TRIALS FOR THE CONTROL OF WILD OATS IN CEREAL FIELDS IN CYPRUS

BY:

A. PAPASOLOMONTOS PH. D.

CYPRUS AGRICULTURAL RESEARCH INSTITUTE

MINISTRY OF AGRICULTURE AND NATURAL RESOURCES

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SUMMARY

Trials carried out in various parts of Cyprus for two consecutive seasons during 1965-67 using tri-allate and barban in wheat and barley at the rate of 387 cc of the formulated product in 6.7 Imp. gallons of water per donum have resulted in a reduction in the wild oat population amounting to 92% for tri-allate and 38% for barban (average of 18 wheat and barley trials). Furthermore, increases in grain yield of 52 and 27 okes per donum for barley (average of six trials) and 53 and 41 okes per donum for wheat (average of eighteen trials) were obtained for tri-allate and barban treatments respectively.

The tri-allate treatments caused in certain trials, a slight to moderate thinning to the wheat stand, but this was in the majority of trials more than compensated by the substantial reduction in the wild oat population and have resulted, in most cases, in substantially increased yields.

INTRODUCTION

Wild oats (Avena spp.) are of considerable economic importance to Cyprus agriculture, but they are of particular significance in the cereal producing areas of the country where it is roughly estimated that they cause an overall reduction in potential yield of about 10—15% which at present day prices would be over £500,000 annually. It is not uncommon for the heavily infested fields to be ploughed under and resown or to be used as a green forage crop as soon as the extent of the infestation becomes apparent, and for the heavily infested fields to produce less than 30% of the potential yield.
None of the herbicides currently in use for general weed control in cereals, such as 2,4-D or MCPA, have any effect on these weeds and their extensive use over the last fifteen years or so may have in fact contributed to an increase in the wild oat population through the elimination of competition from broad leafed weeds. Other factors that may have contributed to the spread, and subsequent multiplication of these weeds, are the use of contaminated sacks used in a variety of ways on the farm which carry the seeds of Avena spp., implements and riverspate water moving from an infested to a wild oat free field, and probably to a lesser extent the wind and the use of impure seed.

Undoubtedly, however, the importance of the combine harvester is of primary importance as a cause for the increased incidence of wild oats observed in recent years. Not only are wild oat seeds very easily shed as a result of the combine harvesting operations but some must also pass through the machine and are discarded with the straw. Furthermore an appreciable number of seeds remain in the machine and are subsequently discarded on clean land.

At present farmers have to rely largely on cultural practices for the control of this weed. The practice of delaying sowing operations until a large number of wild oats have germinated and subsequently cultivating before sowing, provides only partial control as in heavily infested fields, a heavy second generation of wild oats may occur. However, such a practice has much in its favour and where followed is undoubtedly responsible for a considerable reduction in the wild oat population.

In many cases, however, particularly in the very heavily infested fields a more reliable and effective method of control is required if losses are to be reduced, especially since a delay in sowing will result in most cases in a late crop which may be adversely affected by drought in years of low rainfall.

Recently considerable work has been carried out in Europe, N. America, Australia, and elsewhere (1, 3, 4, 5, 6, 9) regarding the use of barban and tri-allate for the control of wild oats in cereals. In view of the encouraging results obtained in most of these investigations, trials were initiated in Cyprus to evaluate these herbicides, determine the best rates and methods of application under local conditions, and study the reaction of the local varieties to these herbicides.

This bulletin describes the results of a number of field experiments on the control of wild oats in wheat and barley crops using tri-allate (as Avadex BW(R)) and barban (as
Carbyne\textsuperscript{(R)} conducted in various localities in the country during the 1965-66 and 1966-67 seasons. Preliminary observations and trials carried out earlier have already been described (2, 10). Most of the current experiments were carried out on private land infested with wild oats to a varying degree and in co-operation with the owner-farmers, without changing the cultural methods used by the farmers concerned.

**MATERIALS AND METHODS**

All trials reported in this bulletin were arranged in randomised blocks with five or six replications per treatment and unless otherwise stated, both tri-allate and barban were applied at the rate of 387 cc of the formulated product in 6.7 imperial gallons of water per donum. Spray applications were carried out by means of a hand operated knapsack type sprayer fitted with a 30' long spray boom with three fan type nozzles. Sprayed plots were between 375 and 1250 sq.ft.

