INFLUENCE OF CEREAL APHIDS INFESTATION (THE OAT CHERRY BIRD APHID, *ROPALOSIPHUM PADI* (L.) AND GREENBUG,*SCHIZAPHIS GRAMINUM* RONDANI ON TRAITS OF CERTAIN DURUM WHEAT VARIETIES UNDER CONSTANT LABORATORY CONDITIONS

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Abstract

Wheat plants are attacked by the cereal aphids *R.padi* and *S.graminum* which are capable for causing severe injury owing to merely sap drainage. Therefore, 39 durum wheat varieties were sown in plastic pots in laboratory to seek out the influence of aphids infestation on wheat traits(1 st, 2 nd leaf blade length and seedlings dry weight). The results obtained can be summarized as follows:

-The highest aphid number took place with, 33. Sc-1DWI variety followed by 14.Sc-1-DWI and SYTDW 41, varieties, while the least aphid population occurred on 6.SC DWL, S.Y.T.D.W 29,26 Sc.DWL and S.Y.T.D.W 27 varieties.

-The highest percentage reduction of 1st leaf blade length took place with,S.Y.T.D.W. 5 variety, followed by S.Y.T.D.W. 8 variety and S.Y.T.D.W. 47 variety, while the least percentage reduction with 6 Sc. DWL 3 Sc.DW L,S.Y.T.D.W 24 and ,6Sc. 1.DWI varieties, respectively.

-The highest percentage reduction of 2nd leaf blade length took place with,S.Y.T.D.W. 5, and S.Y.T.D.W. 44 varieties, respectively, while the least reduction occurred with 39. Sc. DWL, S.Y.T.D.W. 41,33. Sc.-1-DWI and 15.Sc. DWL varieties, respectively.

-The results also indicated that the highest percentage reduction of dry weight seedling were recorded, with S.Y.T.D.W. 7, S.Y.T.D.W. 51 and S.Y.T.D.W. 5 varieties, respectively, while the least percentage reduction occurred with S.Y.T.D.W. 24,2 Sc. DWL and 34.Sc.DWL varieties, respectively.

INTRODUCTION

Wheat aphids *R.padi* and *S.graminum* (Homoptera: Aphididae) are emerging as serious pests of wheat in Egypt, particularly in Middle and Upper Egypt. They are Known to transmit wheat virus diseases. However, under favorite conditions the insect produces several generations and can cause heavy damage in the wheat crop. Both nymphs and adults suck the plant sap, which causes reduced vigor, stunting,

yellowing of leaves and delayed tillering and grain formation. Excretion of honey dew by the insect encourages sooty mold. Many investigators stated that wheat yield losses due to aphids infestation ranged from 7.5% to 60% (Carter *et al.*, 1980). Also. Lee *et al.* (1981)showed that, yield and its components decreased significantly as cumulative index of aphid infestation increase. Therefore. until now, plant breeders have been engaged with developing new cultivars, with high yield capacity and less aphid damage.

MATERIALS AND METHODS

The present experiment was conducted to determine the aphid infestation incidence (both of the oat cherry bird aphid, *Rapalosiphum padi* and the greenbug, *Schizaphis graminum* on 1st and 2nd leaf blade length and dry weight of certain different durum wheat varieties, Table 1 under lab. constant conditions. So, ten wheat grains of each of durum wheat variety, Table 1 were sown in two plastic pots 20 cm diameter in a circular manner, then after seedlings emergence, they were thinned to seven plants. One set of pots was artificially infested with a single newly emerged apterous adult female of both the oat cherry-bird aphid *R.padi* and the greenbug, *S. graminum* to every seedlings of 7 days old. The other set of pots was kept without infestation (Aphid free) as control. All pots were covered with glass lanterns fitted on its tops with tight white gauze to allow air circulation and kept under constant conditions, i.e. light/dark phases 16/8 hrs., 20±3° and 70±5 RH%, respectively at aphids screening nursery, ARC Giza.

When seedling were four weeks old, parameters measured were:

1. Assessing the total numbers of both of *R.padi* and *S.graminum* found on the plants (process of establishment of insect population on them).
2. Measuring the first and second seedling leaf blades.
3. Estimating the seedlings dry weight by gently pulling out the plants from soil, washing carefully with running tap water, then drying inside an electrical oven at 90° for 2 hrs.

