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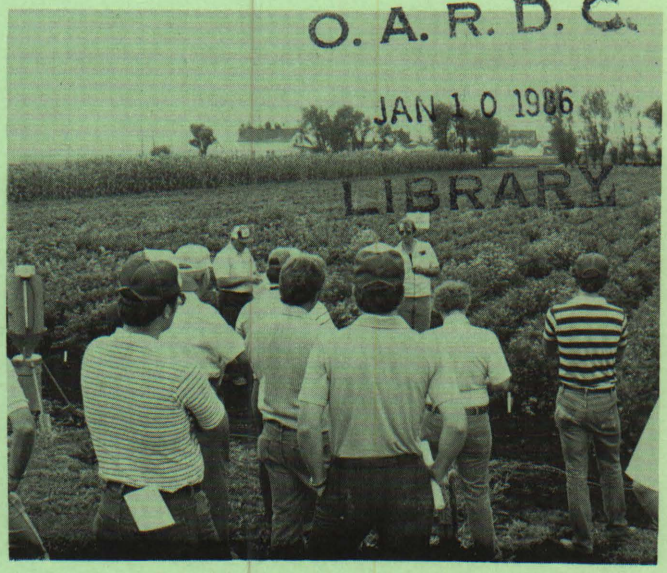
January 1986

VEGETABLE CROPS REPORT
VARIETY TRIALS AND CULTURAL RESEARCH TEST
MUCK CROPS BRANCH, 1985



The Ohio State University
Ohio Agricultural Research and Development Center
Wooster, Ohio

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ON THE COVER: Pictures taken at the 1984 Muck Crops Field Day. Photo provided by the Public Information Department, OARDC.

This report was prepared for distribution at the Celeryville Muck Crops School, January 16 - January 17, 1985

RAINFALL RECORD

O.A.R.D.C. Muck Crops Branch

Willard, Ohio

Date	April	May	June	July	Aug.	Sept.
1	.78					
2	.75	.80		.60		
3	.25	.20	.35	.25		
4						
5			.02			
6	.65			.10	.15	
7					.60	
8						
9	.08					
10				1.60		
11						
12			.70			
13			.30			
14					.25	
15		.50	.30	1.25	.38	
16		.55	.40		.25	
17		.55	.05			
18		.70	.75			
19						
20						
21		.40				
22						
23						
24			.02			.02
25					1.00	
26				.18	.10	.10
27					.01	
28		1.30				
29						
30					.75	
31				1.10	.20	
Month Total	2.51	5.00	2.89	5.08	3.69	.12
Average Normal Total	3.78	3.81	3.86	3.84	3.59	3.20

WILLARD, OHIO WEATHER DATA - 1985

	Average Air Temp.		Average Humidity		Ave[illegible]age 4 [illegible]inches	
	High	Low	High	Low	Bare	Soil
April	66	41	94	52	58	50
May	71	46	99	64	67	60
June	75	52	98	61	71	62
July	81	57	100	70	77	71
Aug.	78	56	98	56	77	70
Sept.	76	52	99	51	73	64

WILLARD, OHIO TEMPERATURE NORMALS

	April	May	June	July	Aug.	Sept.
Max.	60.5	70.9	80.0	83.2	81.7	75.8
Min.	37.5	47.0	56.1	59.8	81.7	51.9
Monthly Precipitation Totals	3.78	3.81	3.86	3.84	3.5	3.20

ONION VARIETY TRIAL 1985

Richard L. Hassell
Muck Crop Branch, Celeryville, Ohio

Forty eight cultivars or promising breeding lines of storage onions along with ten lines of red onions were compared in a replecated trial at the muck crops branch in the 1985 growing season. Cultural information and tabular data summaries are included in this report.

Cultural Information:

Eight hundred pounds of a 16-16-16 fertilizer was broadcast and disced in prior to planting. Seed was premeasured at the rate of four pounds per acre and sown with a cone planter in late April. Plot size consisted of three rows, eighteen feet long, spaced sixteen inches apart. The inside fifteen feet of the middle row were harvested for evaluation. Standard cultural practices were applied to this plot as needed. In July 34 units of nitrogen was broadcast and worked in. Onions were harvested in late September. They were allowed to dry, then graded and placed in bulk storage in November at the John F. Stambaugh Company.

Results:

Plant stands were excellent this year due to the good growing conditions. September was dry and warm which helped in field curing.

Spartan Banner 80 is still the leading overall variety in our trial with the variety Carmen being the leading red. The results of the storage trial of the 1984 trial are also included in this report.

Recommendations (Based on the last five years)

Early (seeded) Non-storage

1. Pronto S
2. Progress
3. Norstar (trial)

Main Season (seeded) Storage

1. Spartan Banner 80
2. Sweet Sandwich
3. Spartan Banner
4. Valiant (trial)
5. Keepsweet II (trial)

Red Onion (seeded one year)

1. Carmen (trial)

DRY ONION STORAGE RESULTS - MARCH 1, 1985

(Asgrow)

Variety	% Bad	Condition
XPH 3258	3	Excellent, very hard
XPH 3380	100	Soft and no skins
Sweet Sandwich	6	Excellent, very hard
Spartan Banner 80	3	Excellent, very hard
XPH 3374	5	Some soft, good
XPH 3367	4	Excellent, very hard
XPH 3376	10	Good shape, some soft

(ARCO)

Capable	4	Fair shape, skinned up
Caprum	0	Excellent, hard
Valiant	0	Excellent
DEXP 1317-1	8	Excellent shape

(Harris)

Super Sleeper	6	Fair, very soft
Spartan Banner	5	Good shape, some skinned
HXP 2610	100	Junk food
D5542	1	Excellent shape, very hard
D275162	0	Excellent, hard-rock

(Ferry Morse)

X231W2		
X231W3	17	Fair, soft skins
Copper Mine	5	Poor, skins off
Gold Mine	5	Fair, soft, loose skin

(University of Wisconsin)

(W419XW420) x 202B	1	Excellent, hard
W429A x 407B	0	Excellent, hard
(W202M76SYN) AXW407B	4	Excellent, hard
(BRBMW404)MSK/AXW407B	2	Excellent
(BRBMW404) MSK/AXW429B	2	Good, some soft

(Krummrey)

Kremy Yellow Globe	6	Excellent, hard darks

(Nickerson)

ACX9836W	2	Good, hard but skins
ACX8196W	0	Excellent
ACX796NR	4	Excellent, hard
ACX9834W	4	Excellent, hard

(Stokes)

Variety	% Bad	Condition
Tecumseh	9	Fair, some skins gone
Northern Oak	16	Fair, light skins

(Crookham)

XPHCRKN11	6	Excellent, very firm
XPHCRKW943	7	Fair, very soft
Autumn Pride	5	Excellent, hard
XPHCRKN13	7	Soft, no skins

(A & C)

Superior	3	Good shape, little soft
Keepsweet	6	Excellent, good color

(IPB)

