OREGON VEGETABLE Digest

Volume XVIII | Oregon State University, October 1969 | Number 4

Weed Control Tested for Onions on Peat Soil

In two years of trials of onions grown on peat soil, none of the new herbicides or herbicide combinations have shown significantly better weed control than the current commercial practice of repeated applications of CIPC and CDAA.

In 1968, many of the combinations included propachlor or CP50144. These herbicides appeared among the best treatments in trials on mineral soils, but they caused excessive crop damage in these trials on peat soils. In 1969, crop injury was minimal with propachlor in one location, but CP50144 applications again resulted in moderate to severe injury.

The treatment list and results of the 1969 trials are summarized in the table on page 2. Two locations on similar peat soils were used, with planting dates on March 29 and April 17; results are averaged in the table. Post-emergence applications were made on May 15 and May 20, at which time the onions had two to three leaves. Weed species commonly present were pigweed, smartweed, purslane, and some grass.

Weed control with PPG 116, which is a combination of CIPC and an enzyme inhibitor, was not adequate. This combination of materials is known to give longer residual control than CIPC alone but should be tried in combination with CDAA to obtain a broader spectrum of control. Of the various post-emergence materials tried, chloroxuron and probably RP 17623 have the property of longer residual control which may be helpful with this long-season crop. Increased weed control activity is obtained with chloroxuron if additional surfactant is used but selectivity, which is apparently dependent on the waxy leaf surface of the onion, is lost.

Further evaluation of combinations of these herbicides is needed to determine if a more satisfactory weed control program for onions grown on peat soils can be developed.

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Cucumber Spacing Studied For Mechanical Harvest

The best combination of plant spacing and variety produced 11 tons per acre of pickling cucumbers in trials at Pacific Farms near Brooks this year.

Seven gyneceous varieties, each in four spacing arrangements, were grown in a randomized block design with four replications. Plots were overseeded and thinned to the correct stand. Herbicide (8 pounds Prefar) and fertilizer (120 pounds nitrogen, 200 pounds phosphate, 60 pounds potash, and 40 pounds sulfur) were broadcast separately and incorporated before seeding.

Yields from once-over destructive harvest by hand are shown in Table 1.

Four varieties were outstanding: Frontier, Pickle Pak, Alice, and Spartan Advance. Of these, Frontier had the most desirable length/diameter ratio.

The 10 by 10-inch spacing resulted in highest yields of all varieties except Spartan Advance, which tended to produce higher yields at the highest plant density (6 plants per square foot).

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Onion Weed Control . . .

Table 1. Herbicide treatments and results of onion weed control trials, 1969

Chemical	Application	Timing	Average weed control rating[1] Time 1	Average weed control rating[1] Time 2	Average crop response rating
	Lbs. ai/A				
CIPC + CDAA	4 + 4	Pre-emergence	10	8	0
Propachlor	6	Pre-emergence	9	6	2
CP50144	4	Pre-emergence	9	7	5
PPG 116	2	Pre-emergence	5	5	1
PPG 116	4	Pre-emergence	6	5	1
PPG 116	3	Pre-emergence	....	5	0
PPG 116	3	Post-emergence			
CIPC + CDAA	4 + 4	Pre-emergence	....	9	1
RP 2929	3	Post-emergence			
CIPC + CDAA	4 + 4	Pre-emergence	....	9	1
Chloroxuron	3	Post-emergence			
CIPC + CDAA	3 + 3	Pre-emergence	....	9	1
CIPC + CDAA	3 + 3	Post-emergence			
Chloroxuron	3	Post-emergence	....	5	1
Chloroxuron	4	Post-emergence	....	5	1
Chloroxuron + X-77	2 + 0.5%	Post-emergence	....	8	7
Chloroxuron + X-77	3 + 0.5%	Post-emergence	....	8	7
Nitrofen	4	Post-emergence	....	7	3
RP 17623	2	Post-emergence	....	9	3
Untreated check	.....	.....	1	0	0

[1] Weed control and crop ratings: 0 = no effect, 10 = complete kill.
Time 1: Weed control rating just prior to post-emergence applications.
Time 2: Weed control rating two weeks after post-emergence applications.

—Garvin Crabtree
Department of Horticulture

Vegetable Notes . . .

