EFFECT OF WHEAT CULTIVARS, SEEDING RATES AND WEED CONTROL TREATMENT ON THE ASSOCIATED WEEDS

BY

EL-Hosary, A.A.; EL-Naggar, H.M.; Abd El-Hamid, M.M. and Shebl, S.M.

** Weed Control Res. Section, Field Crop Res. Institute, A.R.C., Giza, Egypt.

ABSTRACT

Two field experiments were carried out at the Experimental Farm of Sakha Research Station, Kafr El-Sheikh during 1994/95 and 1995/96 winter seasons to study the effect of wheat cultivars (Sakha 8, Sakha 61 and Giza 163), seeding rates (40, 55 and 70 Kg/ fed.) and some weed control treatments on the associated weeds.

The seasonal effects were significant on most of the studied characters for weed growth during the three sampling dates, 60, 90 and 120 days after sowing. Concerning the effect of wheat cultivars, Sakha 8 cultivar significantly decreased fresh weight, dry weight and leaf area index (LAI) of broad leaved, grassy and total annual weeds as compared to Sakha 61 or Giza 163 cultivars during three sampling dates (60, 90 and 120 days after sowing). Increasing seeding rate significantly decreased fresh weight, dry weight and LAI of broad leaved, grassy and total weeds. Axelon at the rate of 1.25 L/fed. or hand weeding (twice), significantly reduced fresh weight, dry weight and LAI of grassy, broad leaved and total annual weeds at the three dates of sampling.

INTRODUCTION

Wheat (Triticum aestivum) is the most important cereal crop in Egypt and the world. In spite of the recent increases of wheat area and national average yield, the local production is still not able to meet the growing needs of wheat.

Weeds can cause up to 10% crop losses in agriculturally developed countries, while in the developing world this figure could be two or more times higher. Several weed problems caused by intensive monocropping or repeated use of a particular herbicide are very difficult to resolve using a single control method. Valent and Wicks (1992) reported that winter wheat cultivars suppressed density and growth of weeds (barnyard grass and green foxtail) significantly than early winter wheat before and after wheat harvest. Yangqing
The present study was carried out at the Experimental Farm of Sakha Research Station, Kaff Al-Shend, Egypt during two successive seasons 1984/85 and 1995/96. The investigation aimed to study the effects of wheat cultivars, seeding rate and some weed control treatments on weeds.

The mechanical and chemical analysis of the experimental field according to Black et al. (1965), indicated that soil texture was clayey with pH 8.2 and 8.3, organic matter 2.46 and 1.81% while the available N was 19.87 and 19.03 ppm for the first and second season, respectively.

Three seeding rates (40, 55 and 70 kg/ha) were used for wheat throughout the two seasons. The seeds of wheat cultivars (Sakha 5, Sakha 51 and Giza 163) were broad cast by hand.

Acrelum 50% [3:4-isopropylphenyl-1, 1-dimethylurea], at the rate of 1.25 L/ha, and broad weeding (twice at 30 and 45 days from sowing) were used as weed control treatments in addition to the untreated weedy check plots. The herbicidal treatment was applied at 3-4 leaf stage of wheat using knapsack sprayer.

A split-plot in factorial design with four replications was used. The main plots were randomly assigned to three wheat cultivars. Seeding rates and weed control treatments were allocated in the sub-plots. The sub-plot size was 15.75 m² (3.5 m in width and 4.5 m in length). All agronomic practices of growing wheat as recommended for the region were followed.

The associated weeds were pulled by hand from two random quadrates of 0.5 x 0.5 m. Weeds were classified, counted, and the following traits were recorded at three sampling dates (60, 90 and 120 days from sowing).
1. Fresh weight (g) of grassy weeds per square meter.
2. Fresh weight (g) of broad-leaved weeds per square meter.
3. Fresh weight (g) of total annual weeds per square meter.
4. Dry weight (g) of grassy weeds per square meter.
5. Dry weight (g) of broad-leaved weeds per square meter.
6. Dry weight (g) of total annual weeds per square meter where the weeds were dried to a constant weight in a forced air oven at 70°C and the dry weight was recorded.
7. Leaf area index (LAI) of grassy weeds.
8. Leaf area index (LAI) of broad-leaved weeds.
9. Leaf area index (LAI) of total annual weeds.