The previous procedures took place with both infested and non-infested seedlings (control).

RESULTS AND DISCUSSION

A comparison of the relative intensity of *R.padi* and *S.graminum* response to-

ward different tested durum varieties revealed that 16.Sc.DWL, 29 S.Y.T.D.W., 26 Sc. DWL. and 27S.Y.T.D.W. were least suitable for insect establishment, whereas 33.Sc. 1-DW1, 14.Sc. 1DW1 and S.Y.T.D.W. 41 had the lowest level of resistance.

As shown in Table 2, it could be concluded that aphids infestation induced numerous reduction percentages for the 1st and 2nd leaf blades length and dry seedling weight as well.

a. EFfect of aphids infestation on the 1st leaf blade

Obtained data in Table 2 indicated that, the highest mean percentage reduction of the 1st leaf blade length occurred with S.Y.T.D.W. 5 variety (35.1%) followed by S.Y.T.D.W. 8 variety (32.4%) and S.Y.T.D.W. 47 variety (30.06%), while the least mean percent reduction recorded with, 16.Sc. DWL variety (2.06%), 3.Sc. DWL variety (2.52%), S.Y.T.D.W 24 (3.09%) variety and 6.Sc-1-DWI variety (4.15%).

b. EFfect of aphids infestation on the 2nd leaf blade

As shown in Table 2, data determined that the highest mean percentage reduction of the 2nd leaf blade length took place with S.Y.T.D.W. 5 variety (43%) and S.Y.T.D.W. 44 variety (40.81%). On the other hand, results obviously revealed that, the least mean percentage reduction occurred with 39. Sc. DWL variety (0.13%), S.Y.T.D.W. 41 (1.28%), 33. Sc. -1- DWI variety (1.38) and 15. Sc. DWL variety (2.49%).

c. EFfect on the seedlings dry weight

Also, data present in Table 2, revealed that the highest mean percentage reduction of seedling dry weight occurred with S.Y.T.SD.W. 7 variety (77.61%), S.Y.T.D.W. 51 variety (55.56%) and S.Y.T.D.W. 5 variety (54.84%), while the least mean percentage reduction was recorded with, S.Y.T.D.W. 24 variety (3.41%), 2 Sc. DWL variety (3.84%) and 4. Sc. DWL variety (7.14%).

According to the obtained data, it could be concluded that, aphid infestation at early growth plant stage induced reduction in 1st and 2 nd leaf blade length. Reaction of tested varieties to aphids infestation expressed as : percentage reduction of the 1st leaf blade, reduction of the 2nd leaf blade, length and percent reduction of seedling dry weight, were found independed of each other, some varieties suffered high reduction of the 1st leaf blade, but less of the 2nd leaf blade, while others suffered high reduction in both leaves. It may be concluded, however, that among the tested

varieties, the reduction in leaf blade length averaged (35.11-3.09), (43.0-0.13) or 1st and 2nd leaf, respectively. This reduction in growth may affect the normal developing procedures of seedlings through affecting photosynthetic area. Burton (1988) found that, reduced total leaf area, combined with chlorotic plant responses, would have a significant impact on the plant's ability to photosynthesize at optimal levels. Total photosynthetic leaf area could be reduced by over 50% following infestation by the aphid *Diuraphis noxia*. In addition to reduction of seedlings dry weight of all durum wheat varieties under this study, which cause the loss yield, these results are in agreement with those of several investigators.

Abundant evidence accumulated during the last decade has documented that in North America several species of cereal aphids can cause significant yield loss in small grains, especially if the feeding occurs during the early growth stages of the group (Ba-Angood and Stewart, 1980; Burton *et al.*, 1985; Johnson and Bishop, 1987; Kieckhefer and Kontack *et al.* 1988; McPhersan *et al.*, 1986). Pike and Schaffiner (1985) mentioned that, aphid feeding during the seedling stage of the plant growth; at population densities of only 15 to 20 aphids per tiller for 1 week, might reduce grain yield by 20%. DuToit (1989) found that, aphids induce stunted growth and chlorotic spots, leaf folding and rolling and spike trapping to wheat plants leaves. Riedell (1989b) proved that, *Diuraphis noxia* (Mordvika) infestation reduced chlorophyll concentrations in younger wheat leaves.