ACX5105R	100	No good onions
ACX5105R	100	No good onions, sprouts

ONION VARIETY TRIAL 1985

Variety	Variety Source	Marketable/acre wt. lb. 50 lb/bag*	Marketable/acre No/ft/row	"B"(small)/acre wt. lb. 50 lb/acre	Culls &
Acx-8544242	Abbott & Cobb	1339	5.4	87	10
FMX 230 W 5	Ferry Morse	1305	7.7	208	0
Dexp 560-3	Arco	1250	6.6	393	8
Acx 8544271	Abbott & Cobb	1168	7.5	131	12
Spartan Banner 80	Crookham	1060	6.5	87	3
XPH 3246	Asgrow	1040	6.6	301	0
HXP 2613	Harris Moran	1010	5.9	111	8
Arco 752-3	Arco	979	7.2	172	0
4 PHDR-3	Ferry Morse	979	6.9	189	5
Spartan Banner 80	Asgrow	973	6.3	85	1
XPH 3230	Asgrow	952	6.3	72	5
HXP 2621	Harris Moran	948	5.6	20	8
S 5537P	Harris Moran	948	6.2	157	17
Acx 8544264	Abbott & Cobb	943	6.4	188	0
Norstar	Stokes	923	5.3	6	17
Valiant	Arco	919	4.7	90	10
DEXP 1317-1	Arco	912	5.4	61	3
Brahma	Arco	910	7.2	225	12
XPH 80 H 282	Crookham	908	4.2	33	21
Sweet Sandwich	Asgrow	902	6.4	140	4
Keepsweet 11	Abbott & Cobb	902	5.8	142	17
Spartan Banner 80	Arco	901	5.7	181	7
Arco 749-4	Arco	884	6.6	33	0
XPH 3272	Asgrow	868	5.8	61	0
Sweet Heart	Ferry Morse	869	4.4	26	15
HXP 2610	Harris Moran	858	4.6	74	18
Bullseye	Ferry Morse	848	5.3	65	19

* weight is figured after reducing total weight by twenty-five percent to account for shrinkage in storage.

ONION VARIETY TRIAL 1985

Variety	Variety Source	Marketable/acre Wt. lb. 50 lb/bag	Marketable/acre NO/ft/row	"B" (small)/acre Wt. lb. 50 lb/bag	Culls &
XPH 81N51	Crookham	840	5.0	6	8
Krummrey	Krummrey	850	6.8	244	2
Arco 751-3	Arco	860	5.5	22	1
HXP 2611	Harris Moran	851	6.1	48	12
Spartan Banner	Asgrow	832	6.0	155	10
Cuprum	Arco	824	4.3	162	9
Class Pak	Ferry Morse	819	4.3	79	7
Sweet Sandwich	Crookham	819	5.8	64	2
HXP 3636	Harris Moran	806	5.8	26	9
Sentinal	Harris Moran	776	6.0	77	4
Arco 778-3	Arco	760	6.1	264	0
Super Sleeper	Harris Moran	747	6.9	151	4
Tamarack	Stokes	714	5.7	131	0
Sensational	Abbot & Cobb	724	5.2	293	11
ACX 8544273	Abbott & Cobb	698	5.2	64	6
Northern Oak	Stokes	688	5.4	157	20
Capable	Arco	675	6.1	94	3
Capable	Arco	675	3.5	0	7
Spartan Banner	Harris Moran	655	4.9	153	0
Spartan Sleeper	Crookham	635	5.1	22	7
ACX 8544228	Abbott & Cobb	539	3.5	59	41

* weight is figured after reducing total weight by twenty-five percent to account for shrinkage in storage.

RED ONION VARIETY TRIAL 1985

Variety	Variety Source	Markatable/acre No. of bags 50 lb/bag*	No/ft/row	"B" (small)/acre 50 lb/bag	Culls %	Internal skin color 1=light 5=dark	Comments
Carmen	Stokes	876	6.4	61	13	5	could be sold for salad bars
4 PR-3	Ferry Morse	585	5.4	120	3	3	to small
Big Red	Abbott & Cobb	85	5.6	79	4	3	to small
XPH 82N106	Crookham	834	6.8	197	4	3	has possibilities
4PHDR-1	Ferry Morse	745	5.9	20	9	3	has possibilities
Ruby	Asgrow	824	5.9	113	11	2	no internal color
Lucifer	Ferry Morse	550	6.5	310	2	2	no internal color
Tango	Arco	707	4.7	31	7	2	no internal color
ACX 834451	Abbott & Cobb	825	5.2	13	13	1	no internal color
Benny Red	Harris Moran	419	3.5	0	42	1	poor yield no color

* weight is figured after reducing total weight by twenty-five percent to account for shrinkage in storage.

ONION VARIETY TRIAL

Variety	Overall Appear. 1=light 5=good	External Characteristics: Skin Color 1=light 5=dark	Scale Retention 1=light 5=good	Bulb Size 1-small 5=large	Uniformity: Shape 1=poor 5=good	Uniformity: Size 1=poor 5=good	Firmness 1=soft 5=firm	Leaf thickness 1=thin 5=thick
ACX 8544242	2.25	2.50	1.50	2.50	1.50	1.50	1.50	1.00
FMX 230 W 5	2.75	2.50	2.50	4.00	2.50	2.50	3.00	2.00
DEXP 560-3	2.50	2.00	2.00	2.50	2.00	2.00	4.00	2.00
ACX 8544271	2.00	2.00	1.50	1.50	1.50	2.00	2.00	2.00
Spartan Banner 80	4.00	3.00	4.25	4.00	2.50	3.00	3.00	1.50
XPH 3246	3.75	2.75	4.50	3.50	2.75	3.50	4.00	3.00
HXP 2613	4.00	3.00	4.00	3.50	3.00	4.00	5.00	3.00
Arco 752-3	4.00	3.00	4.15	3.00	3.00	3.00	4.00	3.00
4PHDR-3	3.25	3.00	3.50	2.50	3.00	3.50	3.50	1.00
Spartan Banner 80	4.00	3.00	3.50	3.00	3.00	4.00	4.00	3.00
XPH 3230	4.00	3.00	4.00	3.00	3.00	3.00	3.00	3.00
HXP 2621	3.00	4.50	4.00	3.00	4.00	3.00	2.00	2.00
D 5537P	3.75	3.00	4.00	2.75	3.50	4.00	3.00	3.00
ACX 85533264	3.25	2.50	2.50	3.50	3.00	2.00	4.50	1.00
Norstar	3.50	1.25	1.00	3.50	2.00	2.00	3.00	2.00
Valiant	4.00	2.50	3.00	4.50	4.00	4.00	4.00	4.00
DEXP 1317-1	2.75	3.25	3.50	3.25	3.50	2.50	3.00	3.00
Brahma	2.00	2.00	1.00	3.00	2.50	2.00	1.50	3.00
XPH 80 H 282	4.00	3.00	2.00	4.25	2.55	2.55	3.00	3.00
Sweet Swandwich	3.50	2.00	4.00	3.00	3.00	4.00	4.00	2.00
Keepsweet II	3.00	2.75	3.50	3.00	2.00	3.00	3.00	3.00
Spartan Banner 80	3.00	2.00	2.75	3.25	3.50	3.50	4.50	2.00
Arco 749-4	2.50	2.50	2.75	2.50	2.00	2.25	5.00	2.50
XPH 3272	4.50	2.50	3.75	3.25	3.50	3.00	4.00	2.50
Sweet Heart	3.50	3.25	3.50	3.25	3.50	3.50	3.50	3.00
HXP 2610	3.25	3.00	3.00	4.00	3.00	4.00	3.00	3.50
Bullseye	2.00	2.00	2.00	3.00	2.00	3.00	2.00	3.00
XPH 81N51	3.50	2.50	3.50	3.00	3.00	2.50	3.50	3.00
Krimmrey	2.50	4.00	4.00	2.00	4.00	4.00	3.50	3.00
Arco 751-3	2.75	2.75	3.00	2.25	3.00	3.00	3.00	3.00
HXP 2611	3.75	2.00	3.00	3.00	4.00	4.00	4.00	2.00
Spartan Banner 80	3.25	3.00	3.00	2.50	2.25	2.50	5.00	3.00