As a result of studying the influence of population density and competition on phenotype stability of tomato plants, George and Peirce suggested that high density testing and selection in a breeding program be delayed beyond the initial one or two segregating generations. In this manner the confounding factor of competition might be greatly reduced since the material would be more homozygous. (Jour. Amer. Soc. Hort. Sci., *94*:65-67, 1969).

Sims and Gledhill in California found that the new chemical Ethrel (2-chloro-ethane phosphonic acid) affected sex expression and growth development in pickling cucumbers. Total femaleness of flowers induced by applications of Ethrel resulted in smaller plant size, higher plant populations, and earlier maturity. (Calif. Agric., *23*(2):4-6, Feb. 1969).

Oregon Vegetable Digest is published four times a year by the Agricultural Experiment Station, Oregon State University, Corvallis, G. Burton Wood, Director. Address correspondence to the author concerned or to the Department of Horticulture.

Preliminary Cucumber Trials Highlight Evaluation Problems

An extensive replicated cucumber trial was conducted on the Calvin Krahmer farm in Washington County. The purposes were to observe the plant and fruit characteristics under field conditions and the effects of different harvest methods on yields and grades.

The sources of seed and varieties used in the trial were: F-M—Green Beauty, Pickle Pak, H-2395; Harris—Ranger, Crusader, SMR 58, Frontier, Explorer, Pickmore; Asgrow — Pioneer; Castle — Castlemech; and Michigan State University—Spartan Advance.

Plantings were made May 21 and harvest began on July 15. All cultural practices were the same as those in the adjoining commercial field. Spacing was 36 x 6 inches.

Three approaches to harvest were tried: (1) multiple—every 5 to 7 days; (2) combination—once over by hand followed by destructive harvest; and (3) simulated machine—single once-over destructive harvest.

Samples of each variety were selected, placed in cotton mesh sacks, and all brined together with single commercial lots by three processing companies so the quality of the final products could be compared. The data, therefore, are not complete. However, some general observations are worth noting.

Preliminary data show that gross yields of 25 tons per acre were obtained from multiple harvests, 12 tons per acre from a combination harvest, and 6.5 tons per acre from a simulated machine harvest.

When to harvest by machine is a difficult decision even for experienced growers. In one case, an unavoidable delay of only three days resulted in too high a percentage of oversize fruits. While some varieties "signal" when they are ready for harvest by showing some yellow at the blossom end of the larger fruits, the same variety may not respond in this way if shaded; other varieties, such as the white-spined ones, do not respond in this way at all.

Three varieties that produced heavily were considered objectionable by one processor because they were white rather than black-spined. The range of angular leaf spot tolerance or symptom expression was striking.

From this extensive preliminary test, only seven varieties will be retained in the more intensive studies planned for 1970. A final report on the 1969 project will be prepared after the processed pickles are evaluated.

—Robert L. Smith
Extension Agent, Hillsboro

Cucumber Spacing . . . (Continued from page 1)

Table 1. Effects of plant spacing and variety on cucumber yields

Varieties	Spacing			
	5" x 5"	10" x 10"	20" x 5"	40" x 10"
	T/A	*T/A*	*T/A*	*T/A*
Frontier	6.5	8.9	5.5	3.8
Pickle Pak	6.1	8.0	7.4	5.9
Spartan Progress	3.0	2.8	2.6	3.2
Alice	6.7	8.3	7.5	6.0
Green Beauty	2.8	5.5	4.8	4.3
Spartan Advance	11.0	10.3	7.8	5.6
SMR 18	4.8	6.0	4.5	3.2

Spacing did not influence the shape (length/diameter ratio) of the cucumbers. The higher densities tended to retard somewhat the rate of growth of the fruits, resulting in higher grades.

The influence of plant spacing on the grade and value of pickling cucumbers is summarized in Table 2.

Each variety was harvested when the largest cucumbers first began to turn yellow at the blossom end and when the farmer decided the optimum time had arrived to get the highest yield and grade. Variations in time of harvest of each variety introduced the greatest error. It has been shown, however, that yields of more than 8 tons per acre of high grade pickles are possible from a single harvest, using a square spacing arrangement and not more than 100 square inches per plant.