Data of the two experiments were subjected to proper analysis of variance according to Snedecor and Cochran (1971). The combined analysis was conducted for the data of the two experiments according to Gomez and Gomez (1983). Duncan's multiple range test was used for comparison between means. Means followed by the same alphabetical letters are not statistically different at the 5% level of significance.

RESULTS AND DISCUSSION

The major weed species associated with wheat crop during the two growing seasons were Phalaris minor, Phalaris canariensis, Kochia scoparia, Poa annua, and Patula annua. Fresh weight, dry weight per square meter and leaf area index were used as reliable indices for weed distribution in wheat plots.

1. Effect of seasons:

The effect of seasons on weed characters presented in Table 1 showed that the seasonal effects were clear with weed distribution and growth measurements. Dry weight in the second sample of total weeds showed insignificant seasonal effect. The mean values of fresh and dry weight of broad-leaved weeds in the three samples in addition to leaf area index (LAI) in the first and second samples of the broad-leaved weeds were significantly higher in the first season. Also, fresh weight of total weeds in the three samples and dry weight of total weeds in the three samples gave significantly higher values in the first season. On the other hand, the other traits had significantly higher mean values in the second one.

At 60 and 90 days after sowing.
Table 2. The average yield of several cultivars on the effect of different management practices on yield in single and mixed crops.

<table>
<thead>
<tr>
<th>Season</th>
<th>Dry weight of Oil (t/ha)</th>
<th>Dry weight of Grass (t/ha)</th>
<th>Total weight (t/ha)</th>
<th>LAI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Winter</td>
<td>7.8%</td>
<td>21.4%</td>
<td>24.6%</td>
<td>0.85</td>
</tr>
<tr>
<td>Spring</td>
<td>17.8%</td>
<td>48.2%</td>
<td>30.0%</td>
<td>0.91</td>
</tr>
<tr>
<td>Summer</td>
<td>32.1%</td>
<td>67.7%</td>
<td>100.2%</td>
<td>1.13</td>
</tr>
</tbody>
</table>

2. Varietal effects:

Data presented in Table 2 showed the effect of four wheat cultivars on fresh weight, dry weight, and LAI of wheat at 60, 90, and 120 days after seeding as combined data over the two seasons. The results clearly indicated that all studied characters were significantly affected by wheat cultivars in all samples. It is obvious from Table 2 that fresh and dry weight/m² of grassy, broad leaved and total weed values were significantly decreased by Sakha 8 wheat cultivar compared to Sakha 61 and Giza 163. This trend was true at the three different stages of wheat growth. Giza 163 cultivar had the highest fresh weights of weeds. The high effectiveness of Sakha 8 in decreasing weed fresh weight values may be attributed to the low population of weeds occurred with this cultivar, that reflects the high competitive ability with the associated weeds. The same trend was obtained by Valenti and Wicks (1992).

Data in Table 2 indicated that leaf area index for grassy, broad leaved and total weeds at 60 and 90 days after sowing were significantly affected by cultivars. Sakha 8 cv. showed an efficient role in the suppression of LAI for weeds during the first and second samples while Giza 163 was the least efficient variety in this connection. The varietal position in weed biomass and leaf area depression may be correlated with ground cover and plant height of the cultivar in the early stage of development as reported by Niemann (1990).

The effect of the interaction between wheat cultivar and season is shown in Table 2. Significant effect of interaction between cultivar and season was detected from fresh weight of grasses/m² in the first and third samples. Fresh weight of total weeds in the first sample, dry weight and LAI of both grasses and broad leaved weeds in the first sample, dry weight of grassy weeds, LAI for broad leaved and total weeds in the second sample. These results indicate that the performance of these cultivars differed from season to season. On the other hand, insignificant effect of interaction between cultivar and season was detected in the weed measurements reflecting the constant behavior of these measurements from season to another.

3. Effect of seeding rate:

Data in Table 3 showed the effect of three seeding rates on fresh weight, dry weight and leaf area index of wheat at 60, 90 and 120 days after sowing as combined data of the two seasons.

