



Submission to Willamette Valley Speciality Seed Association / Oregon Department of
Agriculture Review Committee on production of Canola

Question 1) What is your experience in the following specific areas pertaining to canola production in speciality seed/vegetable production areas ?

a) the use of a formal system for maintaining separation between Canola and speciality seed crops ?

The United Kingdom has in place statutory seed certification rules, covering the production of the main agricultural seed crops, with mandatory standards for previous cropping, isolation, species and varietal purity. The scheme is managed by the National Institute for Agricultural Botany (NIAB) on behalf of the Certification Authority, the Department for the Environment, Food, and Rural Affairs (Defra). However, in common with other seed certification schemes (such as the O.E.C.D. scheme) speciality seed crops (vegetable seeds) are grown as yellow label "Standard Seeds" for which there are mandatory minimum species/varietal purity standards, and minimum analytical standards, but no formal field or isolation standards. Maintaining separation between Canola and speciality vegetable seed crops therefore relies entirely on voluntary co-operation between growers, and the setting of minimum contractual standards by the merchant.

b) the extent to which canola growers and speciality seed growers co-ordinated their efforts and collaborated with one another ?

Depends entirely on the "good neighbour" principle. In general, UK farmers will co-operate with each other when forward planning their cropping, but, as with any system relying on co-operation and friendships, there are situations where one neighbour may be unwilling or unable to change cropping due to crop rotation requirements or sheer stubbornness, in which case a potential sowing may have to be abandoned; this does, and continues, to happen.

c) issues related to volunteers, weeds and oilseed persistence ?

Due to the very nature of brassica seeds, and their oil content, this is a serious on-going problem. There is little written evidence on the subject, but that which exists generally agrees that under the right conditions, brassica seeds can lie dormant in soils for up to 25 years. Limagrain UK has practical experience of brassica seed crops being rejected because they failed to meet species/varietal purity standards in the field due to admixture from

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volunteer canola plants emerging from seeds shed out of crops sown in the same field some 15 years previously according to farm/field records. In addition, there is further practical evidence of longevity of up to 50 years after permanent grassland, which had never been ploughed in living memory, was ploughed out in favour of arable crop production, and the “pioneer” crop – wheat, fodder kale, swedes (rutabaga) – has been swamped by volunteer turnip rapes emerging from seeds shed out of wartime emergency productions of vegetable oil crops. During WW2 the British Government established mandatory cropping instructions for the production of vital food crops, one of these was vegetable oils, and thousands of acres of grassland were ploughed out to grow turnip rape for vegetable oils. On return to normality, the grassland was re-established, and turnip rape production forgotten until the next generation of farmer decided livestock / milk production was uneconomic, and ploughed the grass out. Merchants such as Limagrain, received complaints from farmers of “impure” seed, but careful examination of the growing plants, revealed the true nature of the problem. In drilled crops it was easy to see it was a volunteer problem. In broadcast crops, comparisons of actual plant population counts, against mathematical calculation of populations using data on field areas, 1,000 grain weights, analytical germination figures, proved beyond doubt that the actual amount of seed sown, could not produce the plant numbers counted in the field. This, plus historical documentation, the wide range of affected crops, and differing origins of sown seed, proved beyond doubt the origin of the volunteer turnip rape, even so, some “experts” still do not believe its possible.

There is also an on-going problem of volunteers growing on field, road and rail margins from seeds spread by combine harvesters (turning on the margin at the end of a swath) or spilling from trucks and rail vehicles. Improvements in trailer seals, and use of load covers, has reduced the problem to low levels, but the problem of volunteers on margins continues to be a major cause for concern for seed producers.

d) effects of monoculture and resultant pest or disease effects ?

According to the annual survey of land use carried out by Defra, the area down to oilseeds for harvest 2008 was 620,600 hectares, or 10% of the total UK croppable area (actually a reduction on previous years, but fairly typical for the crop). The net effect of area’s similar to this, year on year, has been an explosion in diseases and pests associated with the crop. Of particular concern are flea beetles (*phyllotreta* spp) and pollen beetle, and the diseases stem canker (*phoma lingam*), stem rot (*sclerotinia*) dark leaf & pod spot (*alternaria*) and grey mould (*botrytis*). Growers are now spending thousands of pounds per year on seed treatments and field sprays in order to combat these conditions, and protect seed yields. The extra spend has a net effect on financial returns for the crop, and the environment, and of course, it pushes up the cost of seed.

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e) GMO out-crossing between canola and speciality brassica seeds.

