

## SEASONAL ABUNDANCE OF APHIDS ON THREE COMMON BEAN VARIETIES, AT QALYUBIA GOVERNORATE, EGYPT

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### ABSTRACT

This investigation was conducted at Qaha Agricultural Station, Qalyubia Governorate to survey the aphid fauna on three common bean varieties; Bronco, Polista and Contender and to study their seasonal abundance and the impact of varieties and sowing dates (Summer & Nili plantation) during the growing seasons 2005/2006 and 2006/2007 on the infestation rates with aphids. The obtained results revealed, 11 different aphid species in both growing seasons; *A. kondoi* was recorded for the first time in Egypt. From 6 to 9 species were recorded on the different plantations.

*Aphis fabae* was the most common aphid species recorded in a relatively high number (995.9 & 466.66 individuals) also a general average in both seasons, followed by *A. craccivora* which, recorded (480.25 and 258.9 individuals) as general average on both seasons.

*A. pisum* was the most dominant aphid species on summer the plantation on all varieties although its general average was not very high ( 6106 & 113.87 individuals), while both of *Aphis fabae* and *A. craccivora* were the most common aphids on nili plantation throughout the period of study on all varieties.

**First season;** 9 aphid species (*A. pisum*, *D. sonchi*, *A. craccivora*, *T. trifolii*, *M. persicae*, *S. graminum*, *A. fabae*, *A. gossypii*, and *R. padi*) were recorded on "Bronco" in the summer plantation,

The most common aphid was, *A. pisum*; its peak number was 22.67 individuals/ plant) occurred in mid April (summer plantation).

*A. fabae* was recorded in late Nov., its peak was (506.7 individuals/plant) on Bronco variety in the nili plantation, while, *A. pisum* was occurred in a few numbers estimated by an average of (22.9) individuals plant .

*A. fabae* was the most abundant species on "Polista" variety in the summer plantation. its peak was 591.7 individual/plant in late Nov.,

*A. pisum* was occurred on "Contender" variety, its peak (44.3 individuals/plant) occurred in mid April. While,

*A. fabae* had two peaks, (470 & 440 individuals /plant) in early & late Nov., respectively on "Contender" variety.

**Second season:** *A. pisum* its peak number was (12.7 individuals/plant) occurred in mid April., on "Bronco" in the summer plantation ,while in the nili plantation, *A. fabae* was the highly abundant one, and its peak number (265 individuals /plant) occurred in late Nov.,

*T. trifolii* appeared in a peak number (11.3 individuals/ plant) in mid April. on "Polista in the summer plantation , while ; *A. fabae* was recorded from late Oct., to mid Dec., its peak was (267 individuals /plants) in late Nov.,

*A. pisum* peak number (32 individuals/plant) was recorded in mid April. on "Contender" variety summer plantation. Also, it found in a higher average number in the summer plantation than in the nili one.

Whereas; the highest abundant species appeared in this plantation was *A. fabae* its peak number (223.3 individuals/plant) was in mid Nov.

Generally speaking, the obtained results declared the aphid infestation was high in the nili plantation than in the summer, common bean plant variety contender was the least infested ones

**Keywords:** *Aphis species, seasonal abundance, bean varieties, bean plantation.*

## INTRODUCTION

Common bean (*Phaseolus vulgaris*) is considered among the most important summer and nili vegetable crop in Egypt for both fresh consumption and processing as well as popular vegetables and is an important source of protein in the human diet all over the world.

The present time, common bean became among the most important export vegetable crop in Egypt. Aphids are economically important pests on agricultural crops for, especially vegetable a number of reasons. Aphids are considered to be the most serious key pest attacking bean in upper Egypt (Rizk,1977) Aphids are plant feeders and extract plant fluids during their feeding process. Although most plants could probably withstand a small amount of feeding, problems may arise when aphid populations are large and this mechanical damage reduces of the plant and leaves it susceptible, some aphids can also serve as vectors of numerous plant viruses that can damage, stress, or kill a plant EL-Attar *et al.*, (1971),.

