Russ Karow Testimony on Canola
Oregon House Agricultural and Natural Resources Committee
Oregon Senate Rural Communities and Economic Development Committee
March 19, 2013

I appreciate the opportunity to speak with you to day about canola. My colleague Dr. Carol Mallory-Smith will provide you with some of the results of the latest experiments in which her research group has been involved with this crop. My role over time with this issue has been that of a coordinator and synthesizer of information and I will play that role again today. I will give you no answers, but will provide a great deal of context and a few ideas about next steps from my personal perspective. Let me be clear that I do not speak for OSU or other OSU scientists today, but rather for my lengthy involvement with canola issues, hopefully as a reasonably impartial participant in discussions.

Some background on me – I came to OSU in 1983 as an extension agronomist with a PhD in plant breeding and genetics and agronomy. I served as the state cereal specialist in Oregon from that date until 2000 when I was asked to serve as the interim head of the Department of Crop and Soil Science and then as the appointed head for the last nearly 13 years. I have worked with OSU faculty, growers and ag industry personnel from across the state throughout my career.

My work with canola began in 1986. There was interest in the crop in the mid-1980s in irrigated and dryland production in eastern Oregon. Trial work was conducted by Hermiston Experiment Station faculty and Mr. Mike Stoltz, Umatilla Co Crops faculty member in that period. In 1987 and 1988 I grew varieties trials at Hyslop Farm outside Corvallis as interest was growing in Western Oregon. A company named Seed Tech contracted seed stock production and commercial canola acreage in western Oregon in the early 1990s with more than a thousand acres grown. In 1990 the first canola control areas were established in Oregon to separate industrial oil quality crops – those that had been grown for decades on limited acreage in the state - from the edible oil crop canola. Western Oregon interest in canola faded in the mid-1990s and acreage disappeared but continued on a limited basis in eastern Oregon with significant increase in acreage in the last several years due to the discovery that fall canolas could be spring planted and successfully produce a crop a year later. I was involved with ODA in the original discussions about rapeseed/canola control areas and have been an active participant in all subsequent discussions, including the latest rule.

Fast forward to today. Let's step back and ask why there is interest in growing canola. Oregon is the grass seed capital of the world. Our western Oregon environment is truly unique from a climate perspective and we can grow some of the highest quality seed in the world – grasses, legumes and specialty seeds. Because of this same environment we have some of the highest

dryland wheat yields in the world. Individual field yields of 150 bu/a are not uncommon. Grasses and grains are both monocot or grass family crops. Grassy weeds are difficult to control in grass or grain crop. The loss of field burning as a management tool and grower and societal interest in moving to reduced tillage production has intensified grassy weed problems to the point where they restrict some production options for growers. The solution to grassy weed problems in monocot crops is to grow a broadleaf crop in which grassy weed herbicides can be used, hence a crop like canola. Why canola versus other broadleafs? Canola is a nationally and internationally grown crop with deep markets. A million acres of canola are grown each year in the US, mostly the northern plains states, and 20 million acres in Canada. World production is even greater. There are over 375,000 acres of grass seed in western Oregon and over 100,000 acres of grains. If a rotation were used in which a broadleaf crop was grown every fourth year, 125-150,000 acres of broadleaf would be needed. This acreage would be less than 7/10th of one percent of North American canola acreage and hence would have no effect on market price, a desirable trait in a rotation crop. With significant North American acreage, pesticides are readily available and market channels well established for canola. Obtaining special local needs or other pesticide registrations for Oregon's many minor crops is a significant issue for growers and would not be an issue for canola. Clover seeds, vetches and meadowfoam are other broadleafs now being grown in dryland rotations in the Valley. Total acreage of legume seeds is around 40,000 acres and meadowfoam less than 5000. There is little flexibility in these acreages without significant market distortions. Around 50,000 acres of processed vegetables are grown in the state, but these crops require irrigation.

