites without identified problems.

Existing 6-yr-old McIntosh or 19-yr-old Romes trees were removed from the planting sites in fall of 1983, but adjacent trees of the same age were left in place. An auger 46-cm in diameter was used to drill planting holes approximately 60 cm deep on 2 Nov 83. Half of the planting holes were immediately treated with 0.68 kg Dowfume MC-2 by placing a single frozen can in the bottom of the planting hole, puncturing the can with a pointed metal rod, refilling the hole with soil, and covering the hole with a 1.5-m square of polyethylene. Untreated planting holes were also refilled. All sites were augered again for planting on 26 Apr 84 when McIntosh trees on M.26 and Rome trees on MM.111 rootstock were planted in the respective orchards. The Ridomil treatment was applied prior to planting by soaking tree roots in the Ridomil solution for 15 minutes. Temik was sprinkled around the planting holes 3 wks after trees were planted and was incorporated into soil 3-5 cm dep with a garden rake. The spring of 1984 was unusually wet with 25 cm of rain during May. Tree trunk diameters and total annual shoot growth were measured mid-Oct 84 and late-Aug 85.

Because shoot-growth measurements in 1984 suggested that the Ridomil treatment had a beneficial effect, preplant Ridomil dips were tested in eight commercial orchards in 1985. Growth of Ridomil-treated and untreated trees were compared for a total of 18 cultivar/rootstock/site combinations. The cooperating growers notified us when they began to plant the test blocks, provided 10 trees for Ridomil treatment and flagging, and then mixed the treated trees with the rest of the stock and planted them in a random pattern throughout the block. The test trees were treated with Ridomil in exactly the same way that Ridomil treatments had been applied in 1984 and were planted immediately after treatment. The spring of 1985 was unusually dry with a total of only 18 cm rain during April and May. In each of the 18 tests, total shoot growth on the treated trees an on paired, adjacent, untreated control trees was measured during late Aug 85. Growth of treated versus untreated trees was compared statistically using the Student's t-test.

Trees treated in 1984 with Dowfume-plus-Ridomil averaged nearly 50% more shoot growth than trees in the other three treatments. Trees treated with Dowfume alone were not significantly different from the controls (Table 1). In the 1985 trials in commercial orchards, however, the Ridomil-treated trees grew no better than the control trees in any of the 18 test blocks. In two blocks (both with the same grower), Ridomil treated trees were actually smaller than control trees (Table 2). Possibly the positive response to the Ridomil-plus-Dowfume treatment in 1984 was caused by an interaction between the fumigant and the fungicide. Alternatively, the dry spring weather in 1985 may have suppressed Phytopthora and Pythium even in the absence of fungicides whereas the wet spring of 1984 would have favored root-rotting organisms.

Table 1.

Treatment and rate	McIntosh/M.26 total shoot growth in cm 1984	McIntosh/M.26 total shoot growth in cm 1985	McIntosh/M.26 1985 diam (cm)	Rome/MM.111 total shoot growth in cm 1984	Rome/MM.111 total shoot growth in cm 1985	Rome/MM.111 1985 diam (cm)
Control	162 a	597 a	2.1 b	159 a	901 a	2.5 a
Temik 15G 43 g /tree (1 oz/tree)	132 a	509 a	2.0 b	210 a	984 a	2.5 a
Dowfume MC-2 0.68 kg/tree (1.5 lb/tree)	150 a	518 a	2.1 b	169 a	911 a	2.6 a
Dowfume MC-2 0.68 kg (1.5 lb)/tree plus 15 min preplant Ridomil dip 2.5 ml/L(1 qt/100 gal)	206 a	690 a	2.5 a	283 a	1180 a	2.6 a

Treatment and rate	Combined McIntosh & Rome data total shoot growth in cm 1984	Combined McIntosh & Rome data total shoot growth in cm 1985	Combined McIntosh & Rome data 1985 diam (cm)
Control	161 b	749 a	2.3 b
Temik 15G 43 g /tree (1 oz/tree)	174 b	748 a	2.2 b
Dowfume MC-2 0.68 kg/tree (1.5 lb/tree)	160 b	687 a	2.3 b
Dowfume MC-2 0.68 kg (1.5 lb)/tree plus 15 min preplant Ridomil dip 2.5 ml/L(1 qt/100 gal)	244 a	935 a	2.6 a

Numbers within columns followed by the same letter do not differ significantly (DMRT, P=0.05).

Table 2.