Damage of aphids on beans, the growing points are with red, brown, or dead. The leaves are crinkled and mottled. They become sticky because of black sooty mold growing on them. The plants are stunted and deformed Avdrc (2001).

The black bean aphid, *Aphis fabae* , is a sporadic but serious pest of beans, causing significant yield losses (Mwangi *et al.*, 2008).

Therefore, survey of aphid fauna and studying their seasonal abundance on 3 common bean varieties (i.e. the effect of 2 different parameters: common bean varieties and sowing date (summer or nili plantation) on the infestation levels with aphids. were the aim of present study

## MATERIALS AND METHODS

This work was conducted at the Agricultural Satation in Qaha district, Qalyubia Governorate, Egypt. The three varieties of common bean Bronco, Polista Contender were cultivated in two different sowing dates i.e. plantation nili and summer plantations , the two successive growing of seasons in 2005/2006 and 2006/2007 till the harvest season of summer 2007.

The experimental area was about half feddan, divided into 3 plots. Common bean seeds were planted on the end of Feb., in the two summer seasons and in the early of September in both nili plantations, received all usual agricultural practices except for use pesticides. Sampling of plants was started as soon as plants appeared above soil surface to study the seasonal abundance of aphids associated with bean crops.

Sampling of common bean fields for aphids began, counts were made by a modification of the Davies (1934) modified by Helson, (1958), Bishop and McKenzie (1982). Technique sampled at random in the field. Aphid sampling each planting (nili or summer) was surveyed for aphids as follows: plants were randomly selected each week from each variety in field, beginning at plant emergence and continued until harvest, from each diagonal traverse of the field. Twenty plant samples; three leaves from each the upper, middle and lower levels of the plants were taking, direct examination and counting of aphid species. In addition to recording the total number of species, field records were made of the numbers of alate, apterous and nymphs form of each species present at each recording. Recordings were made at weekly intervals on experimental, and identifications of each species were made; samples from collected aphid species were mounted on slides and identified as species in the laboratory according to Blackman and Eastop. (1984 & 2000)

The present study aim to survey and identification of different aphid species attacked the common bean in the field, also, seasonal abundance of these species to determine the best time summer or nili for sowing throughout the year and predict which time of aphid infestation began and select the a good variety which less infection with aphids rather than associated viral disease and produced the higher production

## RESULTS

### **Seasonal abundance of different aphid species on 3 common bean varieties in the field Season (2005/2006):**

During this study, the survey results revealed the occurrence of eleven different aphid species belonging to (Homoptera, Aphididae) on common bean plants grown in Qalyubia Governorate.

These species were; the pea aphid, *Acyrtosiphon pisum* (Harris), sonchus aphid, *Dactynotus. sonchi*, (Linnaeus), cowpea aphid *Aphis craccivora* Koch, spotted alfalfa aphid, *Therioaphis trifolii* (Monell), green peach aphid, *Myzus persicae* (Sulzer), green bug aphid , *Schizaphis graminum* (Rondani), faba bean aphid, *Aphis fabae* Scopoli, cotton aphid, *Aphis gossypii* Glover, bird cherry – oat aphid, *Rhopalosiphum padi* (Linnaeus) , corn aphid , *Rhopalosiphum maidis* (Fitch) and , blue alfalfa aphid *Acyrtosiphon kondoi* Shiniji.

In this study the blue alfalfa aphid, *Acyrtosiphon kondoi* was recorded for the first time in Egypt.

