Section VI
Soil Arthropods

# GRAY GARDEN SLUG AND GRASS SEED PRODUCTION: POPULATIONS IN RELATION TO POSTHARVEST RESIDUE MANAGEMENT

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Trials were established in various types of grass seed fields (Perennial ryegrass, Tall fescue, and Chewings fescue) in the Willamette Valley to determine the effects of postharvest crop residue management practices on slug populations.

As part of a larger, on-going study, the crop residue management treatments had been in place for at least three years; for this current study, slug populations were monitored in selected residue management regimes approximately every two weeks during October and November, 1995. Not all fields had similar residue treatments but included, among others, a "clean" treatment (where crop residue was either burned or baled/vacuumed) and a "full straw" treatment (where crop residue was cut and left in field). Each crop residue treatment plot was approximately 22 ft. x 400 ft. and replicated three times in a randomized block experimental design.

Slug populations were determined using open bait stations consisting of four metaldehyde bait pellets per station. Ten bait stations were established every 40 feet within each treatment plot; number of slugs visiting each bait station was recorded 24 hours after each baiting episode.

Results:
Two of the Perennial ryegrass fields (cultivars: Prelude II and Sherwood) behaved similarly, in that the full straw treatments had twice to four times as many slugs as did the bale/vacuum treatments (Figure 1).

In the P. ryegrass field planted with the cultivar Pinnacle, the burn plots (considered "clean") had twice as many slugs as did the non-burned plot (Figure 1). This trend appeared, also, in the Chewings fescue field; the burned plots had more slugs than did the bale/vacuum or bale/flail plots (Figure 2). These results are contrary to the popular belief that a burned field is "cleaner" (has less straw residue) and, thus, would be a less desirable habitat for slugs.

The burn and no-burn fields will be monitored for fauna composition to determine the presence and role of slug predators. Our current hypothesis is that natural predators may play a significant role in regulating slug populations. It's possible that burning may result in predator mortality and/or emigration, resulting in greater slug survorship than in unburned fields. It's unlikely that burning has any significant direct effect on slug populations due to the subterranean habits of slugs at that time of year.

Differences due to crop residue treatments were not significant in the Tall fescue plots (Figure 3).

Weather had an effect on number of slugs visiting the bait stations (Figure 4); the cold, dry weather that prevailed on November 2nd resulted in very low number of slugs. This trend was apparent regardless of location, grass species, or type of crop residue management (data not shown).

Figure 1. Effects of crop residue management for three cultivars of Perennial ryegrass on slug populations.

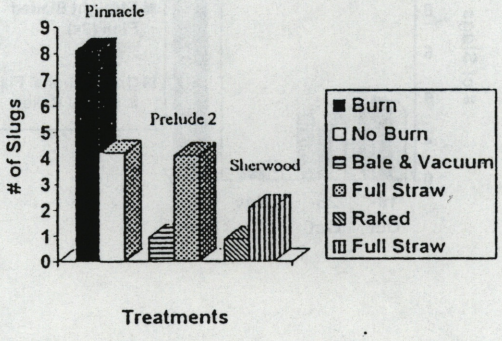


Figure 2. Effects of crop residue management for Chewings fescue, cv. Banner, on slug populations.

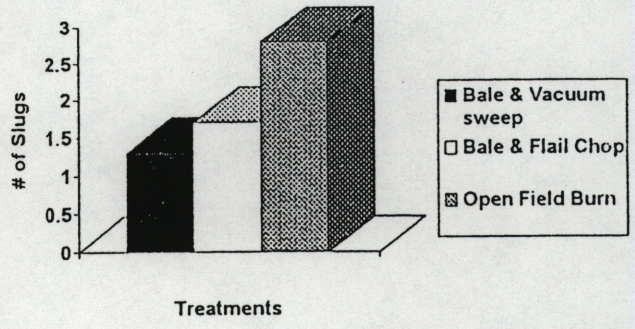

Figure 3. Effects of crop residue management for Tall fescue, cv. Lexus, on slug populations.

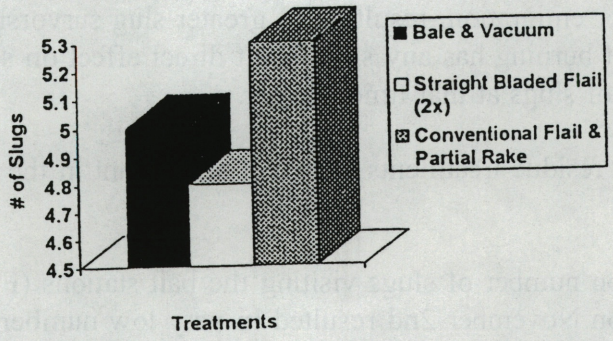


Figure 4. Effects of weather on number of slugs visiting bait stations, Tall fescue, cv. Lexus.