HERBICIDE CARRYOVER TO RUSSET BURBANK POTATOES

by
Rick Boydston, Bob Thornton, and Max Hammond

Six herbicides were applied to winter wheat at 1/9, 1/3, 1, and 2X labeled rates in 1991 to determine their potential to persist and injure potatoes. The soil type was a silt loam with a pH of 6.5. The 1X labeled rate of each herbicide is shown in Table 1. Russet Burbank potatoes were planted in 1992 following the 1991 wheat crop. Herbicide carryover injury to potatoes was evaluated on June 8, July 1, and August 14, 1992. Potato tubers were harvested, graded, and specific gravity and yield determined.

Only Assert (2X), Pursuit (1X and 2X), and Stinger (1X and 2X) persisted long enough to significantly injure potato foliage. Assert (2X) injury was only apparent at the June 8 evaluation and potatoes were chlorotic with a yellowish cast to the foliage. Pursuit (1X and 2X) injury on potatoes persisted well into July and potato foliage was stunted, chlorotic, and in severe cases had lance shaped and slightly cupped leaves. Stinger (1X and 2X) injury was present from June through August, and new growth on the foliage was epinastic, leaves malformed and cupped, and had a "fiddle-neck" appearance similar to injury caused by picloram (Tordon).

Finesse and Glean at the 2X rates caused only minor visual injury early in the growing season. Finesse and Glean did not affect the yield of U.S. #1, U.S. #2, and culls or the size distribution of U.S. #1 tubers. No effect of Finesse and Glean were observed in pea bioassays on the treated soil collected at the time of potato planting in 1992. The lack of effect of Glean and Finesse on potatoes in this trial may be due to the relatively mild winter and low pH of the soil, which would favor a faster breakdown of these herbicides. Previous studies have indicated these two herbicides may persist for several years and injure susceptible crops.

Although minor Assert injury was observed at the 2X rate in early June, Assert did not affect the yield of U.S. #1, U.S. #2, and culls or the size distribution of U.S. #1's. Oat bioassays of treated soil collected at the time of potato planting were not able to detect any Assert present.

Pursuit at 1X and 2X labeled rates persisted and injured potatoes and resulted in significantly less U.S. #1's and more U.S. #2's. Pursuit significantly increased the amount of tubers under 4 oz., malformed tubers, and knobby tubers. The most severely injured tubers had numerous growth cracks that developed soon after tuber set. Sorghum bioassays on soil collected at the time of potato planting indicated significant levels of Pursuit persisted at the 1X and 2X labeled rates. Pursuit is unlikely to be labeled in areas where diverse crop rotations would limit its use.

This Presentation is part of the Proceedings of the 1993 Washington State Potato Conference & Trade Fair.

Although Stinger at the 1X rate significantly injured potato foliage, there was very little effect on the tubers. Stinger at 1X did not affect the weight of U.S. #1 and U.S. #2 tubers or the weight of culls, but slightly decreased the amount of U.S. #1 tubers in the 10-14 oz. category. Stinger at the 2X rate decreased the amount of U.S. #1 tubers in all size categories over 4 oz. and increased the amount of U.S. #2 tubers under 4 oz. There was also a slight, but nonsignificant, increase in malformed tubers. Stinger at the 2X rates also lowered tuber specific gravity. Sunflower bioassays on soil collected at the time of potato planting were able to detect Stinger at levels that could cause potato foliar injury.

Banvel did not persist long enough to cause injury to potatoes. No significant visual injury symptoms were evident on potato foliage and no effects were observed on the tubers. Snapbean bioassays of the soil at the time of potato planting did not detect any Banvel.

Table 1. Herbicides used in carryover study.

Trade name	Common name	1X rate (lb ai or ae/a)
Finesse	chlorsulfuron + metsulfuron methyl	0.03
Glean	chlorsulfuron	0.03
Assert	imazamethabenz	0.38
Pursuit	imazethapyr	0.06
Stinger	clopyralid	0.19
Banvel	dicamba	0.13