ONION VARIETY TRIAL

Variety	Overall Appear. 1=light 5=good	External Characteristics: Skin Color 1=light 5=dark	Scale Retention 1=light 5=good	Bulb Size 1-small 5=large	Uniformity: Shape 1=poor 5=good	Uniformity: Size 1=poor 5=good	Firmness 1=soft 5=firm	Leaf thickness 1=thin 5=thick
Cumprum	3.00	2.75	3.00	3.00	2.50	3.25	3.00	3.20
Class Pak	2.75	2.25	2.00	3.00	3.00	3.00	3.00	2.00
Sweet Sandwich	3.00	2.50	2.50	3.50	3.75	3.75	3.00	2.00
HXP 3636	3.75	3.50	3.50	2.75	3.50	3.50	5.00	2.00
Sentinel	3.50	3.00	3.00	2.50	3.00	3.00	4.00	3.75
Arco 778-3	3.00	3.50	3.25	3.00	3.25	3.25	3.00	2.50
Super Sleeper	3.75	3.00	2.50	3.25	3.25	3.25	5.00	3.00
Tamarack	3.00	2.75	3.00	3.00	2.75	3.50	3.50	4.00
Sensational	2.00	3.50	2.75	3.75	2.50	2.50	4.00	2.50
ACX 8544273	2.75	3.00	3.00	3.00	2.50	3.00	3.00	2.50
Northern Oak	3.50	2.00	3.00	2.50	3.25	2.50	3.50	2.00
Capable	3.25	3.00	4.00	1.50	3.50	4.00	4.00	2.50
ACX 8544233	2.50	3.50	2.00	5.00	1.50	2.75	3.50	3.00
Spartan Banner	3.75	2.00	2.00	3.00	4.00	3.50	4.00	3.00
Spartan Sleeper	3.75	3.50	3.75	3.75	3.00	3.00	3.00	3.00
ACX 8544228	2.00	2.50	2.00	2.50	2.50	2.00	2.25	1.50

CELERY VARIETY TRIAL 1985

Seeded March 5, 1985

Soiless Mix: Metro Mix 215

Tray size: Todd planter flat No. 080A

Transplanted at Wiers Farm May 15 (30" between rows 5" between plants 41,486 plants/acre)

Transplanted at research station May 17. Herbicide, insecticides and fungicides were applied following standard practices for celery growers. Eight varieties were planted in the Wiers Farm trial. Thirteen varieties were evaluated at the research station.

CELERY VARIETY TEST (Wiers Farm Inc.) 1985

Variety	Source	2 dozen	2½ dozen	3 dozen	4 dozen	Hearts
Florida 683	A&C	39%	25%	16%	12%	8%
Ventura	Ferry Morse	24%	19%	13%	17%	27%
Utah 50-70 R inp.	Harris Moran	19%	34%	19%	15%	13%
Deacon	Harris Moran	26%	29%	15%	18%	12%
Clean cut	Harris Moran	14%	27%	30%	22%	7%
2-14	A&C	14%	35%	36%	22%	15%
Bishop	Harris Moran	0%	27%	41%	19%	13%
Utah 52-75	Harris Moran	7%	43%	28%	13%	9%

"CELERY VARIETY TEST (Research Station) 1985"

Variety	Source	Wt. per stalk	Petiole length
F M 1219	Ferry Morse	3.21 lb	28.50 "
Clean Cut	Harris Moran	3.08 lb	27.40 "
CRY 004	Harris Moran	2.93 lb	27.05 "
F.M.1220	Ferry Morse	2.91 lb	25.20 "
Utah 52-70R imp.	Harris Moran	2.80 lb	29.80 "
Strain 2-14	Abbott & Cobb	2.74 lb	26.25 "
Tall Green Light	Harris Moran	2.68 lb	23.80 "
CRY 003	Harris Moran	2.67 lb	26.90 "
Deacon	Harris Moran	2.62 lb	25.10 "
Bishop	Harris Moran	2.59 lb	26.30 "
Ventura	Ferry Morse	2.55 lb	30.75 "
Florida 683	Abbott & Cobb	3.42 lb	27.05 "
Utah 52-75	Harris Moran	2.14 lb	24.00 "

"RESULTS"

Wiers Farm - Florida 683 is still the leading celery varieties in production fields of Ohio. If Florida 683 seed is not available I recommend Utah 52-70 R improved. Ventura continues to fall apart during the month of late July, Aug. and Sept. However it is an excellent variety for early spring transplants due to its tolerance to bolting.

Research Station - These results indicate that some possible new lines have potential in our area. These lines include FM 1219, CRY 004 & FM 1217. They will be futher evaluated and the Wiers Farm Trial in 1986. Line CRY 003 will be looked at again at the research station. The length of the petiole has some questions at this point.

Conclusion - It is important to stress the need for high quality seed. High

germinating seed is essential for both greenhouse production and field seed beds. Don't settle for a cheap product. It will not pay!

Quick pill celery seed was also evaluated at the research station. This is primed celery. One year evaluation shows a lot of promise. I was able to cut greenhouse growing time by one to two week (depending on time of year). Percent germination was over 96% along with uniform plant emergence. Because of the seed handling procedure, special care is needed in adapting it to your operation. If you have question feel free to contact the research station.

BROCCOLI VARIETY TRIAL 1985

Richard L. Hassell
Muck Crops Branch, Celeryville, Ohio

Twenty-one cultivars of promising breeding lines were evaluated in the spring and twenty-two lines in the fall.

Cultural Information:

Eight hundred pounds of 16-16-16 fertilizer was broadcast and disced in prior to planting at the research station and 1000 pounds of 17-17-17 applied in the same way at Wiers Farm Inc. Side-dressings of ammonium nitrate (100lb/acre) were made twice during the growing season. The second was made prior to head formation.

Transplants were grown in Todd planter flat #125. Soiless media was Metro-mix 215 provided W.R. Grace Company. Liquid fertilizer was applied weekly in the greenhouse (15-16-17). Greenhouse temperatures were maintained at 75°F - 65°F. Transplanting was accomplished with a standard bare root planter. Plants were six weeks old. First transplanting was done on April 17th and the second on July 18th. Plants were spaced six inches apart within rows and thirty two inches between rows. Spring harvest was in June and fall harvest in September.

Fall planting was on a heavy clay soil and spring planting on muck soil.

Results:

The spring planting was carried out in conjuction with a row cover experiment. All plants outside the covers were destroyed by frost. The fall planting was done on clay soil to avoid club root problems developing at the research station.

VARIETY RECOMMENDATION

1. Green Commet Early
2. Green Hornet - mid season
3. Premium Crop - late
4. Prominence - mid to late
5. Brovo - fall only
6. Pachman - late (trial)
7. Pacher - late (trial)
8. Emperior - late (trial)
9. XPH 5003 - early (trial, spring only)
10. Galaxy - (trial)

Broccoli Trial 1985

1. Kwik Green (Abbott&Cobb) - Mid season, large beeds, blue green head, head not round, short stem but heavy, 175 gram/head.

2. Green Valiant (Abbott&Cobb) - mid season small beeds, blue green head, uniform head formation, short stem, 193 grams/head.

3. Prominence (Abbott&Cobb) - early to mid season, small beeds, green head, long stem, roung head, very attractive, 200 gram/head.

4. Brovo (Stokes) - early season, blue green, large beeds, long stem and head is round but not uniform, very poor yields in spring but excellent in fall 200 gram/head.

5. Arco X 8002 (Arco) - early season, blue green head, medium to small beeds, long stem, head very round, looked good in both spring and fall, 162 grams/head.

