Chemicals on Weeds in Onions

selective herbicides tested for economical control of common broad-leaved weeds and for effects on commercial onion crop

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Trials conducted in commercial onion fields in San Bernardino County indicate that weed competition can be reduced materially by the use of selective herbicides.

Severe weed competition early in the growth of onion plants reduces yields and—because hand weeding is a major cost in producing an onion crop—heavy weed populations tend to reduce returns to the grower.

Field tests conducted in 1957, on both direct seeded and on transplant onions, involved the use of two commonly used herbicides, potassium cyanate and dinitro selective.

The potassium cyanate was applied at rates of 6, 12, 18 and 24 pounds per acre in 50 gallons of water. The best weed control with no damage to the onions was obtained at the 18-pound rate, although this is somewhat higher than the usual application.

A single rate of six quarts of dinitro selective in 60 gallons of water per acre gave good weed control, but there was some burning of the onion foliage.

A further test was conducted in 1958 to determine the effectiveness of some of the newer herbicides not heretofore used commercially in the area. This test was made near Alta Loma, on a field of transplanted Flat Italian Red onions. The onions were transplanted on February 9 and on the next day treatments were applied: neburon at 2 and 4 pounds per acre; simazin at 3 and 6 pounds per acre; CDAA at 4 and 8 pounds per acre; CIPC at 2, 4, and 6 pounds per acre; and CDEC at 3, 6, and 9 pounds per acre.

All materials were applied over a 1′ band on single row beds at the rate of 300 gallons per acre. Each treatment was applied to three replicates consisting of two rows 25′ long. There was a light breeze blowing at the time of application and air temperature was 70°F. No weeds were showing at the time.

Within a few hours after treatment, light rains fell and continued intermittently for six weeks. A total of 25″ of rain fell on the plots.

Weed counts were made on March 19. All weeds encountered were broad leaved species.

Complete control of lamb's-quarters and mustard—the two most prevalent weed species—was obtained with neburon and simazin. The CIPC plots showed weed counts were significantly higher than neburon and simazin, but lower than CDAA, CDEC or the untreated check plot. The CDAA and CDEC plots did not differ significantly from each other, but had significantly lower counts than the check. In the case of puncture vine, the CIPC plots did not differ significantly from the CDAA and CDEC plots, but all three had a much lower count than the check plots. The number of filaree plants was too small and variable to bring out any significant differences but all treatments had populations well below those in the checks. Within each material there were no significant differences found among rates, either for individual species or total weeds.

Weed Counts on Test Plots in Onion Field March 19, 1958 (Total of three replicates)

Treatment lbs/acre		Lamb's quarters	Mustard	Puncture vine	Filaree	Total*
Simazin	3	0	0	0	0	0
Simazin	6	0	0	0	0	0
Neburon	2	0	0	0	0	0
Neburon	4	0	0	0	1	2
Mean/plot		0	0	0	0.1	0.2
CIPC	2	8	3	54	1	66
CIPC	4	3	4	58	0	65
CIPC	6	0	2	25	0	28
Mean/plot		1.2	1.0	15.2	0.1	17.7
CDAA	4	44	63	43	4	154
CDAA	8	29	44	33	1	110
Mean/plot		12.2	17.8	12.7	0.8	44.0
CDEC	3	40	72	20	3	141
CDEC	6	58	40	22	2	130
CDEC	9	46	32	11	1	93
Mean/plot		16.0	16.0	5.9	0.7	40.4
Check		265	631	245	30	1171
Mean/plot		88.3	210.3	81.7	10.0	390.3

* Total includes some miscellaneous weeds.

None of the plots showed any evidence of damage to the onions with the exception of those receiving simazin. Plants in these plots appeared to be in good condition for several weeks after the material was applied. Then, as additional rain fell on the plots, damage began to appear and became increasingly severe as the season progressed until all of the plants died before reaching maturity.

Records of the number and the weight of bulbs were taken for each plot at harvest time. Stands were so variable throughout the test area that no significant differences among total yields could be demonstrated.

However, the average yield over all treatments—excluding simazin—was significantly higher than the check at the 5% level. No significant differences were found among treatments nor among rates within treatments. The increase in bulb size probably can be attributed to reduced weed competition during the early stage of growth.

Yield of Onion Bulbs Harvested July 9, 1958 (Total of three replicates)

Treatment lbs/acre		Bulbs No.	Weight lbs.	Weight per bulb
Simazin	3	0	0	
Simazin	6	0	0	
Neburon	2	277	137.5	.50
Neburon	4	309	153.0	.50
CIPC	2	277	118.0	.43
CIPC	4	265	118.5	.45
CIPC	6	315	124.0	.39
CDAA	4	294	122.0	.41
CDAA	8	336	152.5	.45
CDEC	3	293	118.5	.40
CDEC	6	358	150.5	.42
CDEC	9	296	139.5	.47
Check		334	123.0	.37

Further tests are needed, but the results of the trials in 1957 and 1958 indicate that neburon, CIPC, CDAA, and CDEC show promise as materials that could help the grower of onions control weeds, reduce costs, and increase yields.

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other times a summer oil emulsion is better. However, oil can be used safely only on trees that have not suffered from lack of moisture at any time during the growing season.

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