Preemergence weed control in potatoes. Timothy W. Miller and Carl R. Libbey. (Washington State University, Mount Vernon, WA 98273) A field study was designed to test several preemergence herbicides for use in potatoes. The study was conducted during 1999 near Mount Vernon, WA. Two rows of 'White Rose' potatoes (2.5 oz, single drop seed potatoes) were planted into each plot May 24. There was a 9-in. spacing between seed pieces and the rowspacing was 38 in. (approximately 2870 lbs/A planting rate). Plots measured 6.3 by 20 ft. Hills were re-shaped June 18, when the first potato leaves emerged. Herbicides were applied immediately following re-hilling using a tractor-mounted sprayer delivering 39.7 gpa at 30 psi. Common lambsquarters and pale smartweed were the major weed species in the plots. Weed control was evaluated June 28, July 7, and August 9; foliar injury was estimated July 7. Potato plants were killed September 15 using diquat at 0.5 lb/A + X-77 at 0.25% v/v. Tubers were dug and sacked October 4 and weighed October 8. The experimental design was a randomized complete block with four replicates. A general linear models procedure was used to analyze the data. Means were separated using Fisher's Protected LSD. Application data is listed in Table 1 and weed control, crop injury, and yield in Table 2.

Predominantly cool, moist conditions during June allowed many of the germinated weed seedlings to survive the re-hilling process. Consequently, many lambsquarters and smartweed seedlings were too large for optimal control. Still, weed control from rimsulfuron + metribuzin was excellent, and sulfentrazone ranged from good to excellent throughout the growing season. Dimethenamid and BAS 656 did not adequately control these two species in this trial. None of these treatments caused significant crop injury, and tuber yields were not significantly reduced compared to the handweeded check.

Table 1. Herbicide application data.

6:45 to 7:30 a.m., June 18, 1999
Broadcast, after re-hilling
100% cloud cover, high overcast
winds 5 to 7 mph, from S
air temp. = 58 F; soil temp (4") = 50 F
relative humidity = 77%
soil surface was damp with small clods

Table 2. Effect of herbicides on weed control, crop injury, and tuber yield of potatoes.

Treatment	Rate	Weed control 6/28	7/7	8/9	Crop injury[b]	Tuber yield
	lb/A	---------- % ----------			%	cwt/A
Sulfentrazone	0.125	77	81	81	1	620.6
Sulfentrazone	0.1875	92	92	88	5	664.7
Sulfentrazone	0.25	64	91	85	4	556.0
Sulfentrazone	0.375	98	99	95	6	647.2
Rimsulfuron	0.02	97	100	99	3	799.6
+ metribuzin	0.5					
Dimethenamid	1.17	51	70	51	4	583.4
BAS 656 H	0.64	46	75	45	4	762.9
Untreated check	—	0	0	0	4	601.6
Handweeded check	—	100	100	100	3	874.9
LSD	—	41	14	21	ns	ns
r^2	—	0.65	0.94	0.88	0.31	0.16
C.V.	—	40.8	11.9	20.1	94.9	44.7

[a]Crop injury evaluated 7/7/99.