In all trials the experimental fields were prepared, cultivated and fertilised by the co-operating farmers themselves as normally practised in Cyprus. Seed was either sown broadcast or machine drilled to a depth of 1-2''. In the former case the seed was subsequently covered by a tractor drawn heavy drag.

In all trials tri-allate was applied within a day from sowing and covering of the seed whereas the barban treatments were applied when the majority of the wild oats were within the 1—2½ leaf stage. In all cases harrowing twice, at right angles, and to a depth of about 1'', by a tractor mounted harrow was carried out in all plots immediately following the tri-allate treatments.

All other normal field operations, such as pest and weed control, application of fertilizers and irrigation where practised, were carried out as is the normal practice by the co-operating farmers themselves. As soon as possible after the wild oats had reached the heading stage in most trials the relative wild oat infestation as well as the thickness of the wheat or barley stands of each plot were recorded. This was done by taking at random four samples of an area of sixteen square feet each from each plot and counting the number of plants.

Yield figures were obtained by harvesting a strip four feet wide down the middle of each plot beginning and ending at a distance of 5 feet from either end of the plot.

Although the main varieties of wheat and barley have been included in one or more trials over the two year-period, to study further their relative susceptibility to tri-allate and barban,
additional trials were carried out during the 1966-67 season at the Athalassa Government Farm on a field free from wild oats. In these trials the barley varieties Athenais and Sel. B 55-22 and the wheat varieties Kyperounda, Psathas and Triopolitico were sown in drills to a depth of 1—2". By suitably adjusting the seeder the same quantity of seed of the same varieties was broadcast on the surface of the ground, and then raked into the soil by a tractor mounted rake. This latter method of sowing was intended to simulate the "hand-broadcasting" method of sowing which is almost exclusively used in Cyprus. In this way it has been possible not only to compare the susceptibility of the different varieties to the herbicides, but also to compare their susceptibility when sown broadcast or in drills.

RESULTS

I. Barley

(a) Effect of herbicides on the wild oat stand.

Detailed results on the effect of the herbicide application on the wild oat population are presented in table 1. These figures refer to the average number of wild oat plants per 100 square feet. The results indicate a better overall control by tri-allate. Barban treated plots had significantly fewer wild oats than the untreated checks in four trials; whereas tri-allate treated plots had significantly fewer wild oats than the untreated checks in all trials. Similarly in four out of the six trials tri-allate treated plots had significantly fewer wild oats than the barban treated ones.

(b) Effect of herbicides on the barley stand.

There were no significant differences in the stand of barley as a result of the herbicidal treatments in any of the trials regardless of whether the seed was hand broadcast or machine drilled. (Table 1).

(c) Effect of herbicides on barley yield.

The average yield of barley from the untreated plots of all six trials expressed on a per donum basis was 240 okes. The average overall increase in yield that has resulted from the reduction in the wild oat infestation through the use of tri-allate and barban was 52 and 27 okes respectively. The results of the individual trials are set out in Table 1. In all trials carried out in infested fields trends towards increased yields were observed as
a result of the tri-allate and barban treatments. However the tri-allate treatment gave significantly higher yields than the untreated checks in four trials; whereas the barban treatments gave significantly higher yields in only one trial. Similarly the tri-allate treatments gave higher yields than the barban treatments in all trials but these differences were statistically significant in only one trial.

II. Wheat

(a) Effect of herbicides on wild oat stand.

Again in the case of the wheat trials, both tri-allate and barban have resulted in significantly fewer wild oats than the untreated controls (Tables 2,3). Similarly the tri-allate treated plots contained on the whole fewer wild oat plants than the plots treated with barban and this difference was statistically significant in six trials. In the remaining six trials in which records on the wild oat stand were taken, no significant differences were observed between these two treatments.

(b) Effect of herbicides on the wheat stand.

There were considerable differences in the stand of wheat as a result of the various treatments in the different trials, regardless of the method of sowing, (Tables 2 and 3). In general the tri-allate treated plots had a thinner stand of wheat, in the “broadcast” trials (Table 2), than the barban treatments or the untreated checks. There were on the other hand only small differences in stand amongst the latter two treatments.