6. Goliatah (Stakes) - mid season, blue green head, medium beeds, medium stem length, very large head and rough appearance,300 grams/head.

7. Packman (Peto seed) - early season, blue green head, small beeds, longstem, round and domed head shape, excellent appearance, 186 grams/head.

8. XPH 5003 (Asgrow) - very early season, blue green, round and domed head shape, excellant uniformity, high yields spring only, 207 grams/head.

9. Southern Comet (Abbott&Cobb) - early season, green head, medium to large beed, short stem, round head, 200 grams/head.

10. Green Comet (Harris) - early season, blue green, small to medium beeds, round head, very short stem, excellant yielder in both spring and fall also very uniform, 227 grams/head.

11. Green Hornet (Stokes) - early season, small to medium beeds, blue green head, long stem, uniform head and heavy yielder, 256 grams/head.

12. PSR 21684 (Peto seed) - mid season, large beeds, blue green head, domed head, uniform yielder and high yields , 210 grams/head.

13. Green Duke (Abbott&Cobb) - mid season, green head, small beeds, short stem with round head, 214 grams/head.

14. Paragin (Stokes) - late season, medium beeds, blue green head, round head, very long stem, 182 gram/head.

15. Arco X 8001 (Arco) - late season, blue green head, short stem, medium beed in head, poor yield, 300 grams/head.

16. Premium Crop (Harris) - late season, blue green head, large head with domed head, medium beeds, long stem, uniform harvest with high yields, 205 grams/head.

17. Arco X 8002 (Arco) - late season, blue green, short stem, uniform head, poor yielder, 400 grams/head

18. PSR 21784 (Petoseed) - late season, blue green head, small beeds, very long stem, round head, excellent yielder, 200 gram/head.

19. Emperior (Abbott&Cobb) - late season, blue green heas, small beeds, medium stem length, excellent yielder, 234 gram/head.

20. Galaxy (Asgrow) - early to mid season, blue green head, long stem, round domed head, high yielder, excellent in fall, 250 grams/head.

21. PSR 21584 (Petoseed) - late season, blue green head, small beeds, long stem, domed head, excellent yields in spring only, 200 gram/head.

22. SSX 7631 (Sieger) - mid season, blue green. small beeds, high yielder but head came apart, un uniform head shape, long stem, 200 grams/head.

23. SSX 2901 (Sieger) - mid season, medium to large beeds, blue green color, long stem, un-uniform head share, poor yielder, fall test only, 250 grams/head.

ROW COVER EVALUATION 1985

The crops covered in this section are as follows: muskmelon, summer squash, celery transplants, celery seed beds and broccoli transplants. The research was conducted on muck soils (85% organic matter) and on sandy clay loam soils. Muck soils were located at the research station of the Ohio State University and Buurma Farms Inc. in Willard, Ohio. The sandy clay loam soils at the Wiers Farm Inc. also of Willard, Ohio.

The 1985 growing season was ineffective in testing against chilling injury. As indicated in figures 1 thru 4 temperatures for late April and early May were above normal. However it was extremely effective in testing against the effects of extreme high temperatures on early growth of vegetable plants.

All covers were applied by hand or by the use of a Holland mulch layer. This layer was modified to lay the spunbonded materials by Buurma Farms Inc.

The products used in this test were: 1) Remay (DuPont product) 2) Kimerely Farms cover (Kimberely-Clark product) 3) plastic cover (grower provided).

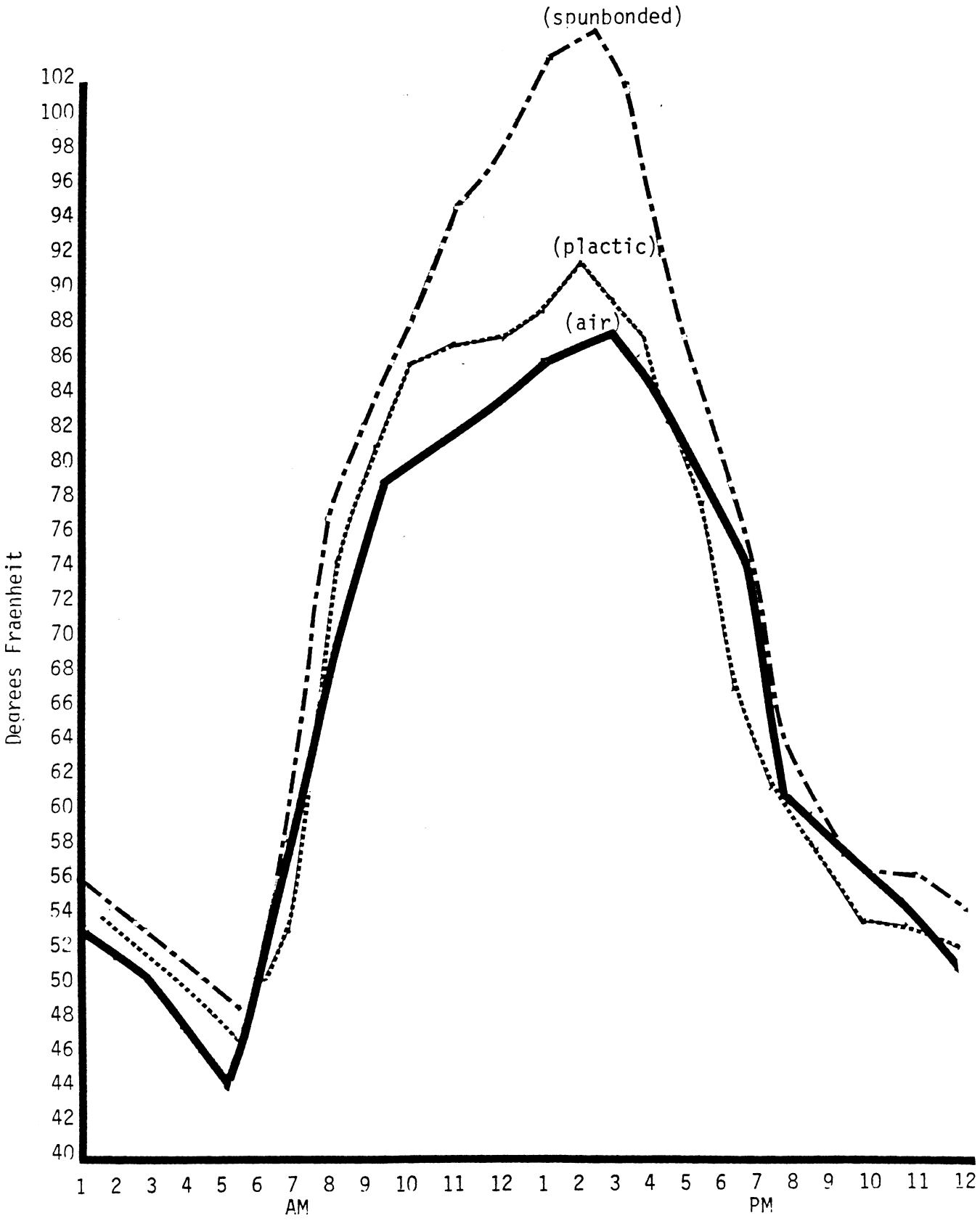

Fig. 1. Effect of row cover on air temperature (mean of 7 consecutive days). April 18 (beginning date) thru April 24 (ending date).