Rootstock	Cultivar	Grower number	Total shoot growth (cm) control	Total shoot growth (cm) treated	F-values for comparison of treated vs. untreated trees[1]
MM.106	Marshall McIntosh	1	331	286	0.35
MM.106	McIntosh	1	113	108	0.78
MM.106	Cortland	1	335	367	0.53
MM.106	Macoun	1	126	127	0.95
MM.106	Jonamac	2	211	234	0.43
MM.106	Rome (nursery A)	2	245	207	0.19
MM.106	Rome (nursery B)	2	303	280	0.50
MM.106	Spartan	3	283	179	0.004 [2,3]
MM.111	Marshall McIntosh	4	191	181	0.58
MM.111	Marshall McIntosh	5	83	90	0.69
MM.111	Summerland McIntosh	6	182	190	0.82
MM.111	Empire	6	312	244	0.19
MM.111	Delicious	7	60	32	0.15
MM.111 with M.9 interstems	Marshall McIntosh	7	150	167	0.64
MM.111 with M.9 interstems	Marshall McIntosh	8	398	398	0.99
MM.111 with M.9 interstems	Empire	3	147	93	0.03[2]
M.7	Empire	1	472	486	0.74
M.26	Marshall McIntosh	2	228	199	0.12

[1]Differences between treated and untreated trees are not statistically significant (P = 0.05) unless the F-statistic ≤ 0.05.
[2]Treated trees were significantly (P = 0.05) smaller than control trees. [3]Data collected from only 7 pairs of trees.

NAME, SOURCE, AND COMPOSTITION OF PRODUCTS TESTED

(Composition is given only for those products not listed in the last issue of Fungicide and Nematicide Tests)

PRODUCT	SOURCE	COMPOSTITION
Baycor 50W	Mobay Chemical Co., Agricultural Chemical Div., PO Box 4913, Hawthorn Rd., Kansas City, MO 64120	Previously published in F&N Tests
Bayleton 50W	Mobay Chemical Co., Agricultural Chemical Div., PO Box 4913, Hawthorn Rd., Kansas City, MO 64120	Previously published in F&N Tests
Benlate 50W	DuPont de Nemours Co., 1007 Market St, Wilmington, DE 19898	Previously published in F&N Tests
BAS 454 06F 25EC	BASF Wyandotte Corp., 100 Cherry Hill Rd., PO Box 181, Parsippany, NJ 07054	Previously published in F&N Tests
Captan 50W	Stauffer Chemical Co., Agricultural Chemical Division, Westport, CT 06880	Previously published in F&N Tests
Dithane M-45 80W	Rohm and Haas Co., Independence Mall West, Philadelphia, PA, 19105	Previously published in F&N Tests
Dowfume MC-2	Dow Chemical USA, Agric. Prod. Dept., Box 1706, 2020 Dow Center Midland, MI 48640	98% methyl bromide & 2% chloropicrin
DPX H6573 40%L	DuPont de Nemours Co. 1007 Market St, Wilmington, DE 19898	Previously published in F&N Tests
Fungaflor 75SP	Janssen Pharmaceutica, 501 George St., New Brunswick, NJ 08903	Previously published in F&N Tests
Fungaflor 50EC	Janssen Pharmaceutica, 501 George St., New Brunswick, NJ 08903	Previously published in F&N Tests
Funginex 50W	Decco Tiltbelt, Pennwalt Corp., 1713 S. California Av. Monrovia, CA 91016	Triforine
Funginex 18.2%EC	FMC Corporation Agricultural Chemicals Div. 100 Niagra St. Middleport, NY, 14105	Previously published in F&N Tests

Manzate 200 80W	DuPont de Nemours Co. 1007 Market St., Wilmington, DE, 19898	Previously published in F&N Tests
Polyram 80W	FMC Corporation Agricultural Chemicals Div. 100 Niagra St. Middleport, NY, 14105	Previously published in F&N Tests
RH-3866 40W	Rohm and Haas Co., Independence Mall West, Philadelphia, PA 19105	Myclobutanil [α-butyl-α -(4-chlorophenyl)-1H-1,2,4-triazole-1-propanenitrile]
Ridomil 2E	Ciba-Geigy Corp., Agricultural Div., PO Box 11422, Greensboro, NC, 27409	Previously published in F & N Tests
RO 15-1297 500EC	Maag Agrochemicals, 340 Kingsland St., Nutley, NJ 07110	2',4'-Dichloro-2-(3-pyridyl)-acetopehenone O-methyloxime
Rovral 50W	Rhone Poulenc, Inc. PO Box 125, Black Horse Lane, Monmouth Junction, NJ 08852	Previously published in F&N Tests
Rubigan 1EC	ELANCO Products Co., PO Box 1750, Indianapolis, IN 46206	Previously published in F&N Tests
Temik 15G	Union Carbide Corporation, Agricultural Products Division, 7825 Baymeadow Way, Jacksonville, FL 32216	Previously published in F & N Tests
Topas 10W	Ciba-Geigy Corp. Agricultual Div,. PO Box 11422, Greensboro, NC 27409	Previously published in F&N Tests
Topas MZ 61 61W	Ciba-Geigy Corp. Agricultural Div. PO Box 11422, Greensboro, NC 27409	(1 lb equals 12 oz mancozeb plus 2.5 g Topaz 10W)
UBI A815 50W	Uniroyal Chemical Inc. 32 Spencer Rd., Naugatuk, CT 06880	Previously published in F&N Tests
UBI A815 30W	Uniroyal Chemical Inc. 32 Spencer Rd. Naugatuk, CT 06770	Previously published in F&N Tests