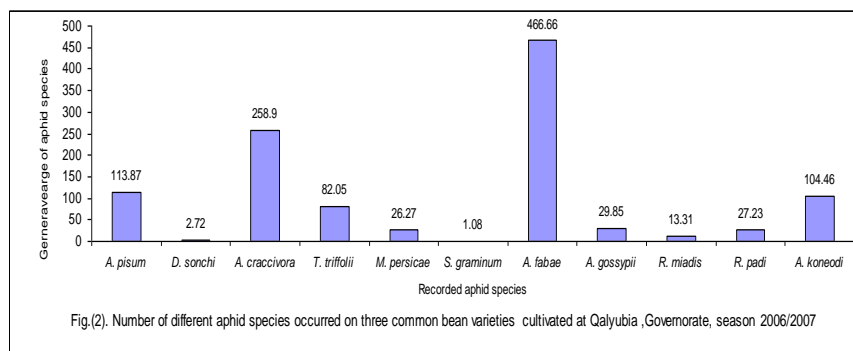
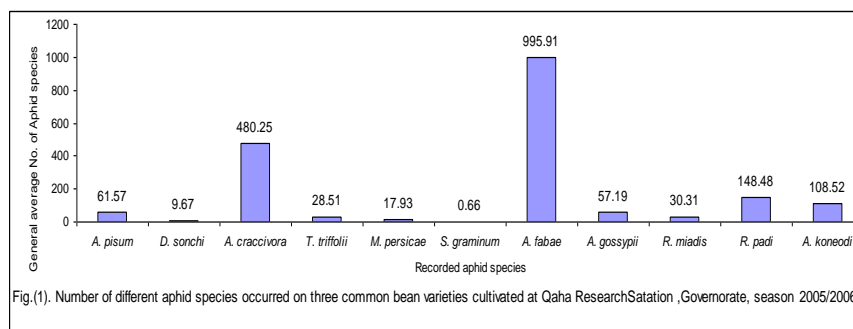
From the eleven aphid species recorded on the three common bean varieties from 6 to 9 species were recorded in the different plantations in both growing seasons 2005/2006-2006-2007 (Fig, 1&2 ).

The most common aphid species recorded in a relatively high number on all plantations was *Aphis fabae* followed by *A. craccivora* (Fig 1&2).

Nine aphid species were recorded on "Bronco" variety in the summer and nili plantations, while 8 species were recorded on the other two common bean varieties, Polista & Contender. In the first season 2005/2006. the

general average no. of *A. fabae* was 995.91 individuals followed by *A. craccivora* 480.25 individuals. Both *R.padi* (148.48 individual) general average and *A. konodi* (108.52 individual) general average, came third in that order. While, *S. graminum* was the lowest aphid species recorded in this seasons.