Limagrain UK (under our former name of Advanta Seeds UK) is unique amongst UK seed producers as having practical experience of the problems associated with contamination of conventional non-GM varieties, by adventitious foreign pollen of GM origin. The incident concerned our productions of CMS Hyola spring oilseed canola produced in Alberta, harvest 1999. On arrival in the UK a PCR test confirmed <1.0% contamination 9/10th Roundup ready, 1/10th Liberty Link (=Challenge). The marketing of GM's is prohibited under UK law, therefore we had to notify Defra of the incident, withdraw all seeds from sale and ship them back to Canada, and pay compensation for destruction of crop and loss of profit to farmers who already planted the seed. Our company was cleared of any wrong-doing by a House of Commons Select Committee investigation. An investigation by our Canadian partner revealed likely point of origin for the contamination to be GM canola crops 1600 metres from our production fields (I believe that at the time Alberta considered 800 metres to be a safe isolation distance between GM and conventional varieties). The incident severely dented our reputation in the UK, and killed sales of Hyola spring oilseed canola.

Much of the speciality brassica seed grown in the Willamette is destined for export to markets where GM's are prohibited by law, including the UK, mainland Europe, Japan, New Zealand etc. If a contamination incident – as described above – occurred, that would leave the parties concerned in a very difficult position, and seriously harm Willamette speciality brassica seed production.

2) Can canola coexist with speciality seed/vegetable production ? Based on the best available scientific research, why or why not ?

3) Seed producers in Oregon already use a pinning system to separate crops when cross-pollination would be a problem. Is this system adequate to separate speciality seed/vegetable production from canola ?

4) In designing a protected district for speciality seeds/vegetable production, based on the best available scientific research, how big a buffer from canola would you recommend around its border ?

5) How would you envision a system that would allow some canola production in the Willamette Valley without harming the speciality seed/vegetable industry ?

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I will answer these four questions as one. The best available scientific research that I have read regarding isolation distances, risk and levels of cross-pollination, is confusing with often contradictory results. Seed producers, plant breeders, seed merchants and seed certification agencies have a duty of care towards end users of the seed they produce, and must have a more cautious, risk averse approach than scientists.

The Oregon pinning system, and observed isolation distances, seem robust enough when applied to the speciality crops in current production. But, once canola becomes established, growers are likely to request that production fields - to be economic – are much larger than existing speciality crop areas. Production fields at random locations throughout the Willamette are likely to increase the risk of contamination by wind-blown or insect spread pollen, and increase the risk of contamination from seeds spilling from farm equipment, trucks etc. The pinning system would also have to expand to keep records of where and which fields canola had been produced in previous cropping years, to avoid use of those fields for speciality brassica production, and monitor/destroy pollen producing volunteers growing from shed seeds.

If canola must be grown, I would suggest a “protected zoning scheme” for speciality brassica/vegetable seed production, with permission to grow canola granted outside the zone, but not inside. Robust measures to be observed to prevent spread of volunteers through shed seeds from farm machinery, trucks etc. With regard to the “buffer” distance, for those species unlikely to cross-pollinate with canola, and bearing in mind the open nature of the Willamette landscape, 2,000 metres. For those species likely to cross-pollinate with canola, and again bearing in mind the open landscape of the Willamette, the fact that 1,600 metres was clearly not sufficient to protect Hyola crops in Alberta, and finally the distance that pollinating insects can travel, I would suggest 4,000 metres.

From a scientific and European - where field sizes are smaller, crop production more intensive, which therefore forces acceptance of lesser isolation distances - these would seem “luxurious” distances. But, we have actually moved production of our high value brassica seed crops, such as rutabaga (same family as canola, crosses quite readily) and kales out of the UK to Washington and Oregon in order to take advantage of the superior isolation distances and improve the quality of our stocks. Producing at double the mandatory UK/EU isolation distances for certified seed crops (mandatory distance for rutabaga seed crops is 200 metres) we were experiencing hybrid off-types in commercial rutabaga crops, leading to complaints against the company. Since moving production to Washington/Oregon, away from the intensive production of canola in the UK, we have experienced no such problems.

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6) Unable to answer this question, no experience of the ODA canola rules.

7) Do the speciality seed production areas of Europe (France, Italy, etc.) have rules for canola production similar to the ODA rules (pin maps, minimum separation distances, only produce one year in four, etc.)? What are those rules? When did they go into effect?

I can only answer from the UK viewpoint, where there are no rules in place for production of commercial canola crops for crushing to extract oil. Since the de-coupling of EU production subsidies from farm crops, farmers are free to follow the markets in deciding which crops to grow. If the price for canola is high, they will grow canola. Most will follow good agronomic practice of a four year rotation between canola crops, a minority, seeking to simplify cropping programmes, and reduce costs, will risk a shorter rotation based on just wheat and oilseed canola. There are no enforced isolation distances for commercial crushing crops.

The only enforced rules in place are for certified seed crops, where mandatory rules on previous cropping and isolation distances are in place and enforced by NIAB Cambridge on behalf of the certifying authority, Defra. Details of seed production programmes in the UK can be found on the NIAB website.

8) Are there any restrictions on the maximum size of contiguous cultivated areas of canola production in speciality seed production areas of Europe (France, Italy, etc.)?

From the UK point of view, the only restriction on the maximum size of contiguous cultivated areas of canola crops for oilseed crushing is that of market demand. There are no rules in place, and the farmer is free to decide how little, or how much, he grows, and whether he grows it in a "block" of fields, or in separate fields. That does not affect the UK's speciality seed production areas, since we do not have a speciality seed production industry. The relative ease and risk free nature of growing canola for oilseed crushing destroyed our speciality vegetable brassica seed production industry; there are very few acres of these crops in the UK.