As shown in Table 3, increasing wheat seeding rate markedly reduced fresh and dry weight of grassy, broad leaved and total annual weeds. The declined fresh and dry weight of weeds associated with raising seeding rate could be related to the reduced weed population and the increased depletion of water by wheat plants under dense crop populations. In addition, the higher crop density may intercept more light and increase the crop ability to compete for soil nutrients. Similar results were reported by Faw (1994), Zuber (1996) and Tanji et al. (1997).
Table (2): Average values of some traits of grasses, broad-leaved and total annual weeds as affected by wheat cultivars

<table>
<thead>
<tr>
<th>Sampling date</th>
<th>Wheat cultivar</th>
<th>Fresh weight g/m²</th>
<th>Dry weight g/m²</th>
<th>Leaf Area Index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Grasses</td>
<td>Broad-leaved</td>
<td>Total annual</td>
</tr>
<tr>
<td>60 DAS</td>
<td>Gala 6</td>
<td>15.90 a</td>
<td>15.50 b</td>
<td>31.40 ab</td>
</tr>
<tr>
<td></td>
<td>Gala 8</td>
<td>16.00 a</td>
<td>15.50 b</td>
<td>31.50 ab</td>
</tr>
<tr>
<td></td>
<td>Gala 163</td>
<td>16.20 a</td>
<td>15.80 ab</td>
<td>32.00 b</td>
</tr>
<tr>
<td></td>
<td>P test (CV 6%)</td>
<td>S</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>90 DAS</td>
<td>Gala 6</td>
<td>16.50 a</td>
<td>15.70 b</td>
<td>32.20 ab</td>
</tr>
<tr>
<td></td>
<td>Gala 8</td>
<td>16.60 a</td>
<td>15.60 b</td>
<td>32.20 ab</td>
</tr>
<tr>
<td></td>
<td>Gala 163</td>
<td>16.70 a</td>
<td>15.70 ab</td>
<td>32.40 b</td>
</tr>
<tr>
<td></td>
<td>P test (CV 6%)</td>
<td>S</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>130 DAS</td>
<td>Gala 6</td>
<td>16.80 a</td>
<td>15.80 b</td>
<td>32.60 ab</td>
</tr>
<tr>
<td></td>
<td>Gala 8</td>
<td>16.90 a</td>
<td>15.90 b</td>
<td>32.80 ab</td>
</tr>
<tr>
<td></td>
<td>Gala 163</td>
<td>17.00 a</td>
<td>16.00 ab</td>
<td>33.00 b</td>
</tr>
<tr>
<td></td>
<td>P test (CV 6%)</td>
<td>S</td>
<td>NS</td>
<td>NS</td>
</tr>
</tbody>
</table>

CV = Cultivar
S = Significant
NS = Not significant

Table (3): Average values of some traits of grasses, broad-leaved and total annual weeds as affected by wheat seeding rate

<table>
<thead>
<tr>
<th>Seeding rate</th>
<th>Wheat cultivar</th>
<th>Fresh weight g/m²</th>
<th>Dry weight g/m²</th>
<th>Leaf Area Index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Grasses</td>
<td>Broad-leaved</td>
<td>Total annual</td>
</tr>
<tr>
<td>60 DAS</td>
<td>40</td>
<td>17.50 a</td>
<td>17.00 b</td>
<td>34.50 a</td>
</tr>
<tr>
<td></td>
<td>65</td>
<td>17.50 a</td>
<td>17.00 b</td>
<td>34.50 a</td>
</tr>
<tr>
<td></td>
<td>70</td>
<td>17.50 a</td>
<td>17.00 b</td>
<td>34.50 a</td>
</tr>
<tr>
<td></td>
<td>F test (CV 6%)</td>
<td>S</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>90 DAS</td>
<td>40</td>
<td>44.00 a</td>
<td>43.00 b</td>
<td>87.00 a</td>
</tr>
<tr>
<td></td>
<td>65</td>
<td>44.00 a</td>
<td>43.00 b</td>
<td>87.00 a</td>
</tr>
<tr>
<td></td>
<td>70</td>
<td>44.00 a</td>
<td>43.00 b</td>
<td>87.00 a</td>
</tr>
<tr>
<td></td>
<td>F test (CV 6%)</td>
<td>S</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>130 DAS</td>
<td>40</td>
<td>68.00 a</td>
<td>67.00 b</td>
<td>135.00 a</td>
</tr>
<tr>
<td></td>
<td>65</td>
<td>68.00 a</td>
<td>67.00 b</td>
<td>135.00 a</td>
</tr>
<tr>
<td></td>
<td>70</td>
<td>68.00 a</td>
<td>67.00 b</td>
<td>135.00 a</td>
</tr>
<tr>
<td></td>
<td>F test (CV 6%)</td>
<td>S</td>
<td>NS</td>
<td>NS</td>
</tr>
</tbody>
</table>