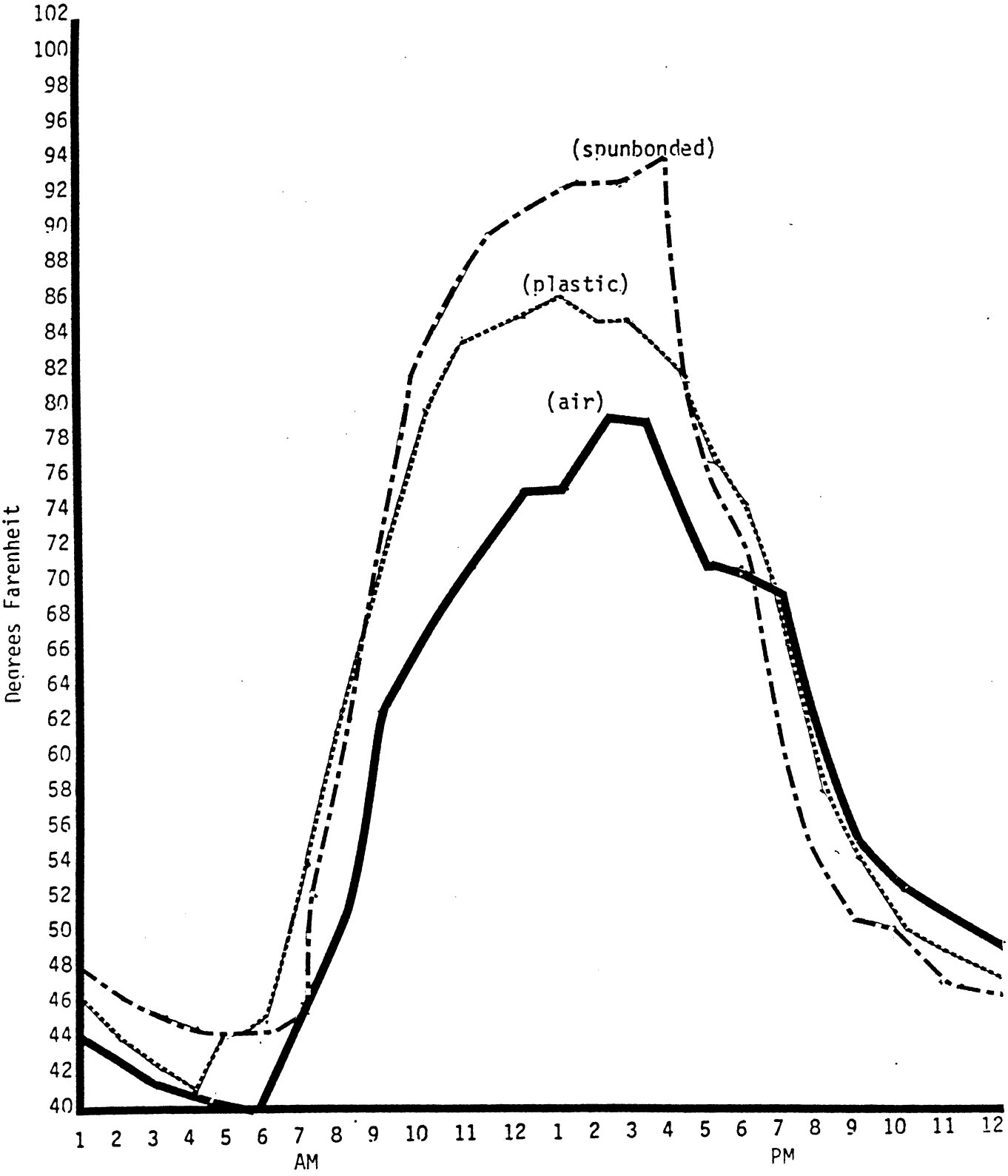

Fig. 2. Effect of row covers on air temperature (mean of 7 consecutive days). April 25 (beginning date) thru May 1 (ending date).

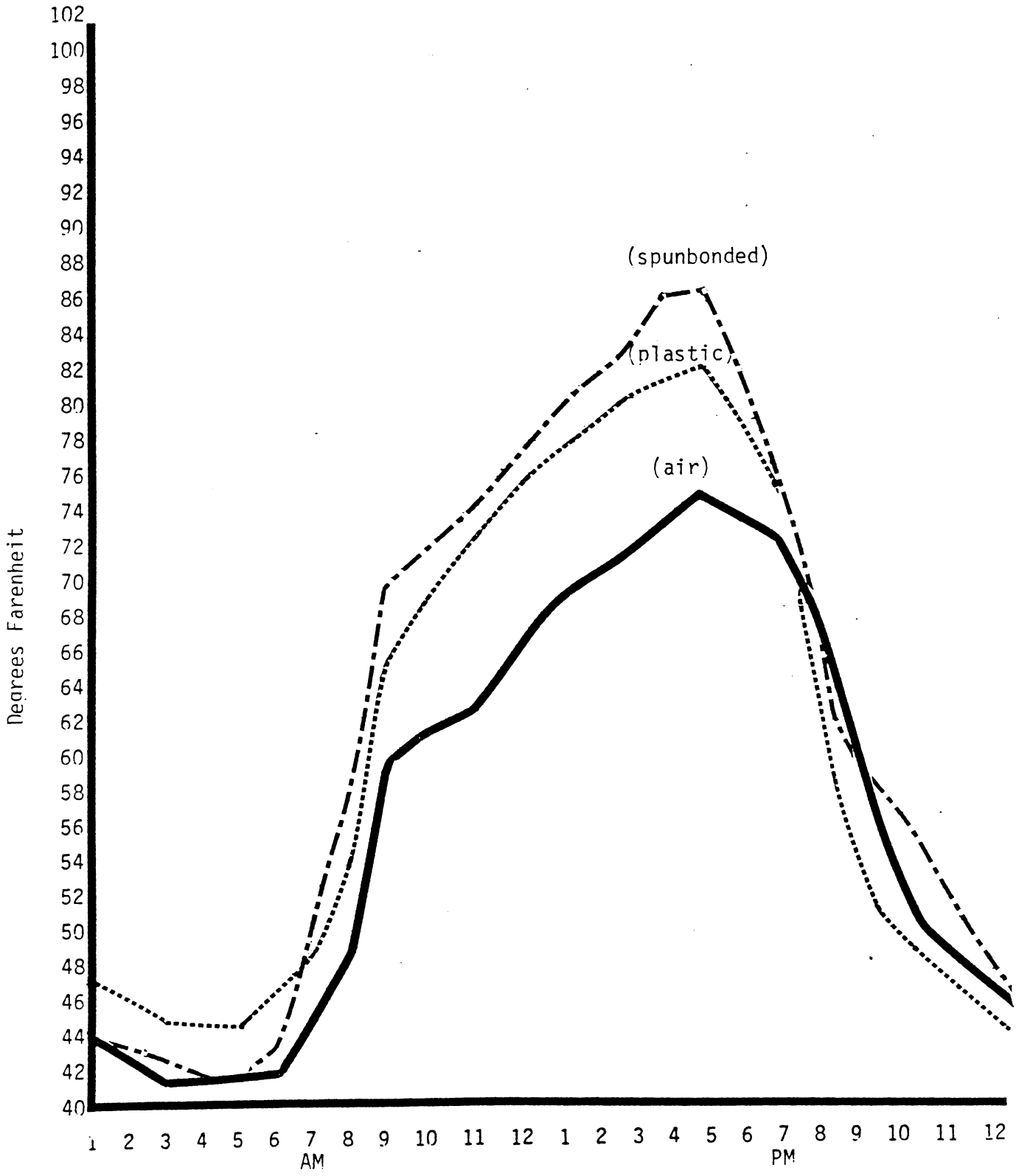

Fig. 3. Effect of row covers on air temperature (mean of 7 consecutive days). May 2 (beginning date) thru May 8 (ending date).