Western Oregon grass seed crops have had an annual value of $300 to over $450M in the past decade. The 2012 estimate was announced last week at $355M. Wheat has been valued at over $100M. A viable broadleaf rotation crop would be beneficial in this over $450M industry. If that crop were canola and canola yielded 2500 lbs/a (a conservative value) at the current North Dakota market price of $0.21 per pound (three cents off Velva ND price to account for shipping; 1500 mi x $0.04 ton-mile), canola on 125,000 acres would have a value of $65M. At a ten-year average North American price ($0.164) the value would be at least $51M. These two values include no direct crop subsidies. However, this crop would likely be grown in a highly mechanized manner and if shipped from the area, would have little potential for local economy value multipliers in terms of jobs and local processing. But in a simplistic sense, canola and its associated benefits in grass and grain rotations could off-set the $40M value attributed to specialty seeds.

As stated earlier, the western Oregon environment is truly unique. Standard climate classification models show only about half dozen other areas in the world with a similar climate. Given the climate and the strict control under which specialty seed growers have been able to grow crops, Oregon produces some of the highest quality seed in the world. We are also

recognized as a "super market" supplier – a buyer can get an array of vegetable and flower seeds from one supplier which has great customer appeal. While acreage is small (14,000?), crop value is high ($40M) and significant multipliers exist in terms of jobs in the local economy. I also personally think about "natural wonders" when pondering the Willamette Valley and vegetable seed production. In some ways, our Valley is a natural wonder. As a state we have set aside waterfalls and ocean preserves and limited resource use in scenic and conservation areas. Would the same make sense for seed production in the Valley?

As you will hear from others, there are indeed cross-pollination risks between canola and other brassica plantings, but current season cross-pollination is likely the least of concerns. If the standard 3-mile isolation distance routinely used by specialty seed growers has been effective, then with care, such isolation distances could be maintained between canola and other crops. The real concern is volunteer plants that come back in previous year fields, seed that may be scattered along roadsides when canola is transported and seed scattered during harvest that may be moved off fields by overland water flow. Our experience with scrutinized experimental fields in the Valley would suggest that volunteer plant levels can be limited, but it may also be true that these fields were more closely managed than may be the case in broader scale production. We do not know if this will or will not be the case.

As you will hear from others, the disease sclerotinia, commonly called white mold, will be a concern. This disease is ubiquitous in the Valley and infests a range of broadleaf crops that are already grown – beans, clovers, peas and others. The question is whether the larger fields likely to be grown by canola producers will provide additional large-scale reservoirs of inoculum. Canola is likely to be grown in fields of 25-100 acres or more, similar in size to clover fields. We do not know the answer to this question and do not have models that can provide predictions. Other diseases are also likely to increase in incidence.

Problems with cabbage maggot will certainly intensify but the degree is again an unknown. Fresh market root vegetable growers are most likely to be impacted by increases in cabbage maggot numbers as the zero tolerance that exists for root damage in their marketed crops allows no leeway. Will other insects increase in number – simply stated, grow it and they will come. Will there be significant new pests? Again, we do not know. When experimental fields were grown and swept for insects, a pollen beetle previously not known to exist in Oregon was identified. It was not the same pollen beetle that causes extensive damage in European production but was a pollen beetle none the less.

Is canola production per se without risk? While canola is a low risk crop when grown by experienced growers, winter crops are susceptible to frost heaving if planted late in the season. Small plants with poorly established root systems are "ice-lensed" out of the soil. Two of our nine experimental fields were lost due to frost heave. If fall rains arrive late as they have in

recent years, later planting will be inevitable. Winter kill per se is highly unlikely given the Valleys mild winters. Spring crops will likely not be grown given the risks of production without irrigation.

Will the production of canola in the Willamette Valley lead to the end of Oregon's specialty seed industry? Likely not, but canola production would certainly create many new unknowns and risks for specialty seed growers. Science at this point cannot answer the question as to whether or not canola production will harm the specialty seed industry. Given that this is a biology and a "scale" (field size) question and that we lack baseline data for the Valley (lots of work has been done in the Canadian Prairies but they have true winters there and so the data are likely not directly transferable), we will only learn by doing and then if we discover that there are problems, the question is whether we can step back. Lack of documented impact from earlier Valley commercial production would suggest that this is perhaps possible, but environmental and production conditions have changed since the early 1990s.

