

Kerb/Lettuce Variety Trial, 1989/1990

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Introduction

A test was established to screen lettuce varieties for sensitivity to Kerb. Two plantings were made with 12 varieties planted September 27, 1989, and 18 varieties on November 14, 1989. The test was conducted in Block E 2 and E 3 at the Yuma Valley Agricultural Center.

Methods and Materials

Each lettuce variety was planted in double rows on a single bed 100 feet long using coated seed and a stanley planter. Application of the treatments was made by Jim Klauzer, representative for Rohm and Haas, following planting. Included were 2, 3 and 4 pounds of active ingredient per acre of Kerb 50-W, as well as an untreated control. Treatments were replicated 3 times in a randomized complete block design. Plots were double rows on a single bed eight feet long. A CO₂ backpack sprayer and 4 nozzle boom with 8002 fan-type stainless steel nozzles were used for applying the material at 30 psi and 20 gallons of water per acre. When application was made on September 27, the air temperature was 91°F, soil temperature at 2 inches was 84°F, relative humidity was 28%, wind 6-9 mph from the southeast, with full sun and dry soil conditions. On November 14 the air and soil temperatures were at 80°F, the relative humidity was 48%, wind calm, partly cloudy skies and dry soil.

Soil at the project site is a silty clay with 3.6% sand, 43.6% silt and 52.8% clay, the Ph is 8.1, soluble salts 0.98 mmhos/cm, sodium 328 ppm, organic matter 1.5%, phosphorus 19 ppm as determined by Bray II, potassium 500 ppm, magnesium 802 ppm, calcium 5121 ppm.

Following planting and Kerb application, solid set sprinklers were run for 24 hours before switching to furrow irrigation until germination occurred. An adequate stand was achieved in all plots, which were not thinned to a stand until preharvest evaluations were complete. Harvest data were collected January 26, 1990 for the 12 varieties planted September 27, 1989. Six representative heads (3 from each row) were harvested from the center 5 feet of each plot and weighed. Stand counts for the 18 varieties planted November 14, 1989, were made on November 27, 1989, followed by evaluations of stunting and yellowing on December 6-7, 1989 and December 15, 1989. Weed control was not evaluated since efficiency was not an objective of this study.

Results and Discussion

Harvest data from the September 27, 1989 planting is provided in Table 1. There were no statistically significant differences between treatments for the 12 lettuce varieties evaluated, even at the highest rate of 4#ai/acre.

Stand counts for the November 14, 1989 planting are shown in Table 2. There was no statistically significant reduction in germination due to higher herbicide rates. A comparison of stand counts for the untreated plots and the highest Kerb rate reveals a fairly large, although not significant, difference due to a low count in one replication of RC74 at 4#ai/acre.

Plots were evaluated for percent injury as observed by yellowing of the leaves. Results of the evaluation at the two leaf stage shown in Table 3 indicate damage to some varieties at the highest rate of 4#ai/acre. Varieties affected were La Jolla, Dark Green Boston, Early Giant, Acacia, Winterset and 1716A. No varieties were adversely affected at the lower rates. Table 4 provides results of the second evaluation for yellowing nine days later. Additional varieties showing significant yellowing at the highest rate were Climax, Domingos 43 and Merit 109. One variety, 1716A, was also affected at the 3#ai/acre rate, while no varieties showed damage within the label rates.

Stunting was evaluated to determine possible reduction in vegetative growth due to Kerb. Data from the first evaluation shown in Table 5 indicate a statistically significant stunting at the 4#ai rate with Dark Green Boston, Acacia, Viva II, 1716A and El Toro. The other rates were not significantly different from the untreated. When the plots were evaluated a second time, the results in Table 6 show only La Jolla and Dark Green Boston being affected, and only at the highest rate.

At the label rate of 2#ai/acre, no statistically significant effect was seen in any of the varieties for any of the parameters evaluated. In only two instances was there an adverse effect at 3# ai/acre; these were stand count and yellowing for variety 1716A. It was not until two times the label rate of 4#ai/acre that there was any significant impact on the lettuce varieties evaluated. When both the September 27 and November 14 plantings are considered, it appears that early season stunting and chlorosis may not necessarily reduce yield or delay harvest.