SR = Seeding rate
S = Significant
NS = Not significant

Effect of Wheat Cultivars, Seeding Rates & Winter Control...
In respect of woods, Table (3) showed the mean values of LAI of grassy, broad leaved and total annual weeds as affected by sowing rate of wheat. It is observed that increasing seeding rate significantly decreased LAI of woods. This was clear at both sampling dates. The lower leaf area of woods under the highest seeding rate could be attributed to the taller plants and larger leaf area in addition to the larger number of culms for the crop (Blackshaw 1992). Ferrero et al. (1994) and Aston and Walzer (1996) mentioned similar explanation.

The results for the effect of interaction between seeding rates and seasons are shown in Table (3). Data revealed that the effect of the interaction was statistically significant for fresh weight of grassy weeds in the three samples. Also it was significant for fresh weight of total annual weeds at the third sample, dry weight of grasses in the second sample, dry weight of grassy, broad leaved and total weeds at the first sample, dry weight of total weight of annual weeds at second and third samples, LAI for grassy and broad leaved weeds during the first sample and for LAI for total annuals in the third sample. This indicates that the effect of seeding rate on the previous characters was inconsistent from season to season. However, this effect was constant for the rest measurements which showed a nonsignificant response to seeding rate x season interaction.

4. Effects of weed control treatments:

The mean values of fresh and dry weights and leaf area index for grassy, broad leaved and total weeds were at 50, 90 and 120 days from sowing in the combined analysis of the two seasons are presented in Table (4). The effect of weed control treatments were statistically significant on all measurements at the three sampling dates. Both chemical and mechanical methods resulted in minimizing values of weed characters under study.

Data given in Table (4) indicated considerable effects of weed control treatments on fresh and dry weight of grassy, broad leaved and total weeds. The effects of weed control treatments were significant during the three samples. The application of Ariston or hand weeding (twice) significantly reduced the fresh and dry weight of grassy, broad leaved and total weeds during the three stages of growth. The effectiveness of controlling all weeds fresh and dry weight was highest at early growth stage than at later Ariston significantly exceeded hand weeding twice in reducing fresh and dry weights of weeds. These results showed the lower efficiency of hand weeding in controlling grassy weeds. Additionally, Ariston can reduce the coming flush of weeds because its effect through the soil after application on weeds that will emerge as mentioned by Thurgood (1985). Moreover, Yadi et al. (1995) indicated that pre-emergence spraying of isoproturon (Ariston 50%) effectively controlled small casary grass (Phleumum minor) and other 6 annual broad leaved weeds in wheat. Similar results were obtained by Zaker (1996). Under weedy check treatments, it could be detected that grassy, broad leaved and total weeds decreased at 90 and 120 DAS compared to 60 DAS. This may be due to the mortality of individual weed plants resulting from the severe competition under weedy check plots. These