So what are we to do? My colleagues recognize that my cup is always more than half full and that I like to find win-win solutions whenever possible and would sincerely hope that we can do so in this situation. In the discussions we have had over the past eight years among canola opponents and proponents, there was never an advantage to either side to concede any ground. There was always hope that the Oregon Department of Ag would rule in the favor of one side or the other and that that other side would then give up and life could move on. As you are well aware, that has not happened and our court system will likely be the final arbitrator in this situation, but in my Pollyannaish world, I still hope that our agricultural community can figure out a solution for themselves. As a state, nation and world we face an array of natural resource issues just like this one and we need to figure out how to come to solutions on such issues. Two thoughts as to solutions:

1. If you decide to ban canola from the Willamette Valley, then the specialty seed growers and state will have "won" by maintaining the highly-valued specialty seed industry at its current levels of risk. Monocot growers will have lost one option in their quest for a viable broadleaf rotation crop. So to create a possible win-win solution
    a. Have specialty seed growers tax themselves ($10 per acre per year?) for a five year period to create a fund to be used to explore possible rotation crops for the Valley that will not interfere with specialty seed production
    b. Have the State match the specialty seed dollars
    c. Have the State make provision for zero or low interest loans for construction or modification of facilities needed to process possible alternative crops. Flax crush and fiber handling facilities and a small-scale, highly versatile hexane extraction

facility for meadowfoam and other specialty oil crops could be among the possibilities

d. Appoint a ten member panel consisting of two pro-canola growers, two Oregon specialty seed industry representatives, two research scientists, a representative of fresh market vegetable growers, a representative of the organic grower community, a representative from ODA and a representative of the legislature to be in charge of fund allocation. Some of the activity will likely be marketing and market research, not scientific research per se, so this would be more than a research panel

2. If you decide to allow canola production, consider the following
    a. As this is a lose-lose/win situation for the specialty seed and canola grower groups, respectively, have the State provide $150,000 per year for five-years to fund research and other activities to allow for co-existence. Some of these activities were included in the fall 2012 Emergency Board request from ODA
        i. A Valley-wide, cooperatively used mapping system will be needed for all brassicas and other crops that could be harmed by brassica contamination or pests
        ii. All brassica crops (canola and others) should be monitored for seed bank, the potential for movement of seed off of fields and following year(s) volunteer plants. These assessments should be made under different production scenarios so that the effects of differences in management can be measured. These assessments can then be used to refine best management practices for brassicas in western Oregon. The existing ODA rule defines some BMPs
        iii. Educational tools (meetings, publications, websites, etc.) will be needed to provide growers with the latest information on brassica and related species management
    b. Search for viable alternative crops. As above, the State should make provision for zero or low interest loans for construction or modification of facilities needed to process possible alternative crops
    c. The State/counties would make prison work crews and youth/adult diversion program participants available in mid-spring each year to pull brassica plants along state and county roads. Through such work we could improve the Valley as a place to grow specialty seeds
    d. Create a management panel like that suggested for alternative crop establishment but include several national or international seed buyers. It is important that they speak for themselves, that their needs in the process of

working toward co-existence are heard and that they are part of the development of a co-existence plan. I do not believe that they had such a voice in other parts of the world where specialty seed production was threatened by rapeseed/canola production. Co-existence has been ODA's goal through the past eight year's discussions.

I again thank you for the opportunity to speak with you today and sincerely hope that we can find a way to maintain the vitality of our Willamette Valley specialty seed industry while providing the tools that western Oregon growers need to be competitive in today's world.

Russ Karow, Head
OSU Crop and Soil Science
(P) 541-737-2821
Russell.s.karow@oregonstate.edu