Doodson and Sounders (1970) found that, the large aphid populations that could develop on a plant were a major sink for plant metabolites and lead to a loss of plant vigour, and occasionally plant death, so reducing the potential yield. Retardation of stem elongation was undoubtedly a result of inhibited root and shoot growth caused by aphids feeding during early stages of plant growth (Gellner *et al.*, 1989). He also added that, the reduction in spikelet number related directly to the fewer seeds and hence lower seed yield by weight, average seed yield was reduced through a range of 24 to 65%.

In general, significant yield and quality losses due to aphid have been documented around the world (Pike and Allisen, 1991).

Table 1. Names, cross and pedigree of different durum wheat varieties.

No.	Origin 95/96	Variety, names and cross and pedigree
1	S.Y.T.D.W. 4	ECO/3*MEXI 75/6/GTA//D21563/AA/3/STK/5/FG/4/61-115/3/3G11 SDD 1416-3SD-1SD-1SD-0SD
2	S.Y.T.D.W. 5	ECO/3*MEXI 75/6/GTA//D21563/AA/3/STK/5/FG/4/61-130//61-115/3/G11 SDD 1416-3SD-1 SD-2SD-OSD
3	S.Y.T.D.W. 10	ECO/3*MEXI75/6/GTA//D21563/AA/3/STK/5/FG/4/61-130//61-115/3/3G11 SDD 1416-12SD-1SD-2SD-OSD
4	S.Y.T.D.W. 11	ECO/3*MEXI 75/6/GTA//D21563/AA/3/STK/5/FG/4/61-130//61-115/3/3G11 SDD 1416-12SD-1SD-3SD-OSD
5	S.Y.T.D.W. 12	CMH-79-1168/MEXI 75//OFN/SOMO SDD 1420-3SD-1SD-1SD-OSD
6	S.Y.T.D.W.17	CMH-79-1168/MEXI 75//OFN/SOMO/3/CHEN"S"/RBC//HUL'S'/TUB"S" SDD 1422-13SD-2SD-1SD-OSD
7	S.Y.T.D.W. 19	CMH-79-1168/MEXI 75//OFN/SOMO/3/CHEN"S"/RBC//HUL'S'/TUB"S" SDD 1422-14SD-2SD-1SD-OSD
8	S.Y.T.D.W. 41	CMH-77.774/MEXI 75/CHM 773774/3/HUL'S'/ CHEN"S"/CHTO"S" SDD 1439-10SD-21SD-3SD-OSD
9	S.Y.T.D.W. 51	CMH 77.774/MEXI 75//CHM 77.774/6/GTA//D21563//AA/3/STK/5/ FG/4/JO 61-130//61-115/3/G11 SDD 1439-10SD-1SD-3SD-OSD
10	S.Y.T.D.W. 10	CMH 77.774/MEXI 75//CHM 77.774/3/OMRABI 5 SDD 1441-1SD-1SD-1SD-OSD
11	S.Y.T.D.W. 3	CMH 77.774/MEXI 75//CHM 77.774/3/OMRABI 5 SDD 1441-1SD-6SD-2SD-OSD
12	S.Y.T.D.W. 25	CMH 77.774/MEXI 75//CHM 77.774/3/OMRABI 5 SDD 1441-1SD-6SD-4SD-OSD
13	S.Y.T.D.W. 47	CMH 77.774/MEXI 75//CHM 77.774/3/OMRABI 5 SDD 1441-1SD-6SD-7SD-OSD
14	S.Y.T.D.W. 8	CMH 77.774/MEXI 75//CHM 77.774/3/OMRABI 5 SDD 1441-1SD-8SD-1 SD-OSD
15	S.Y.T.D.W. 12	CMH 77.774/MEXI 75//CHM 77.774/3/OMRABI 5 SDD 1441-1SD-8SD-5SD-OSD
16	S.Y.T.D.W. 15	CMH 77.774/MEXI 75//CHM 77.774/3/OMRABI 7/4/21564/CR"S"// RABI"S"/3/GLL/LD"S"/RD SDD 1445-6SD-1SD-2SD-OSD
17	S.Y.T.D.W.29	ROK"S'/MEXI 75/5/21564/CR"S"//RABI/3/810/4/INRAT 69/3/BD SDD 1461-2SD-1SD-2SD-OSD
18	S.Y.T.D.W. 23	ROK"S'/MEXI 75/4/KIFF"S"//RUFF"S"/FG"S"/3/MEXI 75 SDD 1462-2SD-1SD-1SD-OSD
19	S.Y.T.D.W. 24	ROK"S'/MEXI 75/4/KIFF"S"//RUFF"S"/FG"S"/3/MEXI 75 SDD 1462-2SD-1SD-2SD-OSD
20	S.Y.T.D.W. 27	ROK"S'/MEXI 75/3/CR"S"/PLC"S"//TEAL"S"/D 6811 SDD 1463-3SD-1SD-2SD-OSD
21	S.Y.T.D.W. 37	KIFF"S"//RUFF"S"/FG"S"/3/MEXI 75/4/CASTICO SDD 1464-1OSD-1SD-1SD-OSD
22	S.Y.T.D.W. 44	KIFF"S"//RUFF"S"/FG"S"/3/MEXI 75/4/ KIFF"S"//RUFF"S"/FG"S"/3/MEXI 75 SDD 1469-1SD-2SD-1SD-OSD
23	S.Y.T.D.W. 7	THOR-4 CD 86672-3M-030YRC040PAP 43Y-3 PAP-OY
24	S.Y.T.D.W. 16	OMRUF-1 ICD 86-0436-A B L-OTR-9AP-OTR-LA P-OTR
25	S.Y.T.D.W. 22	LAHN/HAUCAN ICD 88-1396-ABL-7AP-OAP-8AP-OAP
26	2.Sc.DWL	Frig"S" x Mexi"S"-Mgh x 51792-Durum 6 Sh89-17-OSh-OSh-7Sh-OSh
27	3.Sc.DWL	Shwa"S"-YAV"S" x STORK"S" Sh 89-21-OSh-OSh-OSh-11Sh-OSh

