Effect of postemergence organic products (2004). Tim Miller and Carl Libbey. (Washington State University Northwestern Washington Research and Extension Center, 16650 State Route 536, Mount Vernon, WA 98273)

Plots infested with a heavy, mixed population of weeds were established at WSU NWREC to test three organic herbicides: Weed Pharm (acetic acid), Organic Interceptor (pine oil), and Matran 2 (clove oil). Plots measured 3 by 15 ft and were roto-tilled about 3 weeks prior to herbicide application. At the time of initial application, the soil surface in each plot was about 50% covered by common chickweed, ladysthumb, pale smartweed, common lambsquarters, common groundsel, shepherd's-purse, Italian ryegrass, and hairy nightshade. Plots were sprayed September 3, 2004 when most weeds were in the cotyledon to 2-leaf stage of growth. Plots were treated a second time September 8, 2004 (note that pine oil and clove oil concentrations were higher the second application; vinegar was applied full strength both times). Products were applied using a CO_2-pressurized backpack sprayer applying the equivalent of 25 gallons/acre for both applications. Weed injury (foliar burn) was noted September 7 and September 16 (0 = no injury, 100 = complete defoliation); data are presented in the Table on the next page.

Weed Pharm gave a good general weed burn after one application, and excellent control was achieved after two. The weeds most easily injured by vinegar were ladysthumb and pale smartweed, followed by common chickweed; other weed species were more tolerant to vinegar. Plants beyond 3 leaves were also more tolerant to the product. Addition of yucca extract and humisol did not significantly modify weed burn by Weed Pharm at either timing. Burn by Weed Pharm was adequate for susceptible weed species (which were the dominate vegeatation in these plots), but these results indicate that acceptable weed control would probably require use of other strategies in addition to vinegar application.

Matran 2 provided only slight weed injury (3 to 43%), regardless of rate or number of applications. Neither yucca extract nor Humisol significantly increased foliar burn by Matran 2, although there was a trend toward higher levels of weed injury when Humisol was used. Matran 2 applied at the higher rate (15 to 20%) might have been more effective if applied only to small weeds, but control from the initial application was so poor that weed growth between applications might have influenced efficacy of the product. It appears that Matran 2 will need to be coupled with other weed management strategies if organic weed control is to be successful.

Weed burn with Organic Interceptor was only slight (21-44% injury) when applied at 5 or 10%, but control was improved markedly when applied at 15 to 20% (59-75% injury). This higher level of weed injury in the second rating could have resulted more from two applications of Interceptor being used, rather than from the increased product concentration, however. Effects of mixing with yucca extract or Humisol were not clear, which indicates that neither product aided in weed burn by Interceptor. While control levels were moderate after two applications of Organic Interceptor, additional weed control would have been necessary to provide acceptable control.

Table. Weed injury after organic herbicide applications.

Treatment[a]	Rate 1 (9/3/04)	Rate 2 (9/8/04)	Foliar injury[3] 9/7/04	Foliar injury[3] 9/16/04
	%	%	%	%
Weed Pharm	100	100	86	91
Weed Pharm + yucca	100	100	85	94
Weed Pharm + Humisol	100	100	85	84
Matran 2	5	15	3	9
Matran 2	10	20	14	24
Matran 2 + yucca	5	15	5	10
Matran 2 + yucca	10	20	6	16
Matran 2 + Humisol	5	15	20	18
Matran 2 + Humisol	10	20	21	43
Interceptor	5	15	21	75
Interceptor	10	20	30	69
Interceptor + yucca	5	15	24	58
Interceptor + yucca	10	20	44	73
Interceptor + Humisol	5	15	21	59
Interceptor + Humisol	10	20	36	71
$LSD_{0.05}$	---	---	22	14

[a]Yucca extract included at 1%, v/v; Humisol included at 2.5%, v/v.

Weed Species Present in the Plots:

Dominant Species

- Common chickweed, *Stellaria media*
- Ladysthumb, *Polygonum persicaria*
- Pale smartweed, *Polygonum lapathifolium*

Minor Species

- Common lambsquarters, *Chenopodium album*
- Common groundsel, *Senecio vulgaris*
- Shepherd's-purse, *Capsella bursa-pastoris*
- Italian ryegrass, *Lolium multiflorum*
- Hairy nightshade, *Solanum sarrachoides*