Table 1. Average weight (pounds) of six representative heads harvested from the center five feet of each plot of the September 27, 1989 planting.

| Material | #ai/A | La Jolla | 1716 A | Merit | Diplomat | Excell | Empire | Winterset | Desert Queen | Autumn Gold | Acacia | Viva II | Merit 88 |
|-----------|-------|----------|--------|-------|----------|--------|--------|-----------|--------------|-------------|--------|---------|----------|
| Kerb 50-W | 2.0 | 6.1 a* | 5.6 a | 6.1 a | 4.8 a | 5.3 a | 6.6 a | 7.6 a | 5.8 a | 6.0 a | 6.7 a | 4.7 a | 6.4 a |
| Kerb 50-W | 3.0 | 6.1 a | 6.1 a | 5.9 a | 5.4 a | 5.5 a | 5.7 a | 7.3 a | 5.8 a | 6.1 a | 5.7 a | 5.2 a | 6.6 a |
| Kerb 50-W | 4.0 | 5.8 a | 5.4 a | 6.1 a | 4.6 a | 5.4 a | 6.3 a | 7.5 a | 5.0 a | 5.8 a | 6.2 a | 4.9 a | 6.3 a |
| Untreated | 0 | 6.6 a | 5.9 a | 6.7 a | 5.3 a | 5.8 a | 6.2 a | 7.8 a | 5.4 a | 6.0 a | 5.8 a | 5.0 a | 6.8 a |

*Treatments followed by the same letter are not statistically different from one another at the 5 percent level using Duncan's Multiple Range Test.

Table 2. Average stand count for the center five feet of double row bed for each variety in the November 14, 1989 planting.

| Treatment | #ai/A | La Jolla | Dark Green | Boston | Early Giant | Acacia | Van Crisp | Viva II | Winterset | Climax | RC74 | 1716 A | Domingos 43 | Mor 109 | Merit 109 | Diplomat | Empire | Snow Bird | E1 Toro | Autumn Gold |
|-----------|-------|----------|------------|--------|-------------|--------|-----------|---------|-----------|--------|------|--------|-------------|---------|-----------|----------|--------|-----------|---------|-------------|
| Kerb 50-W | 2.0 | 52 a* | 54 a | 54 a | 55 a | 55 a | 54 a | 55 a | 53 a | 53 a | 54 a | 51 a | 54 a | 52 a | 52 a | 54 a | 54 a | 53 a | 52 a | 51 a |
| Kerb 50-W | 3.0 | 56 a | 53 a | 54 a | 54 a | 53 a | 53 a | 54 a | 52 a | 52 a | 53 a | 55 b | 55 a | 51 a | 53 a | 55 a | 57 a | 56 a | 53 a | 50 a |
| Kerb 50-W | 4.0 | 54 a | 54 a | 53 a | 56 a | 53 a | 54 a | 56 a | 49 a | 43 a | 43 a | 52 a | 53 a | 55 a | 53 a | 53 a | 56 a | 56 a | 52 a | 53 a |
| Untreated | 0 | 53 a | 54 a | 55 a | 57 a | 54 a | 53 a | 57 a | 55 a | 52 a | 50 a | 52 a | 53 a | 54 a | 52 a | 55 a | 55 a | 54 a | 53 a | 52 a |

*Treatments followed by the same letter are not statistically different from one another at the 5 percent level using Duncan's Multiple Range Test.

Table 3. Average percent yellowing of lettuce at the two leaf stage of the November 14, 1989 planting evaluated December 6, 1989.

| Treatment | #ai/A | La Jolla | Dark Green | Boston | Early Giant | Acacia | Van Crisp | Viva II | Winterset | Climax | RC74 | 1716 A | Domingos 43 | Mor 109 | Merit 109 | Diplomat | Empire | Snow Bird | EI Toro | Autumn Gold | |
|-----------|-------|----------|------------|--------|-------------|--------|-----------|---------|-----------|--------|------|--------|-------------|---------|-----------|----------|--------|-----------|---------|-------------|-----|
| Kerb 50-W | 2.0 | 0 a* | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a |
| Kerb 50-W | 3.0 | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 7 a | 0 a | 0 a | 0 a | 7 a | 0 a | 0 a | 0 a | 0 a | 0 a |
| Kerb 50-W | 4.0 | 13 b | 20 b | 13 b | 20 b | 7 a | 7 a | 13 b | 7 a | 7 a | 20 b | 7 a | 7 a | 7 a | 0 a | 7 a | 7 a | 0 a | 7 a | 7 a | 7 a |
| Untreated | 0 | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a |

*Treatments followed by the same letter are not statistically different from one another at the 5 percent level using Duncan's Multiple Range Test.