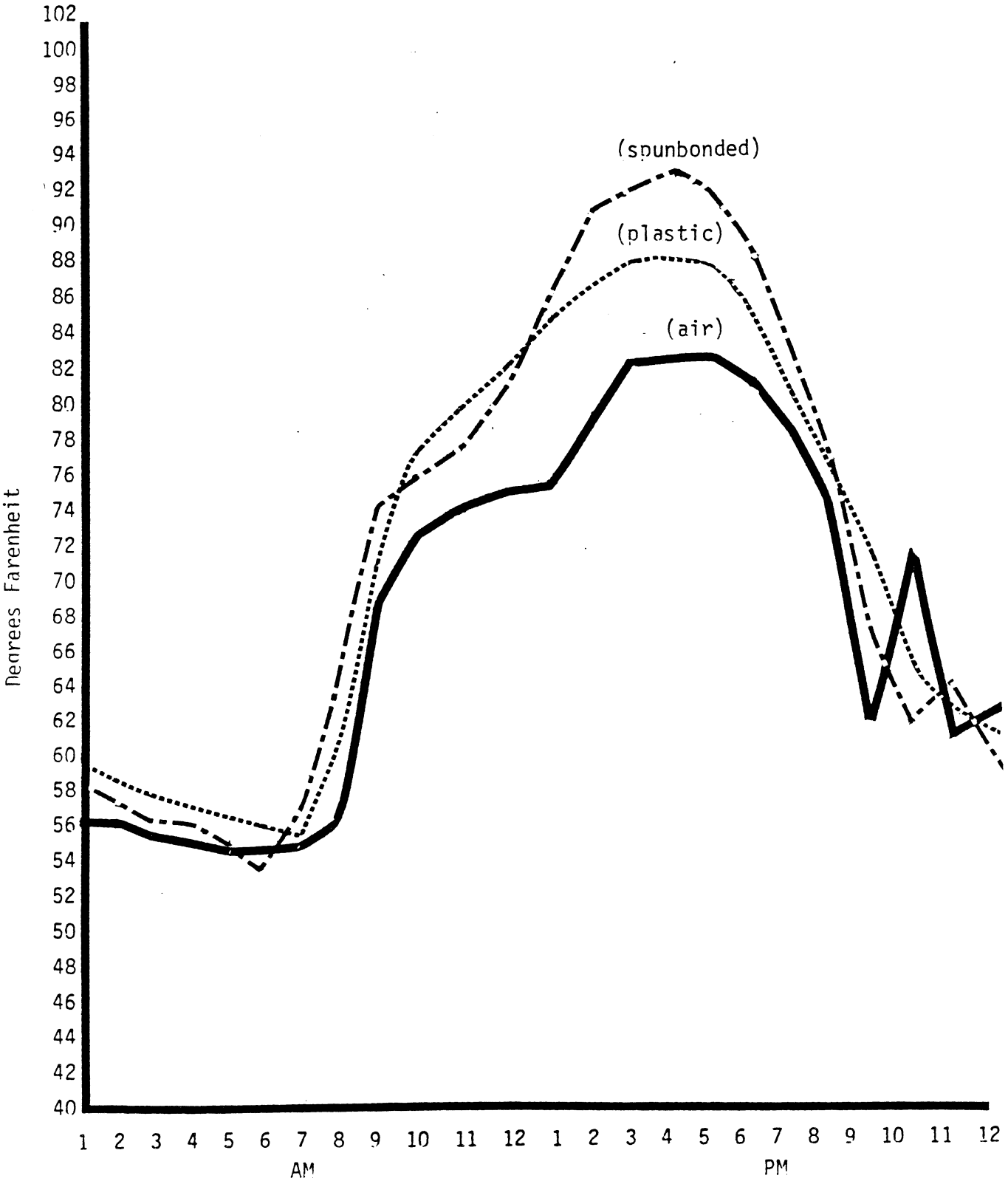

Fig. 4. Effect of row covers on air temperature (mean of 7 consecutive days). May 9 (beginning date) thru May 16 (ending date).

Muskmelons were grown on sandy clay loam soils. This soil hadn't been farmed in vegetables for quite some time. This fertility levels were down. A thousand pounds of triple fourteen fertilizer was broadcast and disked in prior to planting.

All transplants were grown in the greenhouse three weeks prior to transplanting in two inch Todd planter flats. All transplanting was done by hand through preious layed black mulch.

All harvesting was done by hand with each treatment recorded in the field. Prices indicated in this report reflect the current market prices at the time of harvest.

1) Muskmelons - seeded muskmelons April 9th in greenhouse

Variety: Gold Star

2) Planted in field May 7th, 8th
Black plastic was layed April 26 & 27

3) Covered melons with various row covers May 9 & 10
Products used were: Remay, Kimberely Farms, plastic row cover with hoops

4) Covers were removed June 3 - saw first female flowers under covers

5) Harvest began - July 29th. Ended August 30

Harvest Information:

1) July 29th thru August 14

tunnels with wire hoops = 5,735 melons/acre
Kimberely Farms = 5,614 melons/acre

Remay = 5,412 melons /acre

No row cover = 4,539 melons /acre

Large melons (12 melon/crate) Medum melon (16-18 /crate)
Price per crate = $7.00 large $4.00 medium

tunnels = $1505 large + $742 melon = $2,247
Kimberely Farms = $1474 large + $726 melon = $2,200
Remay = $1421 large + $700 melon = $2,121
----- = $1191 large + $587 melon =$1778

2) August 16th thru August 30th

tunnels	= 6,035
Kimberely Farms	= 5,630
Remay	= 6,098
-----	= 5,549

Large melons (12 melons/crate) Medium melons (16-18 melons/crate)
Price per crate = $6.00 $3.00 medium

tunnels	grossed $648/acre over no cover
Kimberely Farms	grossed $451/acre over no cover
Remay	grossed $545/acre over no cover

Conclusion - These results indicate for the year 1985 the use of row covers in muskmelon was not economically worth while.

This statement is based on figures from Dr. John Gerber, University of Illinois. His figures indicate that at least $575 per acre is expended in cost of the material and labor of application and removal of materials. Since muskmelons are considered very sensitive to high temperatures this years growing conditions make it hard to evaluate the row covers.

Plant damage occured under the covers due to high winds. The wiping of the spunbonded materials caused damage to the plant leaves. However this damage didn't seem to be reflected in the final figures.

The early market prices in Ohio are a question. By the time Ohio melons are ready we have Indiana melons on roadside stands for over two weeks thus the market price is already set.

SUMMER SQUASH

Two types of spunbonded row covers were evaluated for potential earliness on Wiers Farm Inc.

Cultural Information

Seeds were sown April 1, 1985. Variety chosen for this experiment was Zucchini Elite. Row covers were applied April 19th with an adapted mulch layer. Covers were removed May 28th at this time the zucchini squash plants have started to flower. Plot size consisted of one row 1300 feet long per cover replicated four times. Harvesting was all done by hand beginning June 18th with harvests every other day.

Results

1) Applying the row covers continues to cause us problems. We haven't seen a piece of equipment that is satisfactory.

2) Temperatures under the row covers exceeded 100°F on many occasions. The Kimberely Clark product is much warmer than the Remay with temperature differences as much as 15°F.

3) At the time covers were removed the plants under the Kimberely Clark were significantly larger than the other two treatments (table 1). There was no other room under the covers for additional plant growth and the plants showed no damage from high temperatures. However, under the Remay covers there was plenty of room for growth.

4) Results on final harvest, table 2, indicate that for summer squash the Kimberely Clark product produces significantly earlier yields and total overall yields than the Remay and the no row cover treatment. These results are only one year's results and should be observed in that manner.