Table 2. Effect of spacing on grade and dollar value per acre

Variety		Spacing			
		5" x 5"	10" x 10"	20" x 5"	40" x 10"
Frontier	$/ton	79	74	80	80
	$/acre	516	672	441	303
Pickle Pak	$/ton	86	67	66	58
	$/acre	527	535	490	345
Spartan Progress	$/ton	99	108	93	88
	$/acre	299	302	242	281
Alice	$/ton	97	68	68	75
	$/acre	647	563	509	453
Green Beauty	$/ton	90	68	68	61
	$/acre	252	375	325	264
Spartan Advance	$/ton	74	61	65	65
	$/acre	810	630	508	363
SMR 18	$/ton	75	65	76	78
	$/acre	360	390	343	251

—James R. Hay
Extension Agent, Salem

Nitrogen Sources Affect Table Beets

Percentages of table beet roots with B (boron) deficiency or canker were lower at a rate of 200 pounds nitrogen per acre than when only 50 pounds of N per acre was applied. No marked differences were found in percentages of 2 to 3 inch roots showing B deficiency when ammonium nitrate, ammonium sulfate, urea, calcium nitrate, and potassium nitrate sources were compared at a total rate of 200 pounds nitrogen per acre. There was a trend for highest percentages of 3 to 4 inch roots to have B deficiency when calcium nitrate and ammonium sulfate were used. No apparent differences in yield were obtained.

In this preliminary test during 1969 at the OSU Vegetable Research Farm, a rate of 50 pounds N, 150 pounds P_2O_5, 50 pounds K_2O per acre as 8-24-8 fertilizer was applied broadcast and disked in before planting Detroit Dark Red (Morse strain) table beets on May 9. Additional N from several sources was sidedressed at a rate of 50 pounds nitrogen per acre on each of three successive dates—June 13, July 1, and July 23. On these dates development of beets was as follows: roots enlarging, roots up to about 1½ inch in diameter, and largest roots about 3 inches in diameter. Harvest was on August 12 and roots were graded into two sizes: 2 to 3 inches and 3 to 4 inches in diameter. About 65 roots of the 2 to 3 inch size were sliced from each of the five replications and observed for the incidence of B deficiency, while about 20 roots of the 3 to 4 inch size were observed from each plot.

Yields ranged from 17.6 to 20.9 tons per acre, with 56 to 62% of roots in the 2 to 3 inch size range (Table 1). Weights were not taken on roots smaller than 2 inches or larger than 4 inches in diameter in this test.

At the rate of 50 pounds nitrogen per acre, percentages of roots with B deficiency were 12% for the 2 to 3 inch size and 32% for the 3 to 4 inch size. Plants receiving an additional 150 pounds nitrogen per acre from various sources during the season produced about 5 and 18% of roots 2 to 3 and 3 to 4 inches, respectively, with B deficiency ((Table 1). Highest percentages of roots with B deficiency in the 3 to 4 inch size were produced from additions of calcium nitrate and ammonium sulfate, but this trend did not occur in the 2 to 3 inch size. A higher percentage of 3 to 4 inch roots had B deficiency than did 2 to 3 inch roots.

Additional work is needed comparing effects of various sources of nitrogen on occurrence of B deficiency in table beets. The effects of calcium, potassium, and sulfur as related to B nutrition and the occurrence of B deficiency need further investigation. These results agree with earlier work in which it was found that the highest percentages of roots showing B deficiency were found at lower N rates of 30 to 50 pounds per acre. (See *Oregon Vegetable Digest*, Vol. 14, No. 4, Oct. 1965). Soil applications of B fertilizer have reduced the occurrence of B deficiency and combinations of soil and foliar applications of B, or in some cases, foliar applications alone have virtually eliminated the occurrence of B deficiency in table beets.

—H. J. MACK
Department of Horticulture

Table 1. Effects of nitrogen rates and sources on yields and boron deficiency of table beets

Nitrogen rate and source	Yield			Roots with boron deficiency	
	2-3″ size	3-4″ size	Total	2-3″ size	3-4″ size
Lbs/A	*T/A*	*T/A*	*T/A*	*%*	*%*
50 (as 8-24-8)	11.0	6.6	17.6	12	32
200 (ammonium nitrate)	10.8	8.5	19.3	4	15
200 (ammonium sulfate)	9.9	7.0	16.9	6	22
200 (urea)	11.3	6.3	17.6	4	16
200 (calcium nitrate)	11.6	9.3	20.9	4	25
200 (potassium nitrate)	12.5	8.4	20.9	6	13