

#### Section 4. Chemical Control/New Products

### THE IMPACT OF SEASONAL PROGRAMS WITH PARTICLE FILMS ON APPLE PESTS AND THEIR NATURAL ENEMIES

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We evaluated the hydrophobic particle film (M96-018) in two apple orchards during 1998. Applications were made to replicated four-tree plots in both Methow and Moxee. The material was applied every two weeks (50 lbs per acre) and we compared a half-season program (7 applications through mid June) with a full season program (10 applications through mid August). Pests and their natural enemies were sampled throughout the season. Particle film applications reduced populations of generalist predators such as spiders, ants, and earwigs from 40 - 100% during the season compared with the untreated control. Leafminer populations were much higher in particle film-treated plots. Green aphids and Rosy Apple Aphid were higher in particle film-treated plots. San Jose Scale outbreaks occurred in particle film treatments. On the positive side white apple leafhopper populations were much lower in particle film-treated plots. Overwintering leafroller populations were reduced nearly 70% and spring populations of cutworms and other lepidopteran species were lower. Stink bugs were lower in particle film treatments and *Campylomma* populations were nearly unaffected by the treatments. At mid-season insect injury was 30% lower in the particle film treatments, however, scale was higher. At harvest, no difference in insect injury was seen between the untreated check and the half or full season particle film treatments, primarily due to the much higher incidence of scale in the treatments. In the Methow orchard no difference was found in fruit quality though trees treated with the particle film had fewer though larger fruits. The apples in the particle film treatments were definitely redder. Based on these results several questions are raised. Can it be used with oil at delayed dormant for both overwintering leafrollers and scale? Is it positive, neutral, or negative for management of sucking bugs? How can it be used to supplement control of codling moth, leafrollers, and cutworms? How can it be used to minimize its impact against scale, leafminers, and generalist predators? And, how can it be used to maximize its potential for positive horticultural benefits.