Data obtained from two trials in which the seed was machine drilled, and where counts on the stand were made, indicate that the tri-allate treated plots were not adversely affected as compared with the barban and untreated check plots of the same trials. In a third trial however an adverse effect was recorded (Table 3). These results are further discussed under another heading.

(c) Effect of herbicides on yield.

The average yield of grain from the untreated plots in the eighteen experiments, (Tables 2,3) for both broadcast and drilled seed, was 156 okes per donum. The average overall increase in yield resulting from spraying with tri-allate and barban was 53 and 42 okes per donum respectively. There were, however, considerable varia-
tions in yield from trial to trial and the possible factors responsible for this variability are discussed later. Altogether the tri-allate treatments resulted in significantly higher yields over the untreated checks in twelve trials; eight of these trials were sown broadcast and four were drilled. The barban treatments on the other hand resulted in significantly higher yields over the checks in ten trials; three of these trials were drilled, the remaining been broadcast.

Similarly the tri-allate treatments yielded significantly higher yields than barban treatment in five trials, two trials of which were drilled. In only one trial did the barban treatment yield significantly higher than the tri-allate treatment (Table 3). Differences in yield recorded in the remaining trials between the two treatments failed to reach significance.

III. The susceptibility of the main barley and wheat varieties to tri-allate and barban.

None of the trials carried out in the wild oat free field at Athalassa (Tables 4, 5) with the most important barley and wheat varieties sown at the same seed rate, either broadcast or in drills, have shown any significant differences in yield as a result of the tri-allate or the barban treatments.

These results may therefore suggest that there are no important differences in susceptibility between the main varieties of wheat and barley used in Cyprus to tri-allate and barban herbicides.

Furthermore no differences in yield were obtained in these trials that could be attributed to the reportedly lower phytotoxic effect of tri-allate to drilled rather than broadcast seed.

DISCUSSION

Both herbicides used have resulted in a substantial decrease in the wild oat stand in both wheat and barley crops. In general, however, barban has given inferior wild oat control than tri-allate, and this may be partially attributed to the great difficulties that have been experienced in timing the barban applications. In most of the trials described in this bulletin, there was, in general, a continuous germination of wild oats for a period of about 1—4 or more weeks following sowing. Consequently it has been extremely difficult to time the barban applications and although in most trials application was carried out when the
majority of the wild oat plants of the first flush had reached the 1—2 leaf stage it was apparent that only a fraction of the total wild oat population was in this susceptible stage. Even so barban treatments have in most trials resulted in a substantial decrease in the wild oat stand, and although the figures presented in the tables refer to the actual number of wild oats bearing seeds, some of these plants were in fact very weak and produced only a few seeds.

In general, timing the application and spraying with tri-allate was much easier and the wild oat control as such was considerably more effective than in the case of barban.

Although considerable variations in both wheat and barley yields, in response to the various treatments, have been recorded in the various trials, these differences largely reflect the wild oat stand and control achieved in the individual trials. In the case of barley and in the absence of any reduction in the number of plants as a result of spraying, regardless of the method of sowing, by either barban or tri-allate, there appears to be a close relationship between wild oat stand, wild oat control and yield. The higher the wild oat population and control, the higher the yields. Under these circumstances, tri-allate, because of its more efficient wild oat control properties has resulted in proportionally higher increases in yield.

Although a similar relationship vis-a-vis wheat yields and wild oat stand was also established, this relationship is complicated by the fact that in some trials the tri-allate, but not the barban treatments were phytotoxic and had caused a varying reduction in the wheat stand. Under these circumstances fields with a low wild oat population had responded the least to tri-allate applications since the detrimental effect of existing wild oat population was relatively small, and its elimination could not fully compensate for the reduction of stand, obtained in some trials, through the use of tri-allate. Barban treatments on the other hand, not being phytotoxic, have under these circumstances resulted in comparatively increased yields over both the tri-allate and the checks. The reverse is, of course, true for the moderate to heavily infested fields. Under these conditions, the small reduction in stand was more than compensated through the elimination of subsequent wild oat competition, and has resulted in substantially increased yields as compared to the untreated checks or the less effective barban treatment.

