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Fruit fly

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FRUIT fly control is compulsory! To obtain effective control of fruit fly it is necessary to combine strict orchard hygiene with bait spraying. In addition, cover spraying with DIPTEREX will give extra protection to stone fruit and pears. When the breeding powers of the fruit fly are considered it is easy to understand why home growers and orchardists need to fight a continual battle against this pest.

During May 1959, more than 150 flies developed from one pear and 80-100 flies from several other individual fruits held in the laboratory. The possible danger of leaving one or two fruits on a tree may well be seen from this. A few dropped fruit hidden in the grass or under leaves below the tree may result in a heavy attack on later fruit. Thus the importance of keeping the trees so that all fruit can be picked and removed from the ground without delay may be understood.

Treatment of the soil with various chemicals will kill some of the maggots as they enter the ground. However, the only safe way of disposing of infested fruit is by boiling, burning or holding under water and kerosene for three to four days.

Many insecticides and methods of applying them have, over the past years, been tested against fruit fly. Malathion mixed with white sugar has given good control splashed or sprayed onto the leaves of the fruit trees. The flies feeding on the poison mixture soon die.

Scientists, while endeavouring to keep fruit flies alive and breeding for experiments, discovered recently that there are certain materials which are necessary for proper development. Resulting from the breakdown of the protein in yeast and some other substances they have become known as protein hydrolysates or hydrolysed proteins. The protein hydrolysate of yeast, soy bean meal, and some otherwise waste animal products have all been found to supply this need for the fruit fly. The flies, apparently being aware of their dietary need are attracted and may be killed by the addition of a poison such as malathion.

Dipterex is very effective against fruit fly, for besides being toxic to the adult flies it penetrates the fruit and kills the eggs and maggots inside.

Fruit which has been struck, recently, before there has been time for development, can be saved by spraying with Dipterex. It is important to make the spray a thorough one. One spray two weeks before harvest and one ten days later is usually sufficient for early stone fruit. Later-maturing fruit mostly needs at least one earlier spraying. Dipterex should not be used to replace, but to augment, orchard hygiene and baiting.

New insecticides such as Rogor 40 and "Lebaycid" have been developed in recent years and are very promising against fruit flies at all stages: eggs, larvae and adult flies. Local tests with...
these and other insecticides are being continued in an endeavour to find the most efficient and reliable control measure.

To conclude, the main points to observe are:

(1) Keep trees to a manageable size.
(2) Pick fruit as it matures.
(3) Pick up all fallen fruit.
(4) Properly destroy all suspects.
(5) At regular intervals splash on to leaves a bait as recommended on the back of your orchard registration receipt and in the Departmental leaflet which you can obtain on request.
(6) If necessary thoroughly spray stone fruit and pears with Diterex.

Points in Purchasing Seed

By B. J. QUINLIVAN, Advisor, Seed Certification and Weeds Branch

At this time of the year many farmers will be giving some thought to their pasture and crop seed requirements for the coming season, and a few words on some of the basic aspects of seed quality would not be amiss.

The three points to be considered when purchasing seed are purity, germination, and strain. Purity involves not only the proportion of impurities such as straw, broken seeds, and soil particles which may be present in any line of seed, but also covers the very important aspect of weed seeds. Without doubt the commonest method of spreading weeds is by way of agricultural seed. Badly graded lines of wheat, oats or barley almost invariably contain a fair proportion of wild turnip, wild radish or mustard and may even contain more serious weed seeds such as saffron thistle. Subterranean clover seed which has not been graded, frequently contains Guildford grass, corkscrew and dock seed in quite appreciable quantities. Cape tulip bulbs and saffron thistle seed have also been found in low grade subterranean clover seed on a few occasions.

The second factor which must be considered when purchasing seed is its germination. Seed which has a low germination is of little value to anyone and while low germination is not common in cereals it is still a very important factor in pasture seed. A low germination in legume pasture seeds can be due to the presence of a high proportion of dead seeds or hard seeds. The presence of dead seeds is more often than not due to faulty harvesting techniques and normally cannot be detected by a visual inspection of the seed. The presence of a high proportion of hard seeds is the result of insufficient scarification. Hard seeds must be conceded to have some value in that they will eventually germinate but this may not take place until several years after sowing.

The third factor to be considered is the question of strain. In some instances, strain differences can be detected from the seed itself but in a large number of cases this is not so and the only sure way to obtain the strain which you require is to purchase certified or pedigreed seed. The most widely sold pasture seed in this State is undoubtedly subterranean clover, and eight different strains of this species are available as certified seed. If a farmer buys certified seed he is guaranteed that the seed has a minimum pure seed content of 98 per cent, and a minimum germination of 80 per cent. He is also sure that he will obtain the strain he requires. The purchase of uncertified seed—particularly seed which has not been graded—is a very risky proposition. More often than not such seed has a pure seed content of 80 to 85 per cent, and a germination of 45 to 50 per cent. Its value for pasture establishment is therefore less than half that of certified seed. In addition, such seed is also sure to contain a good proportion of lucerne flea, red mite, spear grass, corkscrew, dock and Guildford grass. It may also contain more serious weed seeds such as saffron thistle and Cape tulip. These factors combined with the lack of any guarantee as regards strain makes the purchase of such seed most inadvisable.
Some lines of uncertified seed, of course, are quite satisfactory. If the buyer is not particularly concerned about the strain, provided he purchases a well graded line of seed he will more often than not get satisfactory results but generally speaking the best buy is certified seed, even though the price may be slightly higher.