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Fresh weight (g)</th>
<th>Dry weight (g)</th>
<th>Leaf Area (cm²)</th>
<th>Total annual</th>
<th>Grasses</th>
<th>Broad leaved</th>
<th>Total annual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>0.63 ± 0.02</td>
<td>0.69 ± 0.02</td>
<td>57.17 ± 0.6</td>
<td>24.27 ± 0.8</td>
<td>8 ± 2</td>
<td>3 ± 2</td>
<td>3 ± 2</td>
</tr>
<tr>
<td>Hand weeding</td>
<td>0.68 ± 0.03</td>
<td>0.74 ± 0.04</td>
<td>56.25 ± 0.7</td>
<td>23.56 ± 0.9</td>
<td>7 ± 2</td>
<td>3 ± 2</td>
<td>2 ± 2</td>
</tr>
<tr>
<td>Ariston</td>
<td>0.71 ± 0.05</td>
<td>0.79 ± 0.06</td>
<td>55.34 ± 0.8</td>
<td>22.85 ± 1.0</td>
<td>6 ± 1</td>
<td>2 ± 1</td>
<td>2 ± 1</td>
</tr>
<tr>
<td>Hand weeding + Ariston</td>
<td>0.73 ± 0.07</td>
<td>0.81 ± 0.08</td>
<td>54.43 ± 0.9</td>
<td>22.14 ± 1.1</td>
<td>5 ± 1</td>
<td>2 ± 1</td>
<td>2 ± 1</td>
</tr>
<tr>
<td>Ariston + 2 passes</td>
<td>0.75 ± 0.09</td>
<td>0.83 ± 0.09</td>
<td>53.52 ± 1.0</td>
<td>21.43 ± 1.2</td>
<td>4 ± 1</td>
<td>2 ± 1</td>
<td>2 ± 1</td>
</tr>
<tr>
<td>Control + 2 passes</td>
<td>0.77 ± 0.11</td>
<td>0.85 ± 0.12</td>
<td>52.61 ± 1.1</td>
<td>20.72 ± 1.3</td>
<td>3 ± 1</td>
<td>2 ± 1</td>
<td>2 ± 1</td>
</tr>
</tbody>
</table>
results are in agreement with those obtained by Vamhaney and Singh (1990), Bhanvra et al. (1994) and Hoda and Agarwan (1989).

As the data in Table (4) revealed, leaf area index of grassy, broad leaved and total weeds were significantly affected by weed control treatments at 60 and 90 sampling dates in the combined analysis over two seasons. Aresol and hand weeding twice greatly decreased the LAI of grassy, broad leaved and total weeds during the first and second growth stages as compared to the weedy check plots. In the early stages, insignificant differences between the chemical and manual weed control in the reduction of the three measurements. However, at the second growth stage, Aresol treatment significantly exceeded hand weeding in depressing LAI of grassy, broad leaved and total weeds. The excellent efficacy of Aresol on LAI of weeds may be related to its highly exhausting effect on plant metabolism in weeds. Dhanwan (1995) found that root activity levels in treated weeds (Phalaris minor and Avena ludoviciana) fell to zero over 7 days. Moreover, root effect was increased in both weeds by incorporation treatment.

Results in Table (4) indicate that interaction of weed control treatments and season had significant effects on all measurements under study, except fresh weight of total weeds in the second and third samples. This finding revealed that the effects of weed control treatments were not constant over seasons. This may be due to the inconsistent distribution of weeds from season to another.

5. Effect of the interaction between wheat cultivars and seeding rates:

Data in Table (5) for combined analysis showed that the lowest value for all the studied measurements were obtained from 70 kg/fd, with Sakha. However, the highest values were detected from 40 kg/fd with Gliza 163 and 164. The interaction between wheat cultivars and seeding rates significantly affected LAI of grassy, broad leaved and total annual weeds. The first days after sowing. The highest seeding rate resulted in the least leaf area index values. This may be accompanied with the larger leaf area index, fall of number1 and other measures, which enabled the crop competitiveness against weeds.

In the respect of fresh weight of grassy weeds/l in 120 days after sowing, Table (5) indicated that this measurement considerably declined by increasing seeding rates of wheat. This trend was obtained under the three tested cultivars. On the other hand, Sakha 8 cultivar caused the highest suppression in fresh weight of grassy weeds at 120 DAS compared to other cultivars under all seeding rates. However, the lowest weight of grassy weeds was recorded by Sakha 8 cultivar grown by 70 kg/seed/lot. These results may explain the higher crop competitive ability under dense sowing and more competitive cultivars. Concerning the cultivars seeding rates x seasons' interaction, Table (5) shows that this interaction had significant effects on all presented measurements. This