However, inspite of this crop thinning which, in six trials, five of which were sown broadcast, ranged from 16 to 32%, the use of tri-allate in sixteen out of the eighteen wheat trials discussed in this bulletin, including all five of the broadcast trials mentioned above, has resulted in increased yields.
Furthermore the data presented in this bulletin on the stand and yield of the same wheat varieties sown both broadcast and in drills at the same rate do not generally confirm the accepted theory that tri-allate applications are safer in drilled than in broadcast wheat (7–8). The reasons behind this are far from clear but such factors as seed-bed preparation, varieties, seed rate, soil moisture and rainfall and particularly depth of sowing need further investigations. It is conceivable that in drilled seed drilling to a depth of 1–2″ may have been inadequate, especially in view of the fact that tri-allate was subsequently mixed into the soil to a depth of about 1″, and the seed may have come in direct contact with the herbicide. This could lead to crop thinning (1). In view of this, further investigations are called for with the seed drilled at different depths in order to further evaluate the effect of depth of sowing and tri-allate treatment to the wheat stand.

CONCLUSIONS

The increasing costs of cereal production and the increase in the wild oat infestation observed in some cereal producing areas of Cyprus has emphasized the need for herbicides suitable for the control of this weed. The trials described in this bulletin have shown that both barban and tri-allate, but particularly the latter, can be relied upon to control wild oats economically. Under the conditions of these trials and because of the relatively more efficient wild oat control achieved through the use of tri-allate, its relative ease of application, and lack of toxicity to the barley would appear to be more preferable to that of barban.

In the case of wheat fields, because of the relative toxicity of tri-allate to the wheat crop, the use of this product should be confined only to the heavily infested fields. Under these circumstances, the results of these trials would suggest that at current sowing rates practised by farmers any crop thinning that might occur as a result of the use of this product will be more than compensated by increased yields achieved through the elimination of subsequent wild oat competition. In the light to moderately infested fields the use of well timed barban applications would appear from the results of these trials to be more advantageous.

Furthermore, the use of both these products, but particularly tri-allate in conjunction with the usual crop rotation of cereal-fallow-cereal now almost exclusively practiced in Cyprus would also be expected to lead to a gradual decline in the wild oat infestation in the cereal fields perhaps to the extent that after 2–3 applications, over a six-year period, the remaining wild oat seed reservoir in the soil would become substantially reduced to such an extent that it would be probably controlled by cultural methods alone.
### TABLE 1

**Effect of herbicides on wild oat population, barley stand and grain yield**

<table>
<thead>
<tr>
<th>Location</th>
<th>Plot Size</th>
<th>Area Harvested Sq. ft.</th>
<th>Number of wild oats per 100 sq. ft.</th>
<th>CV %</th>
<th>Number of barley plants per 100 sq. ft.</th>
<th>CV %</th>
<th>Yield in okes per donum</th>
<th>CV %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Tri-allate Barban Checks</td>
<td></td>
<td>Tri-allate Barban Checks</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Morphou</td>
<td>450</td>
<td>80</td>
<td>198b B 310b B 622a A</td>
<td>15.3</td>
<td>534a 542a 544a</td>
<td>7.1</td>
<td>293a 303a 263a</td>
<td>3.8</td>
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<tr>
<td></td>
<td>450</td>
<td>80</td>
<td>80b B 330b AB 675a A</td>
<td>22.9</td>
<td>604a 655a 598a</td>
<td>3.7</td>
<td>260a A 244ab A 233b A</td>
<td>3.1</td>
</tr>
<tr>
<td>Pyrga</td>
<td>750</td>
<td>160</td>
<td>58c B 601b A 926a A</td>
<td>16.0</td>
<td>1,908a 2,061a 2,171a</td>
<td>5.1</td>
<td>347a 324a 322a</td>
<td>6.7</td>
</tr>
<tr>
<td>Marathovounos*</td>
<td>450</td>
<td>80</td>
<td>52b B 2035a A 2,465a A</td>
<td>8.2</td>
<td>2,658a 2,895a 2,727a</td>
<td>2.9</td>
<td>267a A 243ab A 220b A</td>
<td>4.3</td>
</tr>
<tr>
<td></td>
<td>450</td>
<td>80</td>
<td>138b B 2357a A 2,970a A</td>
<td>17.6</td>
<td>2,092a 2,432a 2,321a</td>
<td>4.4</td>
<td>271a A 206b B 173b B</td>
<td>5.8</td>
</tr>
<tr>
<td>Prastio (Mesaorias)</td>
<td>750</td>
<td>160</td>
<td>37c C 599b B 1,686a A</td>
<td>20.1</td>
<td>2,582a 2,455a 2,158a</td>
<td>4.7</td>
<td>315a A 283a A 232b B</td>
<td>5.8</td>
</tr>
</tbody>
</table>

* Drilled; other sown broadcast.