**CAN SPRAYING FOR WILD RADISH AND TURNIP AFFECT THE CEREAL CROP**

By G. R. W. MEADLY, Officer in Charge, Weeds and Seeds Branch

The hormone-like herbicides are playing such an important part in the control of weeds in cereal crops, that there is a tendency to accept them as being completely selective with a capacity to remove the weeds without any risk to the crop. This is particularly the case when dealing with wild radish and wild turnip which are among the more susceptible weeds and require relatively small doses.

Large-scale spraying in Western Australia has now been carried out for almost ten years and quite early in this period, as a result of research, it was possible to indicate the growth stages of cereals at which they were most likely to be affected by the application of 2,4-D and related chemicals. There are two periods during which the risk is greatest. The first is in the seedling stage and continues until the plants are stooling freely. The second is at the "boot" stage when the head becomes apparent as a swelling in the leaf sheath. The hazard remains during the flowering period but again decreases when the grain has reached the milk or soft dough stage. This means that spraying should be carried out after the cereal is stooling freely but before the head has obviously commenced to form.

It is interesting to note that the nature of the effects on cereals may differ according to the time they are caused. Treatment during the early danger period can result in a number of malformations and growth disturbances. Wheat may produce club-shaped, twisted and branched ears with an irregular arrangement of spikelets. The glumes may become fused and the number of spikelets reduced, resulting in interrupted heads. Leaves also become twisted and often there is some delay in maturity of the crop. Late spraying does not usually cause abnormalities but has brought about a reduction in grain formation.

During the past season there have been an increased number of reports from farmers of effects on cereals attributed to spraying for weed control. This could be due, in part, to the greater interest being taken by farmers in such activities but there would also appear to be other causes. In the main, the symptoms are those associated with spraying too early and in a number of cases inquiries have confirmed that such has applied. Abnormal heads have also been found in crops sprayed at the recommended growth stage but they have represented only a small proportion of the total crop.

The most frequent symptom has been an irregular disposition of the spikelets as opposed to the normal series of rows. Many are obtusely angled from the stem or rhachis and the term "scatter-heads" has been applied to them. At times, gaps have appeared in the spikelets giving rise to interrupted heads and various forms of twisting have occurred in the stems, leaves and heads.

Abnormalities have been associated with application by ground units as well as aircraft and one half gallon of solution per acre does not appear to have been more critical than one gallon when applied from the air.

Symptoms of frost damage are very similar to some manifestations of 2,4-D injury. It is known that reaction to 2,4-D is influenced by various factors including soil moisture, temperature, fertilisers and soil type, and it is quite possible that frosts, besides causing direct injury have, at times, accentuated the effects of 2,4-D.

Despite the more numerous reports of crop injury during the past season, investigations carried out by the Department indicate that a significant reduction in yield is only likely in relatively few instances and then only when crops were
sprayed too early. In most of such cases farmers agreed that if the crop had not been sprayed, the competition from weeds would have reduced yields to a greater extent. Research into this aspect is being undertaken by the Department, but the hormone-like chemicals undoubtedly will continue to play an important role in cereal husbandry in Western Australia.

**Improving Wheat Quality**

By J. PARRISH, Cereal Products Officer

The large surplus of grain stored in North America has drawn attention to the world wheat market and Australian producers have been faced with the prospect of a much larger carryover. For many years now Australian wheat has been in demand on the world market and has enjoyed a good reputation for dryness, colour and high milling yield.

Recently there has been considerable criticism of the quality of Australian wheat, at least within Australia if not abroad. The main target for criticism has been the mixed nature of F.A.Q. wheat, and critics have suggested it should be separated into hard and soft grades.

There are many different opinions on this aspect of wheat marketing but it is generally agreed that there is a need to improve the over-all quality of the wheat harvest.

The main factors determining quality in wheat are breeding (that is the variety grown) and environment (or conditions under which the crop is grown).

In Australia, plant-breeders have had notable success in producing better quality varieties.

The variety Gabo which is grown on about one-third of the State's wheat acreage is an outstanding example of a good quality variety produced in Australia.

The Cereal Laboratory of the Department of Agriculture has a big part to play in the improvement of quality by means of breeding. Each year, thousands of grain samples each coming from a single plant cross-bred are examined for quality in the Cereal Laboratory by a wheatmeal fermentation test called the Pelschenke test. Results of these tests enable the wheat breeder to discard much material of inferior quality at an early stage in his programme.

When there is sufficient grain from a new variety it is milled, and the flour is examined for quality in the Laboratory. Until this year the main way of determining baking quality has been by using a farinograph to measure some of the physical properties of a flour-water dough.

Recently the new Laboratories at South Perth have been equipped to carry out baking tests and it will now be possible to bake sample loaves from any variety, before it is released for commercial production.

The second important factor affecting quality is environment, or the growing conditions for any particular season.

Climate and soil are the main aspects of environment. A short-season climate with a short time of ripening is favourable to high quality and a longer season where the grain has more time to ripen favours yield at the expense of quality.

There is little that man can do to control the effect of climate except to grow suitable varieties in various climatic regions.

Soil also has a big effect on quality and here there is much that man can do to control the effect of soil. Lack of soil fertility is the main reason why this State does not grow large amounts of high quality wheat.

This low inherent fertility of our soils can be overcome either by the use of nitrogenous fertilisers or of leguminous rotations.

Although application of nitrogenous fertilisers is an effective means of improving quality, in most cases it would not be economic at present.

It has been well established that the inclusion of a legume in the rotation improves both the yield and quality of wheat grain. This is a simple and practical method of improving quality for wheat growers in areas where subclover can be grown.