Table 5:
<table>
<thead>
<tr>
<th>Cultivar</th>
<th>Seed Rate (kg/ha)</th>
<th>LAI</th>
<th>CWT</th>
<th>DWT</th>
<th>MCL</th>
<th>GCW</th>
<th>GCW</th>
<th>GCW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sakha 8</td>
<td>40</td>
<td>1.46</td>
<td>0.56</td>
<td>0.27</td>
<td>0.22</td>
<td>0.46</td>
<td>0.45</td>
<td>0.45</td>
</tr>
<tr>
<td></td>
<td>55</td>
<td>1.35</td>
<td>0.56</td>
<td>0.27</td>
<td>0.22</td>
<td>0.46</td>
<td>0.45</td>
<td>0.45</td>
</tr>
<tr>
<td></td>
<td>70</td>
<td>1.28</td>
<td>0.56</td>
<td>0.27</td>
<td>0.22</td>
<td>0.46</td>
<td>0.45</td>
<td>0.45</td>
</tr>
</tbody>
</table>

CV = Cultivar
S = Season
means that the effect of cultivars × seeding rates interaction was not consistent from season to another for these traits.

6. Effect of the interaction between wheat cultivars and weed control treatments:

The cultivars and weed control treatments interaction over the two seasons had significant effects on fresh weight of weeds at the three samples (Table 6). The results indicated that under three cultivars and both Ardoil and hand weeding significantly reduced all studies measured of weeds comparing to the untreated plots during all sampling dates.

Concerning weed fresh weights, it is clear that both Ardoil 50% and hand weeding significantly reduced fresh weights of grassy, broad leaved and total weeds as compared to the untreated check. The same trend was obtained under the three wheat cultivars (Sakha 8, Sakha 61 and Giza 163) during three sampling dates. On the other side, under the untreated plots, fresh weights of grassy, broad leaved and total weeds differed significantly among the three wheat cultivars. Sakha 8 with Ardoil treatment obtained the lowest values for fresh weight of grasses, in three sample stages, total fresh weight in two growth stages of wheat (90 and 120 DAS). On the other hand, Giza 163 with weedy check obtained the highest values. The superiority of Sakha 8 cultivar against fresh weight of weeds might be attributed to its higher ability in extracting water from soil due to its higher growth and larger LAI. The effect of interaction between cultivars, weed control treatments and season was not significant on fresh weight of broad leaved weeds in the first and second samples. This indicated that the effect of this interaction was constant on these measurements from season to another. However, for the rest measurements, the effect of this interaction was significant revealing the inconsistent effect from season to season.

Table (6) showed the average values of dry weight and LAI of grassy, broad leaved and total annual weeds as affected by the interaction between wheat cultivars and weed control treatments. The combined analysis showed that all measurements studied were significantly affected by weed control treatments under the three tested wheat cultivars. Ardoil and hand weeding twice during three samples obtained the lowest values for all measurements.

Sakha 8, Sakha 61 and Giza 163, with both Ardoil 50% and hand weeding twice greatly reduced dry weight of grassy, broad leaved and total weeds as compared to the untreated plots. The reduction in weed dry weights was significant during the three growth stages. On the other hand, under weedy check plots of the three tested cultivars, Sakha 8 considerably reduced dry weights of grassy, broad leaved and total weeds than both Giza 163 and Sakha 61.
The high potential of Salbu 1 variety in weed dry weight suppression may be referred to its high competitiveness for soil nutrients which might reduce dry weight accumulation by weeds as reported by Satter and Smidt (1992).

Both Ardisa and hand weeding twice significantly decreased LAI at 60 and 60 days from sowing in comparison with check plots. The higher efficiency of both chemical and manual weed control in leaf area index of gramineous, broad leaved and total annual weed was significant under the three cultivars. On the other hand, with the unweed control plots, Salbu 1 cultivars greatly reduced leaf area index of gramineous, broad leaved and total weeds during the two samples (60 and 90 DAS) as compared to Salbu 01 and Grass 103 cultivars. These findings are confirmed by those mentioned by Duanak and Zeredi (1991).