Table 4. Average percent yellowing of lettuce varieties of the November 14, 1989 planting evaluated December 15, 1989.

| Treatment | #ai/A | La Jolla | Dark Green | Boston | Early Giant | Acacia | Van Crisp | Viva II | Winterset | Climax | RC74 | 1716 A | Domingos 43 | Mor 109 | Merit 109 | Diplomat | Empire | Snow Bird | EI Toro | Autumn Gold | |
|-----------|-------|----------|------------|--------|-------------|--------|-----------|---------|-----------|--------|------|--------|-------------|---------|-----------|----------|--------|-----------|---------|-------------|-----|
| Kerb 50-W | 2.0 | 7 ab* | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 7 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a |
| Kerb 50-W | 3.0 | 13 ab | 0 a | 0 a | 7 a | 7 a | 0 a | 0 a | 0 a | 0 a | 0 a | 13 b | 0 a | 7 a | 0 a | 7 a | 7 a | 7 a | 0 a | 7 a | 0 a |
| Kerb 50-W | 4.0 | 20 b | 20 b | 20 b | 20 b | 7 a | 7 a | 13 a | 20 b | 13 b | 0 a | 20 b | 13 b | 7 a | 20 b | 13 a | 13 a | 13 a | 13 a | 13 a | 7 a |
| Untreated | 0 | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a |

*Treatments followed by the same letter are not statistically different from one another at the 5 percent level using Duncan's Multiple Range Test.

Table 5. Average percent stunting of growth of lettuce at two leaf stage of the November 14, 1989 planting evaluated December 7, 1989.

| Treatment | #ai/A | La Jolla | Dark Green Boston | Early Giant | Acacia | Van Crisp | Viva II | Winterset | Climax | RC74 | 1716 A | Domingos 43 | Mor 109 | Merit 109 | Diplomat | Empire | Snow Bird | E1 Toro | Autumn Gold |
|-----------|-------|----------|-------------------|-------------|--------|-----------|---------|-----------|--------|------|--------|-------------|---------|-----------|----------|--------|-----------|---------|-------------|
| Kerb 50-W | 2.0 | 0 a* | 7 a | 0 a | 0 a | 7 a | 0 a | 0 a | 0 a | 7 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 7 a | 7 b | 0 a |
| Kerb 50-W | 3.0 | 7 a | 0 a | 0 a | 0 a | 0 a | 7 a | 0 a | 0 a | 7 a | 0 a | 0 a | 0 a | 0 a | 0 a | 7 a | 7 a | 7 b | 0 a |
| Kerb 50-W | 4.0 | 13 a | 20 b | 7 a | 13 b | 7 a | 20 b | 7 a | 0 a | 7 a | 13 b | 0 a | 0 a | 0 a | 7 a | 7 a | 13 a | 20 b | 7 a |
| Untreated | 0 | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 7 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a |

*Treatments followed by the same letter are not statistically different from one another at the 5 percent level using Duncan's Multiple Range Test.

Table 6. Average percent stunting of growth of lettuce varieties of the November 14, 1989 planting evaluated December 15, 1989.

| Treatment | #ai/A | La Jolla | Dark Green Boston | Early Giant | Acacia | Van Crisp | Viva II | Winterset | Climax | RC74 | 1716 A | Domingos 43 | Mor 109 | Merit 109 | Diplomat | Empire | Snow Bird | E1 Toro | Autumn Gold |
|-----------|-------|----------|-------------------|-------------|--------|-----------|---------|-----------|--------|------|--------|-------------|---------|-----------|----------|--------|-----------|---------|-------------|
| Kerb 50-W | 2.0 | 0 a* | 7 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 7 a | 0 a | 0 a | 0 a | 0 a | 0 a | 7 a | 7 a | 7 a | 0 a |
| Kerb 50-W | 3.0 | 7 a | 0 a | 0 a | 0 a | 7 a | 7 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 7 a | 0 a | 0 a | 0 a |
| Kerb 50-W | 4.0 | 20 b | 20 b | 7 a | 7 a | 7 a | 7 a | 0 a | 7 a | 7 a | 7 a | 7 a | 7 a | 7 a | 7 a | 0 a | 0 a | 7 a | 7 a |
| Untreated | 0 | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a | 0 a |

*Treatments followed by the same letter are not statistically different from one another at the 5 percent level using Duncan's Multiple Range Test.