**Three resp. sown with Athenais and three with Sel B 55-22; all other trials carried out with var. Athenais. 
Treatment at Morphou trials replicated five times: in all others there were six replications.

Comparative figures, with in any one line with the same letter are not significantly different.
Small letters — 5% probability; capitals — 1% probability.
# TABLE 2

Effect of herbicides on wild oat population, wheat stand and grain yield in broadcast seed

<table>
<thead>
<tr>
<th>Location and year</th>
<th>Variety</th>
<th>Plot size in sq. ft.</th>
<th>Number of wild oats per 100 sq. ft.</th>
<th>CV</th>
<th>Number of wheat plants per 100 sq. ft.</th>
<th>CV</th>
<th>Yield of wheat per donum in okes</th>
<th>CV</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Sprayed</td>
<td>Harvested</td>
<td>Tri-allate</td>
<td>Barban</td>
<td>Checks</td>
<td>Tri-allate</td>
<td>Barban</td>
</tr>
<tr>
<td>1965 - 1966</td>
<td>B.X.I.P.I.</td>
<td>750</td>
<td>250</td>
<td>20b B</td>
<td>42b B</td>
<td>105a A</td>
<td>15.4</td>
<td>944b B</td>
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<tr>
<td></td>
<td>B.X.I.P.I.</td>
<td>750</td>
<td>250</td>
<td>27b B</td>
<td>72b B</td>
<td>233a A</td>
<td>19.4</td>
<td>884b B</td>
</tr>
<tr>
<td></td>
<td>B.X.I.P.I.</td>
<td>750</td>
<td>250</td>
<td>212c B</td>
<td>362b B</td>
<td>573a A</td>
<td>11.7</td>
<td>740a</td>
</tr>
<tr>
<td>Kondemenos 1</td>
<td>Kafkari</td>
<td>750</td>
<td>250</td>
<td>30b A</td>
<td>142b AB</td>
<td>315a B</td>
<td>24.2</td>
<td>1205a</td>
</tr>
<tr>
<td>1966 - 1967</td>
<td>B.X.I.P.I.</td>
<td>750</td>
<td>160</td>
<td>586b B</td>
<td>366a A</td>
<td>485a A</td>
<td>12.7</td>
<td>348a</td>
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<tr>
<td></td>
<td>B.X.I.P.I.</td>
<td>750</td>
<td>160</td>
<td>101c B</td>
<td>449b A</td>
<td>567a A</td>
<td>9.4</td>
<td>259a</td>
</tr>
<tr>
<td>Marathovounos</td>
<td>Kyparouna</td>
<td>750</td>
<td>160</td>
<td>— —</td>
<td>— —</td>
<td>— —</td>
<td>— —</td>
<td>— —</td>
</tr>
<tr>
<td></td>
<td>Kyparouna</td>
<td>750</td>
<td>160</td>
<td>— —</td>
<td>— —</td>
<td>— —</td>
<td>— —</td>
<td>— —</td>
</tr>
<tr>
<td>Morphou</td>
<td>Kyparouna</td>
<td>450</td>
<td>80</td>
<td>59b B</td>
<td>498a AB</td>
<td>610a A</td>
<td>26.0</td>
<td>434a</td>
</tr>
<tr>
<td>Gyra</td>
<td>Tripolitico</td>
<td>750</td>
<td>160</td>
<td>— —</td>
<td>— —</td>
<td>— —</td>
<td>— —</td>
<td>— —</td>
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<tr>
<td>Gyssou</td>
<td>Kyparouna</td>
<td>750</td>
<td>160</td>
<td>— —</td>
<td>— —</td>
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<tr>
<td>Lefkoniko*</td>
<td>Kyparouna</td>
<td>750</td>
<td>160</td>
<td>45b A</td>
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<td>Prastio</td>
<td>Kyparouna</td>
<td>750</td>
<td>160</td>
<td>22b B</td>
<td>102b B</td>
<td>467a A</td>
<td>40.1</td>
<td>1165a</td>
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</table>

* Data on wild oat and wheat populations taken for three replications only.