Table 1 Cont.

No.	Origin 95/96	Variety, names and cross and pedigree
28	6.Sc.DWL	WIN"S" x ROK"S"
		Sh 89-30-OSh-OSh-OSh-14Sh-OSh
29	15.Sc.DWL	Saed"S" x Shwa"S"-YAV"S"
		Sh 89-56-OSH-OSh-OSh-9Sh
30	26. Sc. DWL	CMH77-74//ITURA/CMH74A-3700/3/CMH77-7741CMH79A-1149X1147X
		wIN"S"
		Sh 89-81-OSh-OSh-0Sh-17Sh-OSh
31	34.Sc.DWL	Somo/Str//Brachoua
		ICD 89-0371--AP-OSh-11Sh-OSh
32	39.Sc.DWL	Syrica 2/Hora
		ICD 89-0705-OAP-OSh-OSh-2Sh-0Sh
33	42.Sc.DWL	Branchoua/5/A630/STY//LDS/3/WIN/4Erp/Ruso
		ICD 89-0709-OAP-OSh-OSh-2Sh-OSh
34	47.Sc.DWL	Tunisian Durum1 x Rok"S"
		Sh89-9-OSh-OSh-OSh-7Sh-OSh
35	6.Sc-1-DWI	PATKA-6
		CD 78995-1m 030YRC-040M-1YRL-OAP
36	14.Sc-1-DWI	Gerboy
		ICD 88-1324-ABL-6AP-OAP-1AP-OAP
37	20.Sc-1-DWI	Bicro/Loukos 4
		ICD 87-0108-APL-15AP-OTR-3AP-OAP
38	33.Sc-1-DWI	Chaika-1
		CD66968-2Y-020H-OBW-3YRC-OPAP
39	35.Sc-1-DWI	Burhinus-3
		CD78988-44-040M-030YRC-2M-OYRL-2M-OY

Table 2. Number of *R.padi* and *S.graminum* that setted on seedling of tested durum wheat varieties, means of seedlings trails (1st, 2nd leaf blades) and dry seedling weight, 3 weeks after infestation.

