SUMMARY

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First part:

The experiments reported herein were carried out at the Experimental Research Station at Moshtohor Zagazig University, Kalubia Governorate, Egypt, during the two successive seasons 1998/99 and 1999/2000. The purpose of this study was to investigate the effects of planting dates, phosphorous fertilizer levels and some faba bean cultivatars and the magnitude of interactions between these factors, on infestation with some insects, i.e. *Aphis craccivora,* Koch., leaf miner *(Liriomyza congesta, Becker,* yield and its components in both seasons. Two experiments were conducted at different planting dates early (during october) and late (during December).

In each experiment, a split —plot design with three replications was used. The main plots were randomly assigned three levels of phosphorous i.e. o.o , 30 and 60 kg P_2O_5/fed and five cultivars Giza 3, G 461 G. 674, G. 716 and G:za 843 were allocated in the sub plots. Data recorded : number of aphid *(Aphis craccivora* koch) leaf miner, the percentage of infestation with *Bruchus rufimanus* in 100 seeds, yield , its components, histological examination of leaves and chemical content.

Results could be summarized as follows:-

A-Aphids:

A-1. Effect of phosphorous fertilizer levels:

The average number of aphids in both seasons in each planting date significantly decreased by increasing P-levels up to 60 kg P_2O_5 /fed.

A-2. Varietal performance:-

In The first season, the average number of aphids over different weekly samples, the lowest vulues 7.58 individuals /10 plants were detected by G.3 followed by G. 843 and then by G. 461 in early planting date. While, G. 3 followed G. 461 and then G. 843 in late planting date gave the lowest ones. In the second season, the average of number of aphids in the early planting date showed that G. 674 attracted the lowest of number of aphids but G. 3 had the lowest number of aphids/10 leaves in the late planting date. From the result of two seasons it may concluded that G. 3 had the best variety within the five tested cultivars for aphid infestation avoiding followed by G. 461 and G. 674.

The number of larvae and pupae of leaf miner:

11.1- Effect of phosphorous fertilizer levels:-

The average number of larvae and pupae/10 leaves were higher in early planting date compared with late planting in the same sample. In both seasons the no. of larvae and pupae/10 leaves of leaf miner on faba bean were significantly decreased by increasing phosphorous fertilizer up to 60 kg$P_2$05/fed.

B. 2- Varietal performance:-

In the first season average over all samples in early planting date, G.716 followed G.674 had the lowest number of larvae and pupae /10 leaves of leaf miner . While, G716 followed by G.843 showed the lowest number of larvae and pupae /10 leaves in leaf miner in late planting date. However, G.3 gave the highest one in both planting dates.

In the second season G.3 followed G.716 gave the lowest average number of larvae and pupae /10 leaves of leaf miner on

faba bean over all samples in early planting date. Also, both cultivars G.716 and G.843 gave the lowest average'number of larvae and pupae of leaf miner in late planting date. Also, over two seasons and two planting dates, G. 716 gave the lowest number of larvae and pupae /10 leaves.

C- The percentage infestation of leaf miner:-

C. 1- Effect of phosphorous fertilizer levels:-

In both seasons, the average of all weekly samples, the infestation percentage of leaf miner was decreased significantly by increasing P-levels up to 60 kg P_2O_5/fed.

C.2- Varietal performance:-

In early planting date, the two varieties G. 461 and G. 716 and G. 716 in the late planting date were lowest values of average of infection % of leaf miner in the first season. While, G. 716 gave the lowest infection % of leave miner in both planting dates in the first season.

In the second season, the lowest values of infestation % of leaf miner average over the different samples were obtained by G. 461 followed by G. 3 in the early planting date and G. 674 followed by G. 461 in the late planting date in the first season.

While, G. 461 gave the lowest infestation percentage of leaf miner in both planting dates in the second season. It could be concluded that the G. 461 was considered the best variety for low infestation % of leaf miner.

D- Relationship between faba bean cultivars and p-fertilizer levels interaction and histological traits on aphids infestation :

Insignificant negative correlation values between mean no. of aphids and each of cuticle lower epidermis and spong tissue was detected. Significant negative correlation coefficient between mean number of aphids and upper epidermis was obtained. This result indicates the effect of thickness for these anatomic traits for reducing number of aphids especially upper epidermis.

Relationship between faba bean cvs. and P-fertilizer levels interaction and histological traits on no. of leaf miner infestation.

Significant positive correlation coefficient between no. of larvae and pupae and palisade tissue in both planting dates was obtained, revealing that thinner of palisade tissue resulted the lower no. of leaf miner.

F- Relation between varieties and phosphorous fertilizer levels interaction and chemical content on leaf Aphids infestation:-

The correlation coefficients between the percentage of soluble sugars (reducing non reducing and total %) in leaves and number of aphids were significant positive values, indicating that increasing soluble sugars increased number of aphids. However, insignificant correlation coefficient was detected between crude protein percentage and number of aphids, indicating that number of aphids infestation was riot affected by protein percentage.

Relation between varieties and phosphorous fertilizer levels interaction and chemical content on leaf miner infestation:-

Significant positive correlation coefficients between leaf miner infestation and each of crude protein % and reducing soluble sugars %, indicating that the increasing of reducing soluble sugars % or crude protein % increased leaf miner infestation.

G- Yield and yield components:

G-1- Effect of planting date:

Data showed clearly that the early sowing date (first Nov.) was better than the late one (first December).

G-2- Effect of phosphorous fertilizer levels:-

The results showed that seed yield either per 10 plants or plot, significantly increased as P-level raised up to 60 kg P205/fed.

G- 3- Varietal performance:

G. 461 cv. had :the highest values for seed yield /10 plants or plot and number of pods/plant.

The second part:-

The experiments_ were °carried out after harvest, the technique used to assess the inherent susceptibilities of faba bean varieties and some legume crops i.e. faba bean varieties G. 3, G. 461, G 674, G. 716 and G. 843) Kidney bean Giza 3 cv., Cowpea Azmerly cv., lentil Giza 3 cv., mung bean Cayme 1 cv. and pea letel merfel cv. to attack by C. maculatus was as follows.

A-1- Preference:

Cowpea and kindey bean gave the highest infestation with C. maculatus. However lentel seeds showed lower infestation by C. maculatus.

A-2- Infestation potential of *Callosobruchus maculatus* on different pulse seeds.

A-2-1- Susceptibility of faba bean varieties:

Concerning number of eggs, Giza 3 gave the highest no. of eggs but without superiety than G. 461 and G. 716.

For number of hatch eggs, G. 674 followed by Giza 716 had the highest number of larvae penetration (hatch eggs). Regarding number of adult insect, G. 674 had the highest number, while G. 461 gave the lowest one.

Regarding weight loss(%), Giza 843 gave the highest loss (7%) followed by G. 461, However, G. 716 gave the lowest one 4.86%.

A-2-1 Susceptibility of some pulse seeds:

The high oviposition no. of 8 female *Cmaculatus* was recorded on mung bean followed by kidney bean while the lowest number of eggs was recorded on lentil.

Regarding no. of hatch or penetration and penetration %, the highest value was recorded by mung bean followed by mung bean for hatching % on the other hand kidney bean followed by lentel had the lowest values for number of adult insect (0.0 and 5.33) adult emergence %(0.0 and 9.12 %) SI (0.0 to 2.28.