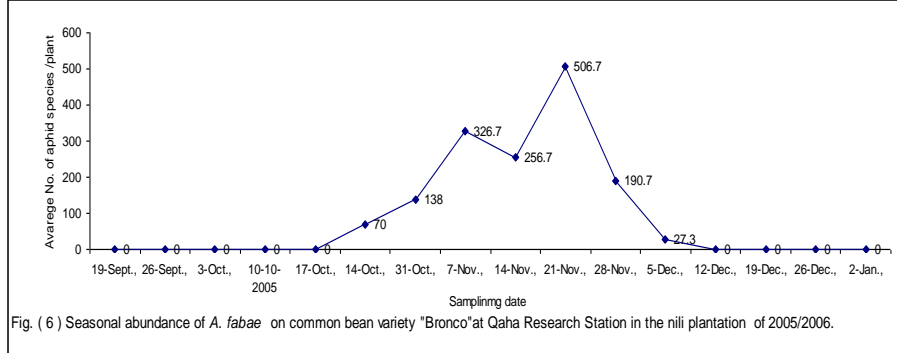
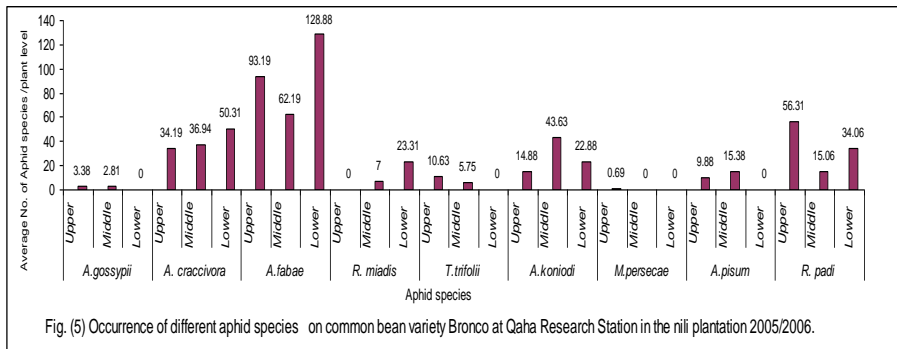
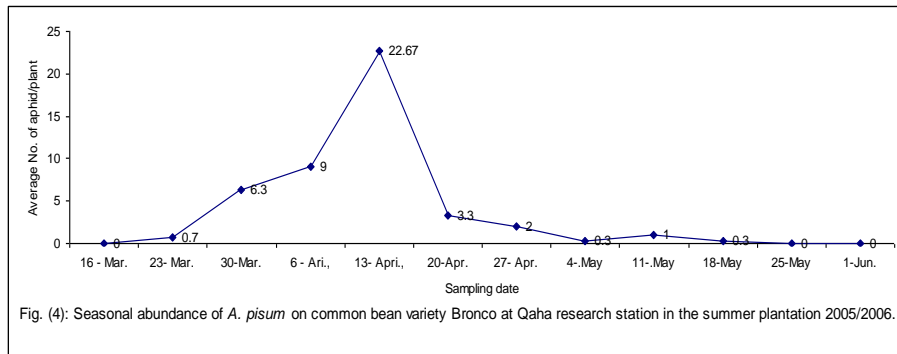
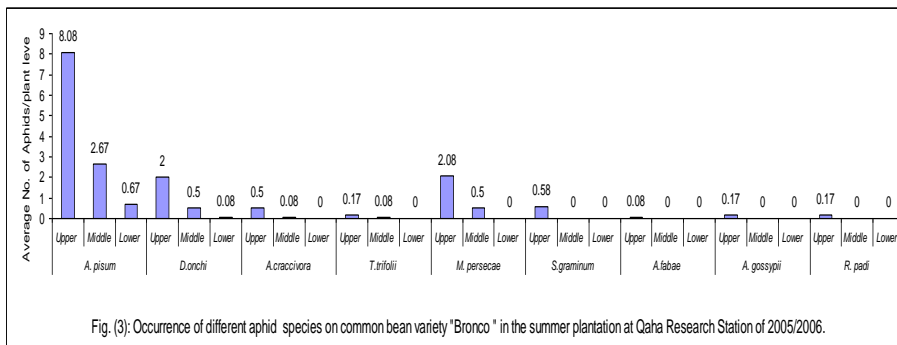
In the second one it was 466.66 individuals of *A. fabae* followed by *A. craccivora*, which recorded 258.9 individuals in the 2<sup>nd</sup> .season. The other species were recorded in a remarkably lower numbers (Fig1&2).



**Seasonal abundance of different aphid species on “Bronco” variety in the summer and nili plantations of 2005/2006:**

Nine aphid species appeared on this summer plantation, they were: *A. pisum*, *D. sonchi*, *A. craccivora*, *T. trifolii*, *M. persicae*, *S. graminum*, *A. fabae*, *A. gossypii*, and *R. padi*. The most common aphid species occurred during this plantation was, *A. pisum*; its average numbers were 8.08, 2.67 & 0.67 individuals/upper, middle & lower levels of bean plant, respectively the other 8 aphid species were occurred in a relatively low numbers as shown in Fig. (3). *A. pisum* was appeared from mid March to first June and its peak number occurred in mid April (22.67 individuals/plant).

*A. fabae*, *A. craccivora*, *A. gossypii*, *R. miadis*, *T. trifolii*, *A. koniodi*, *M. persecae*, *A. pisum* and *R. padi*.were recorded on Bronco variety in the nili plantation.