The interaction between wheat cultivars, weed control treatments and seasons was insignificant for dry weights of gramineous and total annual weeds at 120 days of growing. However, the effects of this interaction on other rest measurements were significant. This finding means that effect was inconsistent over seasons for most of these measurements.

7. Effect of the interaction between wheat seeding rates and weed control treatments

Data in Table (7) showed that wheat seeding rates and weed control interaction had significant effects on fresh weight of gramineous, broad leaved and total weeds at the three growing stages. The lowest values for fresh weight of gramineous, broad leaved and total annual weeds were detected from 70 kg seeded with Ardisa as compared to 60 kg seeded with hand weeding. On the other hand, the highest values were observed from 40 kg seeded (lowest seeding rate) with check control. The declined weed fresh weights under the three growing rates of the unseeded plots may reflect the higher competitiveness ability of wheat seeds at higher densities. This is similar to the results of Harrison and Jeereitn (1989). The interaction between seeding rates, weed control treatments and seasons insignificantly affected fresh weight of total annuals at 60 days after sowing, fresh weight of broad leaved weeds at 90 days after sowing, in addition to fresh weight of broad leaved weeds at 120 days after sowing. On the other hand, with the excluding of the above-mentioned measurements, the rest characters were significantly affected by this interaction. The effect of interaction between seeding rates and weed control treatments was significant on dry weight and LAI of gramineous and broad leaved and total annual weeds at the three samples stages (Table 7). The lowest values for previous characters were detected from applied 70 kg/ha with Ardisa at the three sampling stages. On the other hand, the highest values for all measurements were obtained from 40 kg/ha and check control.

Leaf area index of weeds at 60 and 90 DAS was significantly influenced by seeding rates and weed control treatments interaction. Under 40, 55 and 70 kg/ha as seeding rates, Ardisa 50% and hand weeding caused remarkable
Effect of Wheat Cultivars, Seeding Rates & Weed Control...


تأثير أصناف القمح بمعالجات التقاوی وبدع معاملات مكافحة الفطانش على
المحافظة المصاحبة

على عبد المقصود الحصري، هارون موسي التجاري،
مسعود محمود إبراهيم عبد الحميد، سعد محمد شبل

قسم المحاصيل - كلية الزراعة بشتهر - جامعة الزقاق - تعرض بنها،
قسم بحوث مكافحة الفطانش - معهد بحوث المحاصيل الحالية مركز البحوث
الزراعة - الجزيرة - جمهورية مصر العربية

أجريت تجارب حقيقية في منطقة البحوث الزراعية بسخا خلال موسم
1995/96، 1994 بهدف دراسة فاعلية بعض طرق مكافحة الفطانش تحت
ظروف الزراعة ب معدلات تقاوی مختلفة لثلاثة أصناف من القمح المزرعة في
جمهورية مصر العربية على الفطانش المصاحبة. تم استخدام أربعة
عواملية في أربعة مكررات حيث زرع أصناف مأمون (سخا) ، سخا 81، جوحة
123 في القطاع الزراعي، وروعة الكالات (4:6:5:5 كجم/ha) بمعدلات
مكثفة الماشي (أربيل) 1.25 تر/ha، نضافة دومية مرتين والغير معدل للناقلة.

وزعت عواملها في القطاع الشتوي فيما إلى أهم النتائج:
- كان تأثير المكثفات ناعماً على كل الصفات المدرسية الفطانش خلال ثلاث
مواقع، فنما المكثفة للدراسة في أقصى من القيود المحدودة
المباشرة الجبلية، الوزن الجاف، والمساحة الزراعية وذلك خلال كل الموقع.A،
- سجل المผลกระท的安全 8 اختلافًا معنويًا في الإوزان الموضوعية والجبلية،
- كانت هناك زيادة معدل التقاوی إلى اختلاف معنوي في الأوزان الطارئة للفطانش
الجبلية، والحبوب في المتر المربع وذلك خلال في
- أدى استخدام مبيد الأليلن وكذلك القفطان للتروية إلى تقليل الأوزان
الطورية للمباشرة الجبلية، والحبوب والكلية معنويًا في القطاع الممثلة عليها في
المقارنة وذلك خلال جميع المнатين المأخوذة.