TABLE 1. Main effect of row covers upon the total amount of plant dry matter at the time covers were removed. Plant weight is a means of sixteen observations.

Row cover	Wt (grams)/ plant
No cover	22.40
Remay cover	26.05
Kimberely Farms cover	30.20
LSD . 05	2.64

TABLE 2. Main effect of row cover on the number of half bushels hampers harvested per plot. Each number is means of four observations.

Row covers	Total number harvested/row (June 18 through June 29)	Total number harvested/row (July 1 through July 27)
No cover	51.00	100.67
Remay	53.75	108.75
Kimberely Farms cover	80.25	140.13
LSD .05	12.23	11.66

CELERY TRANSPLANTS

Eight week-old celety plants were transplanted in the field April 12th. Covers were removed May 16th. This study is in conjunction with a celery bolting study. Two forms of row covers were used: Kinberely Farms and white plastic. These row covers were 30" in width and placed over each row of celery. Variety used was Utah 52-70R improved.

Results:

High temperatures occurred in April and early May which caused 110^{0}F or higher reading under the row covers.

1) Plants under the plastic were burned severely. Also a lot of succulent growth occurred. Plants under the spunbonded cover had no burning with very healthy dark green plants. High temperatures had little damaging effect on plant growth using the spunbonded covers. (table 2)

2) Root systems were shallow with 90% of the roots in the top 2" of the soil surface on plants under plastic. Plants under the spunbonded covers were much fuller and six to eight inches deep with 50% or better of the root system four inches of below.

3) Light measurement under the covers indicate a large reduction in the amount of usable light that is allowed to penetrate. (Fig. 1). These results have been observed for the past two years. The muck soil has a tendency to blow in the spring which maybe the reason for the reduction with the spunboned material.

4) Final yields taken in July (table 1) indicate an average of one pound weight per stalk higher with the spunbonded cover over plastic and one and a half pounds difference over no covers at all.

TABLE 1 Main effect on wt. per stalk of celety for variety Utah 52,70R improved. Stalk weight is a mean of six observations.

Row cover	Wt. (lb)/ plant
Row covers	2.32
Plastic	2.81
Spunbonded	3.48
LSD .05	.46

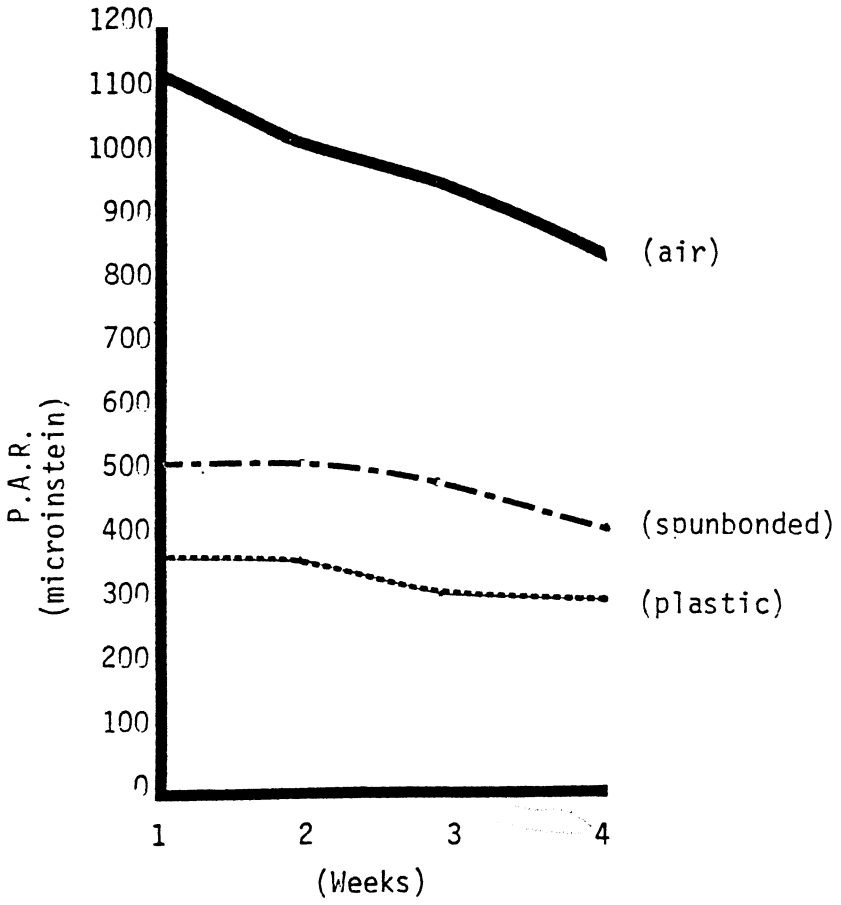

Fig. 1 Effect of row covers on usable photosynthetic light (mean of 7 consecutive days). April 19 (beginning date) through May 16 (ending date).

TABLE 2. Main effect of row covers on the total amount of plant dry matter at the time covers were removed.

Row covers	Wt. (grams)/ two plants
No cover	12.50
Plastic cover	22.35
Kimberely Farms cover	26.35
LSD .05	2.91

Conclusion:

High temperatures cause no determental effect to celery transplants when using the Kimberely Farms spunbonded material. However when using the white filmed plastic, plants experienced severe damage which resulted in no advantages at harvest time. The high winds in early spring caused little plant damage other than covering up the spunbonded materials which may present a problem. Further research is needed.

CELERY SEED BEDS

Celery seed beds are generally started towards the end of April. These beds are then ready to pull for field transplants the first part of July. Currently all seed beds are sown with pregerminated seed and gell seed in the field.

In 1985 row covers were applied to grower sown beds the day after seeding, April 24. This was the second year for this study. Row covers used in the research were Remay and Kimberely Farms.

Row covers were removed May 16th due to unusually high outside temperatures. Temperatures were recorded over 110°F under the covers. This was very destructive to the celery seedling. Results are listed below.(see table 1)

1. Kimberely Farms cover - too hot under covers. Death and severe stunting of young celery seedlings.
2. Remay - no injury to seedlings. However there was no advantage over the beds with no row covers.

This was an unusually hot spring. Results form one year earlier show significant advantages using row covers. However we learned that if a sunny day occurs with temperatures in the 80°F range, damage is sure to occur with celery seedlings under row covers.

TABLE 1. Main effect of row covers upon the total amount of plant dry matter at the time covers were removed.

Row cover	Wt. (grams)/ 10 plants
No cover	.53
Remey cover	.20
Kimberely Farms cover	.48
LSD .05	.13

SPRING BROCCOLI

Broccoli seeded in greenhouse March 8th. Tranplanted in the field April 17th.

Due to bad weather covers were not applied until April 22. Kimberely Farms product was the only product used.

Row covers were removed May 10th.

Results:

Broccoli is considered a cool season crop. It has been known to withstand temperatures below freezing. That is temperatures in the mid 20°F range. However if temperatures go from warm to just below freezing rather suddenly, plant death can occur. This happened in the spring of 1985. Temperatures went from the mid 70's to 28°F and back to the mid seventies.

Plants outside the covers froze back to growing point. Those under the spunbonded cover were unharmed. A week later this type temperature occurred again. Those plants still alive outside the cover were killed by the frost. Those still under the covers were again unharmed. Thus no heads were ever harvested off the non=covered rows.

Temperatures under the row cover were recorded in excess of 100°F and reached temperatures in the 120°F range at times. However there was no sign of any harm to the plants.