*A. fabae* was the highest species on this plantation with an average numbers of 93.19, 62.19 & 128.88 individuals/ upper, middle and lower levels of bean plant respectively (Fig .5). *R. padi* came second with an average No. 56.31, 15.06 & 34.06 individuals / upper, middle and lower levels of bean plant respectively. *A. fabae* appeared on "Bronco" variety from mid Oct., and increase gradually to reach its peak 506.7 individuals/plant in late Nov., after that decreased to disappear in mid Dec., Fig ( 6). while both *D. sonchi* and *S. graminum* didn't record in the nili plantation (Fig.5).

**Seasonal abundance of different aphid species on "Polista" vary summer and nili plantations (2005/2006):**

Eight aphids species recorded on "Polista" variety cultivated in the summer plantation of 2005/2006 they were; *A.pisum*, *D.sonchi*, *A.craccivora*, *T.trifolii*, *M.persecae*, *S.graminum*, *A.fabae* and *R. padi*

*A. pisum* was occurred in a few numbers estimated by an average numbers of 22.42, 0.5 & 0.17 individuals/ on the three plant levels,

respectively *D. sonchi* came second with 1.25 and 0.33 individuals /upper and middle plant levels respectively, it did not record on the lower level of the plant (Fig,7 )

*A.pisum* appeared from mid March to the end of May in low numbers ; the highest number 4.7 individuals/ plant was occurred in mid April (Fig,8).

Also, Eight aphid species; *A. gossypii*, *A .craccivora*, *A. fabae*, *T. trifolii*, *A. koniodi*, *M. persecae*, *A. pisum* and *R. padi*, were occurred on the Polista variety at the nili plantation

*A. fabae* was the most abundant species its average number was 75, 124.19 & 133.44 individuals/ three plant levels, respectively (Fig, 9).

*A .craccivora* came second, 52.5, 60.25, & 105.94 individuals / upper, middle and lower levels of bean plant, respectively (Fig,9).The three species: *D. sonchi*, *S.graminum* and *R. maidis* didn't appear on the "Polista" variety in the nili plantation.

*A. fabae* was appeared from mid Oct., to mid Dec., and its peak number was 591.7individual/plant in late Nov. (Fig, 10).

**Seasonal abundance of different aphid species on "Contender" variety in the Summer and nili plantationsof (2005/2006):**

Eight aphid species were occurred on "Contender" variety, in the summer plantation were; *A .pisum*, *D .sonchi*, *A. craccivora*, *T. trifolii*, *M. persecae*, *A. fabae*, *A. gossypii* and *R. padi*

*A.pisum* was appeared from mid March to late May and the peak was in mid April with an average no., of 44.3 individuals /plant, (Fig,12) and its average numbers was 12.67, 2.5 and 1.25 individuals/ upper, middle and lower levels on bean plant levels, repectively. its *D.sonchi* came second with; 3.67, 1.42& 0.45 individuals/ upper, middle and lower levels of bean plant, repectively ( Fig 11 ). All of *A. craccivora*, *T. trifolii*, *M. persecae*, *A. fabae* *A. gossypii* and *R. padi* were recorded in a very low numbers as showin in Fig (11),while, *S .graminum* was disappeared in this plantation .

In the nili plantaion, Eight aphid species; *A.gossypii*, *A.craccivora*, *A.fabae*, *T.trifolii*, *A.koniodi*, *M.persecae*, *A.pisum* and *R. padi*. Were; recorded on Contender variety.