No.	Aphid No.			First leaf length (cm)				Second leaf length (cm)				Seedlings dry weight (gm)			
	Sch. graminum	*Rap. padi*	Aphid mean	Cont.	Treat.	Mean	Red-uc.	Cont.	Treat.	Mean	Red-uc.	Cont.	Treat.	Mean	Red-uc.
1	9.43	9.49	9.46	12.43	11.57	11.99	6.91	10.66	7.14	8.90	33.02	0.116	0.060	0.088	48.28
2	8.47	9.78	9.13	16.29	10.57	13.43	35.11	8.86	5.05	6.96	43.00	0.031	0.014	0.023	54.84
3	9.52	10.02	9.77	14.20	11.87	13.03	16.41	9.33	7.34	8.34	21.36	0.020	0.012	0.016	40.00
4	9.61	11.31	10.46	10.14	8.40	9.27	17.16	8.50	6.06	7.28	28.71	0.024	0.015	0.020	37.50
5	10.58	13.33	11.96	11.86	10.00	12.93	15.29	9.29	8.22	8.76	11.52	0.034	0.025	0.030	26.47
6	13.91	11.72	12.82	13.25	10.82	12.04	18.34	9.25	8.95	9.10	3.24	0.027	0.020	0.024	25.93
7	12.09	11.83	11.96	13.17	9.72	11.45	26.20	11.40	9.19	10.30	19.39	0.017	0.013	0.015	23.53
8	18.21	10.21	14.21	12.75	11.17	11.96	12.39	8.61	8.50	9.56	1.29	0.025	0.018	0.022	28.00
9	14.06	10.72	12.39	15.83	12.91	14.37	18.45	14.50	11.44	12.97	21.10	0.027	0.012	0.020	55.56
10	13.18	12.34	12.76	15.31	12.51	13.91	18.29	10.17	8.42	9.30	17.21	0.014	0.011	0.012	21.43
11	11.54	12.13	11.84	18.43	14.43	16.43	21.70	14.57	12.21	13.39	16.20	0.032	0.024	0.028	25.00
12	10.38	10.07	10.22	19.71	15.35	17.53	22.12	12.71	11.29	12.00	11.17	0.053	0.042	0.048	20.76
13	11.75	11.82	11.79	18.86	13.19	16.03	30.06	15.43	11.24	13.34	27.15	0.268	0.200	0.234	25.38
14	10.01	9.30	9.65	23.14	15.61	19.38	32.54	14.00	11.96	12.98	14.57	0.320	0.178	0.249	44.38
15	9.83	13.28	11.56	20.14	15.07	17.61	25.17	14.29	11.92	13.11	16.59	0.105	0.060	0.082	42.86
16	8.62	6.14	7.38	12.86	11.43	12.15	11.12	12.14	9.19	10.66	24.30	0.097	0.084	0.090	13.40
17	7.25	5.45	6.35	12.57	11.81	12.19	6.05	10.57	8.99	9.78	14.95	0.070	0.060	0.065	14.29
18	8.67	7.47	8.07	12.16	10.62	11.39	12.66	9.50	7.06	8.28	25.68	0.068	0.062	0.065	8.82
19	6.33	11.30	8.82	11.33	10.98	11.16	3.09	7.16	7.06	7.11	1.40	0.088	0.085	0.086	3.41
20	5.58	8.11	6.84	11.67	11.17	11.42	4.28	10.17	9.37	9.77	7.87	0.257	0.213	0.235	17.12
21	8.13	8.89	8.51	13.50	11.78	12.64	12.74	8.83	7.43	8.13	15.86	0.013	0.012	0.013	7.69
22	11.64	10.90	11.27	12.50	9.70	11.10	22.40	10.66	6.31	8.48	40.81	0.118	0.078	0.098	33.90
23	10.14	9.33	9.73	10.20	9.32	9.76	8.63	8.33	6.57	7.45	21.14	0.067	0.015	0.041	77.61
24	9.63	7.98	8.81	11.33	10.64	10.99	6.09	9.50	7.41	8.46	22.00	0.018	0.015	0.017	16.67
25	10.44	10.14	10.29	18.17	17.17	17.67	5.50	11.33	10.33	10.83	8.83	0.028	0.022	0.025	21.43
26	8.27	5.90	7.08	18.80	17.40	18.10	7.45	12.20	11.55	11.88	5.33	0.026	0.025	0.026	3.84
27	7.37	6.76	7.06	17.44	17.00	17.22	2.52	10.20	9.85	10.02	3.43	0.084	0.077	0.080	8.33
28	6.46	6.21	6.34	18.00	17.63	17.82	2.06	13.25	12.00	12.63	9.43	0.023	0.020	0.021	13.04
29	7.51	8.44	7.98	14.75	13.04	13.89	11.59	9.25	9.02	9.13	2.49	0.030	0.026	0.028	13.33
30	7.58	6.36	6.70	18.29	16.33	17.31	10.72	13.71	12.12	12.92	11.60	0.013	0.011	0.012	15.39
31	9.56	10.85	10.21	13.22	10.79	12.01	18.38	9.11	7.50	8.31	17.67	0.014	0.013	0.014	7.14
32	7.77	11.67	9.72	13.00	11.99	12.49	7.77	7.76	7.75	7.76	0.13	0.038	0.021	0.029	44.74
33	10.96	12.43	11.70	15.66	13.90	14.38	11.26	11.33	10.64	10.99	6.09	0.048	0.042	0.045	12.50
34	9.43	12.77	11.10	14.57	12.89	13.73	11.53	12.50	10.46	11.48	16.32	0.030	0.024	0.027	20.00
35	12.44	15.03	13.74	18.33	17.57	17.95	4.15	14.25	13.71	13.98	3.79	0.030	0.022	0.026	26.67
36	14.55	14.18	14.37	22.33	20.85	21.59	6.63	16.00	15.24	15.62	4.75	0.014	0.010	0.012	28.57
37	12.83	14.16	13.50	23.50	21.34	22.42	9.19	18.00	15.89	16.94	11.72	0.027	0.020	0.023	25.93
38	15.12	17.46	10.20	20.20	23.56	24.88	10.08	17.44	17.20	17.32	1.38	0.022	0.019	0.021	13.64
39	11.89	13.42	12.65	19.28	17.24	18.26	10.58	12.71	9.78	11.24	23.05	0.042	0.034	0.038	19.05
	10.28	13.48		15.79	13.65			11.37	9.88			0.056	0.044		