The row cover test was incorporated into the variety test where fourteen different varieties were both under the cover and outside the covers. All variety under the covers preformed normally with no buttoning.

Broccoli was harvested between June 6th and June 24th.

Although this is only one years data the results were very impressive. The springs in Ohio are unpredictable thus causing problems with broccoli. Once broccoli plants reaches the adult stage (usually the sixth leaf stage). They are sensitive to temperature. If cool temperatures occur (below 60°F) for a short period of time (seven to ten days) buttoning can accur. This condition cannot be known until sometime in the growing season which makes the economical outlook too risky.

Broccoli preforms best under cool conditions which usually occur in the spring and fall. This is important mainly in the formation of the head. The results from this study indicate that extream high temperatures failed to cause damage to the plants. By using the spunbonded row cover the future of spring broccoli in Ohio shows promise.

SEED QUALITY and SEED ENHANCEMENTS ON LETTUCE PRODUCTION 1985

Direct seeding of lettuce, endive and escrole have been an on going problem for many years. Depending on the time of year and amount of soil moisture, getting a plant stand and uniform emergance is a constant battle. Through the help of three major seed companies: Royal Sluis, Asgrow and Harris-Moran, we evaluated seed treatments to overcome this problem. These treatments involve a process called priming. Raw seed is brought to a point in its germination process without radical emergance by laboratory means. The purpose of this is to overcome any dormancy (heat & light) problems and eliminate slow germinating seeds.

The evaluation of these treatments were carried out at the research station, Buurma Farms Inc., Wiers Rarm Inc., Holthouse Farm, Miller Farms and K.W. Zellers & Sons Inc. Our objective was to achieve high germination rates, high vigor, no dormancy, free from pathogens and seed spacing.

The majority of all seeds used were provided by Harris-Moran Seed Company. All seed treatments used were performed by Royal Sluis Inc. with the exception of one lettuce variety (Waldmanns Green) treated and provided by Asgrow seed company.

Results: Seed Quality

It was established early that high germination seed is essential. Also seed lots must be very vigorous to be able to germinate under a wide range of germinating conditions. These results were obtained by the use of a thermogradient table preformed by Royal Sluis Inc. Growers need to insist on these two conditions. There is no since in starting out with poor seed quality to begin with. This is a job for the seed companies to improve on.

Seed Priming:

Besides looking at uniform emergance we evaluated dormancy problems due to light and heat. We used a Stan Hay seeder placing each pellet two and one-half to three inches apart. Those seeds which were treated out preformed those that were not, especially those that were light sensitive. Plant emergance was extremely uniform with strong healthy sedlings. Seed that was treated also emerged one day earlier that untreated seed. This is exciting because we were able to cut down on seed rates per acre which inturn eliminates doubles also seed thinning costs would be cut down in the same manner.

Seed heat dormancy was not a problem this season due to unusual cool soils. However this is a major problem with endive and escarole which in greenhouse studies has been overcome with seed priming.

At harvest time which is the final test those seed which were primed still out preformed those that were not. Yields per acre were up due to uniformity and percent doubles were way down. As you entered the field at harvest time there was no sign of plants that were only half grown or less as was the case with the untreated rows.

Conclusion:

Growers need to pay more attention to what they are buying. Insist on high quality seed even if it costs more. Seed priming works. It is essential to maintain excellent yeilds per acre all season long despite varying weather conditions. Seed priming on lettuce's is now commercially available and growers should take advantage of this process. Before buying primed seed check with the research station to make sure it has been tested and that it works.

COMMON MEASUREMENTS

Number of Feet of Row Per Acre at Various Row Spacings

Distance between Rows in inches	Feet of Row per acre
12	43,560
15	34,848
18	29,040
20	26,136
21	24,891
24	21,780
30	17,424
36	14,520
40	13,068
42	12,445
48	10,890
60	8,712
72	7,260
84	6,223
96	5,445

Length

1 centimeter = 10 millimeters
1 centimeter = 0.4 inch (0.394)
1 inch = 25.4 millimeters or 2.54 centimeters
1 foot = 30.48 centimeters
1 yard = 91.44 centimeters
1 yard = 0.914 meters
1 meter = 100 centimeters
1 kilometer = 1000 meters
1 kilometer = 0.621 mile

Area

1 square meter = 10.8 square feet (10.76)
1 square meter = 1.2 square yards (1.196)
1 square meter = 0.0001 hectare
1 hectare = 10000 square meters
1 hectare = 2.47 acres
1 hectare = 395 square rods (395.4)
1 acre = 0.405 hectare (0.4047)
1 square mile = 2.59 square kilometers
1 square kilometer = 0.39 square mile (0.386)

Weight

1 gram = 1000 milligrams
1 ounce = 28 grams (28.35)
1 pound = 454 grams (453.6)
1 kilogram = 1000 grams
1 kilogram = 2.2 pounds (2.205)
1 metric ton = 2205 pounds (2204.6)
1 metric ton = 1.1 short tons (1.102)
1 metric ton = 0.98 long ton (0.9842)
1 short ton = 2000 pounds
1 long ton = 2240 pounds

Volume (liquid)

1 teaspoon = 5 milliliters (approx.)
1 tablespoon = 15 milliliters (approx.)
1 ounce = 30 milliliters (approx.)
1 pint or 2 cups = 473 milliliters (473.2)
1 quart = 946 milliliters (946.3)
1 gallon = 3785 milliliters (3785.3)
1 liter = 1000 milliliters
1 pint = 0.47 liter (0.473)
1 quart = 0.95 liter (0.946)
1 gallon = 3.8 liters (3.785)

FERTILIZER GUIDELINES FOR VEGETABLE CROPS GROWN ON MUCK SOILS IN OHIO

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	Available Phosphorus**			Available Potassium**			Nitrogen*
	Below 75	75-120	Over 120	Below 200	200-300	Over 300	Amount to apply
	Amount to Apply			Amount to Apply			
Crop	P_2O_5 lbs/A	P_2O_5 lbs/A	P_2O_5 lbs/A	K_2O lbs/A	K_2O lbs/A	K_2O lbs/A	N lbs/A
Beets, Red	150-200	100-150	50-100	175-225	125-175	75-125	25- 60
Carrots	150-175	125-150	75-125	250-300	200-250	150-200	75-100
Celery	250-300	200-250	150-200	375-425	350-375	300-350	50-125
Celery Cabbage	150-200	100-150	75-100	175-225	150-175	100-150	34- 45
Dill	175-200	150-175	125-150	175-200	150-175	125-150	40- 90
Endive	125-175	100-125	75-100	125-175	100-125	75-100	25- 90
Escarole	125-175	100-125	75-100	125-175	100-125	75-100	25- 90
Greens	125-150	100-125	75-100	150-175	125-150	100-125	40- 90
Lettuce	125-175	100-125	75-100	125-175	100-125	75-100	25- 90
Onions (Dry)	150-200	100-150	50-100	200-250	125-200	100-125	25- 90
Green Onions	100-150	75-100	50- 75	100-150	75-100	50- 75	25- 40
Parsley	125-175	100-125	75-100	125-175	100-125	75-100	25- 90
Potatoes	150-175	125-175	75-125	225-275	175-225	125-175	75-125
Radishes	125-150	100-125	75-100	100-150	75-100	50- 75	25- 75
Spinach	150-175	125-150	100-125	125-150	100-125	75-100	50-125
Sweet Corn	125-175	100-125	75-100	100-150	75-100	40- 75	50-140

*Amount of nitrogen to apply will vary with crop, time of year, soil temperature, water applied, type of muck, residue being incorporated into soil and related factors.

**REAL Lab Soil Test Values

December 1985

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