Comparative figures, with in any one line with the same letter are not significantly different.

Small letters - 5% probability; capitals - 1% probability.
TABLE 3

Effect of herbicides on wild oat population, wheat stand and grain yield in drilled seed

<table>
<thead>
<tr>
<th>Location and year</th>
<th>Variety</th>
<th>Plot size in sq. ft.</th>
<th>Number of wild oats per 100 sq. ft.</th>
<th>CV</th>
<th>Number of wheat plants per 100 sq. ft.</th>
<th>CV</th>
<th>Yield of wheat per donum in okes</th>
<th>CV</th>
</tr>
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<tr>
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<td>Sprayed</td>
<td>Harvested</td>
<td>Tri-allate</td>
<td>Barban</td>
<td>Checks</td>
<td>%</td>
<td>Tri-allate</td>
</tr>
<tr>
<td>1965-1966</td>
<td>Morphou</td>
<td>Kyperounda</td>
<td>1250</td>
<td>250</td>
<td>138c C</td>
<td>668b B</td>
<td>1660a A</td>
<td>16.0</td>
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<tr>
<td></td>
<td>Marathovounos</td>
<td>Kyperounda</td>
<td>750</td>
<td>160</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>1966-1967</td>
<td>Morphou 1</td>
<td>Kyperounda</td>
<td>450</td>
<td>80</td>
<td>88c B</td>
<td>398b B</td>
<td>887a A</td>
<td>19.2</td>
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<tr>
<td></td>
<td>Morphou 2</td>
<td>Kyperounda</td>
<td>375</td>
<td>80</td>
<td>26b B</td>
<td>176b AB</td>
<td>424a A</td>
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<td></td>
<td>Gyra</td>
<td>Tripolitico</td>
<td>750</td>
<td>160</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

* Treatment replicated five times, in all others there were six replications.

Comparative figures, with in any one line with the same letter are not significantly different.

Small letters — 5% probability; capitals — 1% probability.
TABLE 4

Yield of different varieties of wheat following treatments (a) with tri-allate and barban in a wild oat free field at Athalassa Farm, 1966 - 1967.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Dosage/donum cc.</th>
<th>Yield in okes per donum</th>
<th>Variety Kyperounda</th>
<th>Variety Psathas</th>
<th>Variety Tripolitico</th>
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<tr>
<td></td>
<td></td>
<td>Drilled</td>
<td>Broadcast</td>
<td>Drilled</td>
<td>Broadcast</td>
</tr>
<tr>
<td>Tri-allate</td>
<td>387</td>
<td>263 a</td>
<td>232 a</td>
<td>197 a</td>
<td>232 a</td>
</tr>
<tr>
<td>Barban</td>
<td>387</td>
<td>264 a</td>
<td>226 a</td>
<td>189 a</td>
<td>226 a</td>
</tr>
<tr>
<td>Checks</td>
<td>—</td>
<td>284 a</td>
<td>222 a</td>
<td>180 a</td>
<td>221 a</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CV=8.4%</td>
<td>CV=9.5%</td>
<td>CV=7.2%</td>
<td>CV=13.3%</td>
</tr>
</tbody>
</table>

(a) Plot size=450 sq. ft.; area harvested=80 sq. ft./plot.

Figures with the same letter in any one column are not significantly different.
TABLE 5

Yield of different varieties of barley following treatment \(^{(a)}\) with tri-allate and barban in a wild oat free field at Athalassa Farm, 1966 - 1967.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Dosage/donum</th>
<th>(\text{Yield in okes per donum}^{(a)})</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>cc.</td>
<td>Variety Sel 55 - 22</td>
</tr>
<tr>
<td>Tri-allate</td>
<td>387</td>
<td>Drilled 344 a</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Broadcast 358 a</td>
</tr>
<tr>
<td>Barban</td>
<td>387</td>
<td>Drilled 323 a</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Broadcast 355 a</td>
</tr>
<tr>
<td>Control</td>
<td>—</td>
<td>Drilled 320 a</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Broadcast 333 a</td>
</tr>
</tbody>
</table>

CV=3.6% \(\text{CV}=5.6\%\) CV=3.9% \(\text{CV}=4.6\%\)

\(^{(a)}\) Plot size=450 sq. ft.; area harvested=80 sq. ft./plot.