L.S.d. at 5% for								
Treatments	NS		0.244		0.187		0.008	
Varieties	2.148		1.075		0.826		0.036	
Treat x Var	3.038		1.521		1.169		0.051	

REFERENCES

1. Ba-Angood, S.A. and P.K. Stewart. 1980. Effect of cereal aphid infestation on grain yield percentage protein of barley, wheat and oats in southeastern Quebec. Can. Entomol. 112:681-686.

2. Burton, R.L. 1988. The Russian wheat aphid. First Annual Report of the Agricultural Research Service. U.S. Department of Agriculture, October, 1988.

3. Burton, R.L., D.D. Simon, J.K. Starks and R.D. Morrison. 1985. Seasonal damage by greenbugs to a resistant and a susceptible variety of wheat. J. Econ. Entomol., 78: 395-401.

4. Carter, N., I.F.G. McLean, A.D. Watt and A.F.G. Dixon. 1980. Cereal aphids: a case study and review. Applied Biology. 5: 271-348.

5. Doodson, J.K. and P.J.W. Saunders. 1970. Some effects of barley yellow dwarf virus on spring and winter wheat in field trials. Ann. Appl. Biol., 66: 361-374.

6. Du Toit, F. 1989. Components of resistance in three bread wheat lines to Russian wheat aphid (Homoptera: Aphididae) in South Africa. J. Econ. Entomol. 82: 1779-1781.

7. Gellner, J., R.W.K. Kieckhefer and M.W. Ferguson. 1989. Assessment of aphid damage in seedling wheat by a slant-board-absorbent technique. Cereal Res. Commun. 17: 149-151.

8. Johnson, R.L. and G.W. Bishop. 1987. Economic injury levels and economic thresholds for cereal aphids in spring-planted wheat, J. Econ. Entomol. 80: 478-482.

9. Kieckhefer, R.W. and B.H. Kantac. 1988. Yield losses in winter grains caused by cereal aphids in South Dakota. J. Entomol., 81: 317-321.

10. Lee, C., J. Stevens, S. Stokes and S.D. Wratten. 1981. Duration of cereal aphid populations and the effects on wheat yield and bread-making quality. Ann. Appl. biol. 98: 169-178.

11. McPherson, R.M., T.M. Starling and H.M. Compers, Jr. 1986. Fall and early spring aphid populations affecting wheat and barley production in Virginia. J. Econ. Entomol. 79: 827-832.

