

Response of four crops to low rates  
of Prowl, Tolban, and Basalin  
simulating soil residues

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Summary

The responses of many rotational crops to Caparol, Karmex, and Treflan applied in cotton have been determined by research and grower experience. Three newer herbicides, Prowl, Tolban, and Basalin, are now used in cotton but less is known about their soil persistence and possible problems in crop rotations. Tests were conducted in the greenhouse at Tucson in 1980 to determine the response of barley, sorghum, sugarbeets, and wheat to low levels of Prowl, Tolban, and Basalin in the soil. The soil (60% sand, 25% silt, 15% clay, and 1% organic matter) was treated with 0, 0.5, 1, 1.5, 2, and 2.5 ounces per acre of each herbicide. The soil was mixed to incorporate the herbicide. The soil was surface irrigated and allowed to drain. Seed of each crop were placed on the moist soil surface and covered with dry, treated soil. After emergence seedlings were thinned to 6 to 10 per pot. After 2 to 3 weeks plant height was measured and root development estimated. The following table indicates the lowest rate of each herbicide which reduced top and root growth of crops in two or three experiments.

Lowest rate of herbicide reducing top and root growth of four crops.

Crop	Herbicide (ounces per acre)			
	Basalin	Prowl	Tolban	Average
Barley Tops	1.7	1.5	2.0	1.7
Roots	1.2	1.2	1.5	1.3
Sorghum Tops	1.0	1.3	0.5	0.9
Roots	0.5	0.7	0.5	0.6
Sugarbeets Tops	0.7	1.5	1.0	1.1
Roots	0.5	0.8	1.0	0.8
Wheat Tops	1.5	1.7	2.0	1.7
Roots	1.0	1.0	1.0	1.0

Seedling top and root growth of the four crops were reduced by 0.5 to 2 ounces per acre of the three herbicides in the soil. Sorghum was the most sensitive crop; barley and wheat, the least. Roots were more sensitive than tops to herbicide residues. Roots of sorghum were stunted by 0.5 to 0.7 ounces per acre of these herbicides. If 0.7 pounds per acre were applied in cotton and only 95% degraded during the season, 0.6 ounces per acre would still remain in the soil. Herbicide residues sometimes affect crop seedlings without reducing crop yields. Where Prowl, Basalin, and Tolban were used in cotton, the grower must determine by testing and/or experience if herbicide residues persist. Residues are most likely to persist when high rates are used, applications are made late in the season, or irrigation is less than normal. Do not plant sensitive crops, such as sorghum and sugarbeets, if residues persist.