Section I.
Invasive and Emerging Pests

PESTS OF CAMELINA AND CANOLA GROWN IN THE VALLEY FOR BIOFUEL

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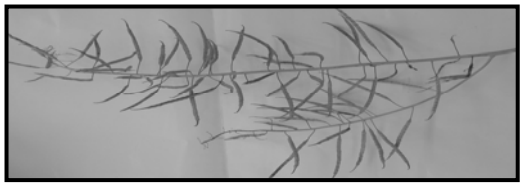

Recent volatility in petroleum prices has greatly increased interest in local production of oilseed crops in Oregon to provide feedstock for biodiesel and other bio-based products such as meal. Camelina (*Camelina sativa*) and Canola (*Brassica napus* L., spp. *oleifera*) are oilseed crops currently being grown and tested in the PNW to produce biodiesel. The oil content of camelina (36 – 42%) and canola (35 – over 45%) makes them competitive as a low cost feedstock for biodiesel. After oil is extracted from the seeds, the remaining by-product, seed meal, is used as a high protein animal feed.

Questions have arisen regarding the negative effects of growing these crops in the Willamette Valley, such as: "Can camelina be established between grape rows without interfering with wine grape production?" In most vineyards, clean cultivation or permanent perennial grasses are grown between the vine rows and the soil directly under the vine is kept weed free. There are many reasons to grow cover crops in vineyards. Cover crops suppress weeds, improve soil quality, enhance soil structure by adding organic matter increase biological activity, improve water infiltration, remove vigor (necessary in Oregon), reduce dust levels and help avoid soil erosion. Finally, cover crops can act as a refuge and provide food for natural enemies of vineyard pests; and most of all enhance natural control of arthropod pests. We planted camelina in the rows of two grape vineyards and we are monitoring for diversity and abundance of pest and beneficial organisms and observing the effects on vine quality.

Another question of concern: "Can canola be grown in the Valley without greatly interfering and increasing insect and disease pressure on specialty seed *Brassica* fields?" We will address pest management issues on these crops in the Valley and discuss a number of insects (e.g., cabbage maggot (*Delia radicum* L.), cabbage seedpod weevil (*Ceutorhynchus obstrictus*), 3 species of aphids (cabbage aphid (*Brevicoryne brassicae* (Linn)), green peach aphid (*Myzus persicae* (Sulzer)), and the turnip aphid (*Lipaphis erysimi* (Kaltenbach)), black pollen beetles (*Meligethes* spp.) that damage canola crops as well as other *Brassica* (Crucifer) crops. Seasonal assessments of pests were performed using sweep net, beat sheet, and visual plant examination over 2007 and 2008 season (Table 1).

Figure 1. Non-irrigated camelina growing between rows in an establishing vineyard and broadcasted in a field.

Table 1. Mean no. of seed pod weevils and black pollen beetles using sweep net samples in fall-planted canola fields

Field Site	Mean no. of Seed Pod Weevils (SPW) per ten, 180° sweeps[1]				Mean no. of Black Pollen Beetles (BPB) per ten, 180° sweeps[2]			
	5/6	5/20	5/23	6/9	5/6	5/20	5/23	6/9
South of Valley TILLED Planted 27-Sept	**2.7**	**2.3**	**2.1**	**1.7**	**4.5**	**7.5**	**2.2**	**3.4**
South of Valley NO-TILL Planted 27-Sept	**3.2**	**--**	**2.8**	**1.9**	**6.9**	**--**	**12.5**	**7.6**
North of Valley TILLED Planted 25-Sept	**3.4**	**2.5**	**1.8**	**0**	**5.7**	**2.2**	**2.6**[3]	**0**
Hyslop Farm	**--**	**--**	**--**	**0.5**				

[1] The SPW threshold documented in Canada is 2 per 180° sweep.
[2] Healthy well established winter oilseed canola (fall-planted) warrants a threshold of 15 BPB beetles per plant to justify treatment.
[3] North Valley field was sprayed for SPW on the 29th of May.

Approx. 10% of the canola terminals were infested with aphids in 2007; and no aphids were present in either of the fields in 2008. In both years, less than 5% of roots were infested with cabbage maggot injury.