12. Pike, K. and Allison. 1991. Russian wheat aphid biology damage and management. Pacific Northwest Research Bulletin 371. Wash State Univ., Pullman, W.A.

13. Pike, K.S. and R.L. Schaffner. 1985. Development of autumn populations of cereal aphids, *Rhopalosiphum padi* and *Schizaphis graminum* and their effects on winter wheat in Washington State. J. Econ. Entomol. 78: 676-680.

14. Riedell, W.E. 1989b. Effects of Russian wheat aphid infestation on barley plant response to drough stress. Physiol. Plant. 77: 587-592.

تاثير إصابة من القمح (من الشوفان (.L)*Ropalosiphum padi* ومن القمح الأخضر *Schizaphis graminum* Rondani على سمات بعض أصناف القمح الصلدة فى المعمل

إبراهيم على مرزوق

معهد بحوث وقاية النباتات – مركز البحوث الزراعية،الدقى . الجيزه.

مما لا شك فيه أن إصابة القمح بحشرة المن تؤدى إلى العديد من الأضرار للنباتات المصابة والناتجة عن تغذية الحشرة المباشر على عصارة النبات بالإضافة إلى نقل الأمراض الفيروسية الأمر الذى يؤدى إلى أضعاف النبات وقلة المحصول الناتج .

تهدف هذه الدراسة إلى بيان مدى تأثر إصابة بادرات القمح فى مراحل النمو المبكرة بحشرتى من الشوفان *R.padi* ومن القمح الأخضر *S.graminum* علي بعض الصفات النباتية (طول نصل الورقة الاولي والثاني وكذا الوزن الجاف للبادرة) تحت الظروف المعملية.

وقد استخدم لهذه التجربة ٣٩ صنف من الأقماح الصلدة (الديورم) حيث زرعت عشرة حبوب من كل صنف في مكررين (٢ أصيص بلاستيك) وعند ظهور البادرات خففت إلي سبعة. وقد تم إحداث عدوي صناعية عن طريق وضع حشرة كاملة من حشرة من الشوفان *R.padi* ومن القمح الأخضر *S.graminum* الي أحد المكررين وترك الآخر بدون عدوي كمقارنة.

حفظت جميع الأصص تحت ظروف بيئية ثابتة من درجات الحرارة والرطوبة والضوء في صوبة تربية المن بمركز البحوث الزراعية (٢٠ ± ٣ م°، ٧٠ ± ٥٪ ، ١٦ / ٨ ضوء/ظلام) ويمكن تلخيص النتائج المتحصل عليها كمايلي:

١. أعلي أعداد من حشرات المن *S.graminum, R.padi* تواجدا علي البادرات كان الصنف 14.Sc-1-DWL يليه الصنف S.Y.T.DW 41 بينما كان أقل الأعداد تواجداً حدث علي الصنف SC.DWL 6. و الصنف S.Y.T.D.W. 29, الصنف 26.Sc. DWL و الصنف S.Y.T.D.W. 27 علي التوالي.

٢. أعلي نسبة انخفاض في طول نصل الورقة الأولي حدث مع الصنف S.Y.T.D.W.5 يليه الصنف S.Y.T.D.W.8 الصنف S.Y.D.W. 47 بينما أقل انخفاض سجل مع الصنف 3.Sc.DWL, 6 Sc.DWL والصنف S.Y.T.D.W. 24 ثم الصنف 6.Sc-1-DWI علي التوالي.

٣. أعلي نسبة انخفاض في طول نصل الورقة الثاني سجل في الصنف S.Y.T.D.W. 5, بينما و S.Y.T.D.W.44 بينما الأصناف 39.Sc.DWL الصنف S.Y.T.D.W. 41, DWL 33.Sc.-1-DWI 15.Sc. كانت نسبة الانخفاض بها أقل.

أوضحت النتائج أيضا أن أعلي نسبة انخفاض في الوزن الجاف للبادرة حدث مع الصنف S.Y.T. DW7 يليه الصنف S.Y.T.D.W. 51 و الصنف S.Y.T.D.W. 5 بينما الصنف S.Y.T.D.W 24 والصنف 2.Sc. DWL والصنف 34.Sc.DWL سجل أقل نسبة انخفاض في الوزن الجاف للبادرة.