Figures with the same letter in any one column are not significantly different.
ΠΕΙΡΑΜΑΤΑ ΚΑΤΑΠΟΛΕΜΗΣΕΩΣ ΤΗΣ ΑΓΡΙΟΘΡΩΜΗΣ ΕΙΣ ΤΑ ΣΙΤΗΡΑ ΕΝ ΚΥΠΡΩ

ΠΕΡΙΛΗΨΗ

Πειράματα διεξάγοντα είς διαφόρους σιτοπαραγωγικούς πε- 
ριοχάς τῆς νήσου κατά τὴν περίοδον 1965–1967, μὲ τὰ ἐκλεκτικὰ 
ζιζανικτόνα τριάλλειτ (tri-allate) καὶ μπαρμπάν (barban) διά 
τὴν καταπολέμησιν τῆς ἀγριοθρώμης εἰς τὰς καλλιεργείς σῖτου 
καὶ κριθῆς ἔδωσαν λίαν ἰκανοποιητικὰ ἀποτελέσματα. Καὶ τὰ 
δύο αὐτὰ ζιζανικτόνα, ἤτοι τὸ τριάλλειτ (ὡς Anadex BW) καὶ 
τὸ μπαρμπάν (ὡς Carbyne), εἰς ἀνάλογαν 387 κ.χ.κ. εἰς 6.7 σιτο-
κρατορικά γαλλόνια ὕδατος (25 περίπου ὁautoplay) ἀνὰ κυβερνη-
τικὴν σκάλαν ἐπέφεραν εἰς τοὺς οἰροματικοὺς ἀγροὺς μείωσιν 
τοῦ πληθυσμοῦ τῆς ἀγριοθρώμης, τὸ μὲν τριάλλειτ κατὰ 92%, τὸ 
δὲ μπαρμπάν κατὰ 38% (μέσος ὄρος 18 πειραμάτων μὲ σῖτον καὶ 
κριθῆν). Παρασκεύασος ἐπὶ ἐγκαίρος καταπολέμησις τῆς ἀγριοθρώ-
μης καὶ ἤ κατ' ἀκολουθίαν μείωσις τοῦ συναγωνισμοῦ μεταξὺ 
ἀγριοθρώμης καὶ σιτηρῶν ἔδωξαν ὡς ἀποτέλεσμα τὴν αὐξήσιν τῆς 
παραχώγης, τῆς μὲν κριθῆς κατὰ 50 ὁautoplay ἀνὰ κυβερνητικὴν 
σκάλαν εἰς τὴν περίπτωσιν τοῦ τριάλλειτ, καὶ 27 ὁautoplay ἀνὰ 
κυβερνητικὴν σκάλαν εἰς τὴν περίπτωσιν τοῦ μπαρμπάν (μέσος 
ὄρος 6 πειραμάτων) τοῦ δὲ σῖτου κατὰ 53 ὁautoplay ἀνὰ σκάλαν 
eἰς τὴν περίπτωσιν τοῦ τριάλλειτ, καὶ κατὰ 41 ὁautoplay κατὰ 
σκάλαν εἰς τὴν περίπτωσιν τοῦ μπαρμπάν (μέσος ὄρος 18 πει-
ραμάτων).

Ἡ χρήσις τοῦ τριάλλειτ προεκάλεσε εἰς ὁρισμένας περι-
pτώσεις ἐλαφρὰν μείωσιν τοῦ πληθυσμοῦ τῶν φυτῶν σῖτου, ἀλλ' 
ἢ μείωσις αὐτὴ εἰς τὰ περισσότερα τῶν πειραμάτων οὐδεμιᾶ 
προεκάλεσε μείωσιν τῆς παραχώγης, καθότι ἡ καταπολέμησις 
τῆς ἀγριοθρώμης ἐλέγχει ὡς ἀποτέλεσμα τὴν ἀπαλλαγήν τοῦ σῖ-
του ἀπὸ τὸν συναγωνισμὸν τῆς ἀγριοθρώμης, πρᾶγμα τὸ ὅποιον 
συνέτεινε εἰς τὴν καλύτεραν ἀνάπτυξιν τῶν φυτῶν τοῦ σῖτου καὶ 
eἰς μεγαλύτερας ἀποδόσεις.

