

AGRICULTURAL EXPERIMENT STATION  
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SUGGESTIONS FOR CONTROLLING PEA DISEASES  
IN THE EASTERN OREGON PEA CANNING AREA

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The maladies which limit pea production are of three types:

1. Virus diseases called mosaics which dwarf plants and blight pods.
2. Foliage diseases such as mildews which cause defoliation and spotting of pods.
3. Root rots and wilts which either reduce the stand or kill the plants after they are partly grown.

Fortunately, the Eastern Oregon plantings have been remarkably free from all these diseases except the root-rots. The explanation of this disease freedom relates both to cultural practices and climatic factors. This circular encourages those practices which tend to prevent diseases and suggests ways of circumventing root-rot. A brief discussion of each disease group follows:

Mosaic: A very serious form of mosaic occurs in Oregon. The presence and severity of this disease correlates directly with the presence and abundance of aphids. It is not seed-borne but it is aphid-borne. Those cultural practices which reduce insect infestation tend to eliminate mosaic.

Mildews: Oregon pea cultures are subject to two mildews - downy and powdery. The downy mildew is confined to coastal plantings but the powdery mildew can injure the crop anywhere peas are grown. It is extremely destructive to peas grown for seed purposes especially those varieties which mature slowly.

Root Rots: Root rots may be caused by several kinds of fungi, including Fusaria which also cause wilts and near wilts. The root-rot now becoming too abundant in Umatilla county plantings is largely caused by strains of Rhizoctonia. When peas are grown after peas, strains of soil fungi which become more and more infectious to peas, are gradually developed. Eventually, the land becomes "soil sick" for the crop concerned. This condition is developing in Umatilla county fields where peas have been grown after peas for too long a time.

RECOMMENDATIONS

1. That the canning pack production areas be kept entirely separate from seed production. In explaining the absence of mosaics and mildews, the comparatively short growing period required for a canning crop is a very important factor. Mildew fungi build up enormous aggregates of infectious material on pea vines toward the end of the seed maturing period. Likewise, the mosaic disease and the aphids responsible for its distribution, are favored by long season crops. The removal of vines and turning under of plant remnants insure destruction of the plants when they are only two-thirds matured, and prevent them from functioning as

reservoirs for disease elements. If the growers save parts of their crops for seed, or even use other areas in the same locality for seed production, the probability of destructive disease outbreaks will be greatly increased.

2. Plant only the best pea seed obtainable. Early development of the pea seed and pea canning industries in the wheat land sections of Washington and Idaho was seriously handicapped by the inroads of the Fusarium diseases known as wilts and near wilts. These diseases immediately lead to "sick soil" conditions which make it impossible to grow most varieties of canning peas commercially. The industry could not have expanded in Umatilla county were it not for the successful development of resistant varieties. Some of the better seed companies, including those operating in Moscow, Idaho, are developing, testing, and maintaining commercial seed stocks of resistant varieties representing the varieties now grown in Umatilla county. These seeds are held to a very high standard of variety type and resistance and are yearly tested in a way which insures maintenance of resistance under Eastern Oregon conditions. The use of these wilt resistant varieties, grown by reputable seedsmen, enhance the probability of permanence of the canning industry. The following recommendation is made to avoid the root-rot form of "soil-sickness."

3. Crop rotation and field "clean up" is desirable. Crop rotation and immediate elimination of above ground refuse, as recommended for weevil eradication, are likewise important for the elimination of disease. Even a two year rotation would be helpful in preventing the development of Rhizoctonia strains which may become effective as disease agents capable of reducing stands and inducing "sick-soil" conditions.

4. Avoid growing peas and sweet clover side by side. From various surveys of pea diseases in Oregon, we know that pea virus No. 1 is the chief cause of "mosaic." It is not seed-borne, but it can over-winter in the Umatilla region on sweet clover. From this standpoint, sweet clover should be discouraged in areas where peas are grown, even though from other standpoints it may be desirable. Red clover is usually immune to this virus.

5. Seed treatment with disinfectants are at present not advised. The stands in the Umatilla area, except where continued cropping has induced Rhizoctonia "soil-sickness," are on the whole so good that disinfection treatment of the seed would be inadvisable. Moreover, it should be remembered that seed cannot be inoculated and the disinfected without sacrificing the inoculum.

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