The only restrictions on contiguous cultivated areas of brassica species apply to certified seed crops; simply that if two or more fields in a block are planted for certified seed production, in order to comply with isolation requirements, they must be of the same species, same variety, and same grade of seed.

In respect of Continental Europe, I have not seen canola growing in the speciality seed production areas. However, this does not mean it cannot occur, simply that I have no experience of it occurring.



9) *Do European canola producers typically rotate their canola crops or do they grow it year after year in the same fields ? What is the typical timing for rotating canola out of a field ? What are the typical rotation crops for canola in Europe ?*

Good agronomic practice dictates a minimum four year rotation between canola crops. A minority of farmers will unwisely risk a shorter rotation in order to simplify cropping and reduce costs. Growing in the same field year after year is seriously unwise, and not even the plain crazy would follow this practice. Short rotations carry serious risk to soil nutrient levels (canola is a very demanding crop), and build up of pests and diseases, in particular sclerotinia, and Clubroot (*Plasmodiophora brassicae*) an infection of which would effectively rule a field (and potentially neighbouring fields, as the condition is spread on infected soil) out of brassica seed production for many years.

A typical UK rotation would include canola with wheat/barley, sugar beet, grass, peas, potatoes or other arable crops according to farm location, personal cropping practice, and market demands. At its simplest, it could be following crops of wheat, with canola as a “break” crop one in three or four years.

10) *Are there any protected speciality seed production areas in Europe ? (I.e. are there areas within the bounds of which canola production is not allowed ?).*

There are seed production zones – one such in the UK is the Essex Seed Protection Zone – but these exist only to enforce isolation distances in protection of pre-registered seed production fields; in effect, they operate like a pinning system. I am not aware of any areas within Europe where the production of canola is not allowed.

11) *By individual country, are there fields of brassica speciality seeds being cultivated in European countries right now ? How many acres ? Over the last 5 years ?*

Yes there are, as the market for brassica vegetables continues to increase, there is a steady increase in demand for seed, which must be of high quality and varietal purity, which has resulted in the majority of seed production being transferred to areas of Europe where climate and isolation from other brassica crops (i.e. canola) are favourable to the production of a consistent high quality of seed. The major European production areas are the Low Countries, parts of France, Spain, Portugal and Italy. I am unable to quote acreage figures.

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12, 13 & 14)

Please forgive me if I do not type these questions out in full, but they can be answered in one.

Without carrying out a great deal of research, I am unable to quote exact figures for areas of speciality brassica seed production in Europe as a whole. Has the area declined or increased ? I do not know for sure, you will need to speak to seed trade colleagues in Continental Europe.

Here in the UK, the area has declined to such an extent that Defra no longer records or publishes the area as a separate item in the annual survey of land use.

I would suggest factors affecting the decline in the UK would largely be the intensive nature of farming in the UK, coupled with a decline in market prices for the main arable crops (now reversing in line with increased world demand for food), along with increases in prices for farm inputs (fuel, fertilizer, field sprays etc) which together put pressure on farm incomes and led to farmers buying up available land to increase farm sizes, and operating a simplified cropping rotation with larger machinery, employing fewer staff, in order to reduce operating costs per acre.

Farmers are risk averse, speciality brassica seed crops carry risks, and if the chance of growing a fairly less risky crop appears, which has lower growing costs, and comes without the care and attention required for a speciality seed crop, they will abandon speciality seed crop production in favour of the easier and less risky alternative. Your question 13 states "other than canola production" but, canola production is just that less risky alternative, and its widespread introduction into UK farming in the 1970's was the major factor in the decline in speciality brassica seed production (and other crops) in the UK.

It has to be said that one of the world's major production zones for speciality brassica vegetable seeds, just happens to be the Willamette Valley in Oregon. Along with areas in Washington, and New Zealand, it is one of the most important vegetable brassica seed production zones in the world, and despite the fact that European seed companies do have production fields closer to home, the Oregon and Washington productions are vital to world vegetable seed production, and in the process, make a worthwhile contribution to the local economy, and US export values. It seems crazy to put this at risk for the short term politically inspired idea of creating bio-fuels from food crops. Creating bio-fuels from food crops is unsustainable in an era when rising world populations, and global climate events, are putting pressure on food production, leading to shortages, increased prices, and even food riots.

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There is a future for bio-fuels, but it lies in the second generation of production methods creating bio-fuels from cellulosic technologies using waste plant material, forestry waste, domestic waste and plants such as switchgrass. We are still a long way from perfecting this technology, but in the meantime, we should be cautious about abandoning valuable crops, with a certain and sustainable future, in favour of short term gain, and I would urge all concerned to think long and hard before putting your seed industry at risk. Once the genie of canola production is out of the bottle, you will never put it back.

Peter Garland
12th February, 2009.



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