Ἡ ἐπί τῆς βάσει τῶν ἀποτελεσμάτων τῶν πειραμάτων τοῦτων 
συνιστάται ἡ χρήσις τῶν τριάλλειτ ὅσον καὶ τοῦ μπαρμπάν 
dίὰ τὴν οἰκονομικὴν καταπολέμησιν τῆς ἀγριοθρώμης εἰς τὰ σι-
tηρά. Ἡ ἐπείδη τὸ τριάλλειτ ἐν συγκρίσει μὲ τὸ μπαρμπάν ἄπε-
δείχθη ἀποτελεσματικὸτέρων διὰ τὴν καταπολέμησιν τῆς ἀγριο-
θρώμης, συνιστάται ὅπως τοῦτο χρησιμοποιήσει εἰς τὰς φυτεῖας 
kριθῆς καὶ εἰς τὰς φυτεῖας σῖτου, αἰτίες προβλέπεται ὅτι θὰ
έχουν σοβαράν προσβολήν ἀγριοθρώμης. Εἰς τὰς φυτεῖας τῶν
φυτῶν τούτων, ἰδίως δὲ τῷ σῖτῳ, αἵτινες προβλέπεται ὅτι θὰ
έχουν ἢ ἔχουν ἐλαφράν μόνον προσβολήν ἀγριοθρώμης, δέον
ὅπως χρησιμοποιηθῇ τὸ μπαρμπάν.

Τὸ τρόπος χρησιμοποιήσεως τῶν δύο τούτων ζίζανικτόνων
eἶναι διάφορος:—

Τὸ μπαρμπάν χρησιμοποιεῖται μεταφυτρωτικῶς καὶ ὅταν τὰ
πλείστα φυτὰ τῆς ἀγριοθρώμης εὐρίσκονται εἰς τὸ στάδιον τοῦ
1—2½ φύλλων. Ῥήσασμός πρὸ ἢ μετὰ τὸ στάδιον αὐτὸ ἀναπτύ-
ξεως τῆς ἀγριοθρώμης δὲν θὰ εἴη ικανοποιητικά ἀποτελέσμα-
tα διὰ τὴν καταπολέμησιν της.

Τὸ τριάλλειτ χρησιμοποιεῖται ἀμέσως μετὰ τὴν σποράν, δέον
δὲ ὅπως ὁ σπόρος τοῦ σῖτου ἢ κρίθης παραχωθῇ καλῶς εἰς τὸ
ἐδάφος, τουλάχιστον εἰς βάθος 1—2'. Ἀμέσως μετὰ τὴν ἐφάρ-
μαγήν τοῦ τριάλλειτ δέον νὰ παραχωθῇ εἰς τὸ ἐδάφος διὰ
ἀταυροειδοὺς καλλιεργείας εἰς βάθος ½—1', χρησιμοποιώντας δι'
αὐτὸν τὸν σκοπὸν ὀδοντωτῆν σβάρναν. Ἡ χρήσις τοῦ ζίζανικτό-
νου αὐτοῦ προϋποθέτει ἑπίσης καλὰ καλλιεργημένον ἐδάφος,
ὅμοιομορφον, καὶ ἂνευ λίθων, «θόλων», ὑπολειμμάτων φυτῶν ἢ
ὑπερθολικῆς ὑγρασίας.

Ἡ μὴ συμμόρφωσις πρὸς τὰ ἀνωτέρω, καθὼς ἐπίσης ἡ χρη-
σιμοποίησις μεγαλυτέρας ἢ μικροτέρας δόσεως ζίζανικτόνου,
καὶ ἡ ἀνομοιόμορφος ἐφαρμογὴ τοῦ δυνατόν νὰ μὴ δώσουν ἱκα-
νοποιητικὰ ἀποτελέσματα.
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