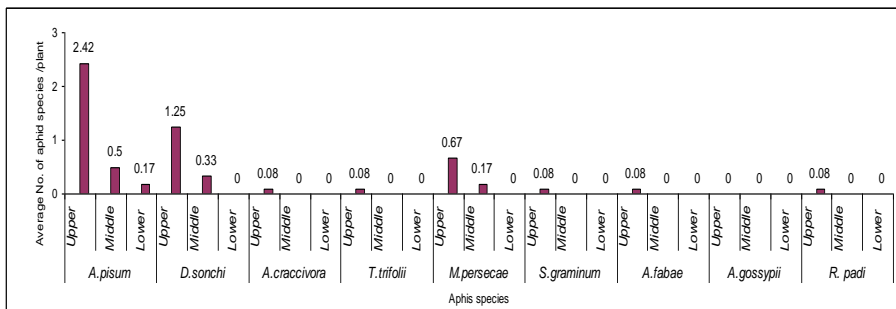


Fig (7) Occurrence of different aphid species on common bean variety "Polista" at Qaha Research Station in the summer plantation of

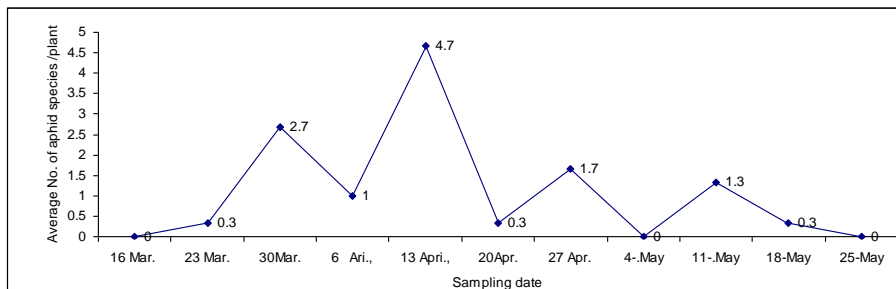
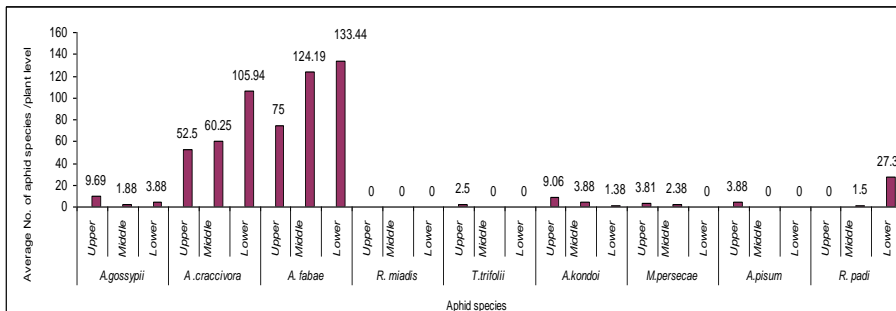
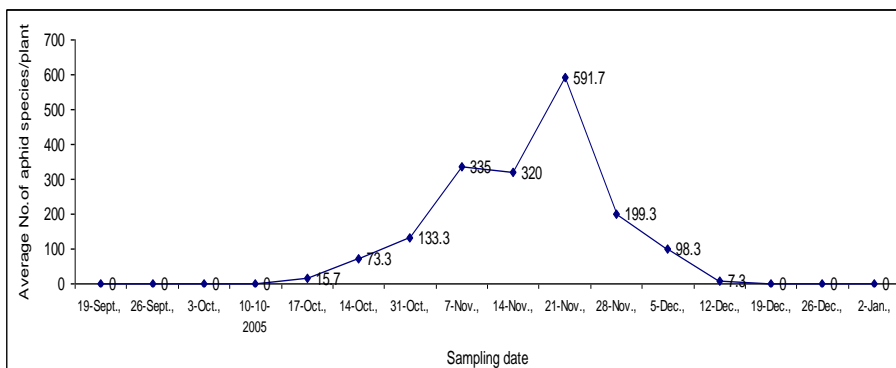


Fig (8) Seasonal abundance of *A. pisum* on common bean variety "Polista" at Qaha Research Station in the summer plantation of 2005/2006



Fig(9) Occurrence of different aphid species on common bean variety "Polista" at Qaha Research Station in the nili plantation of 2005/2006.

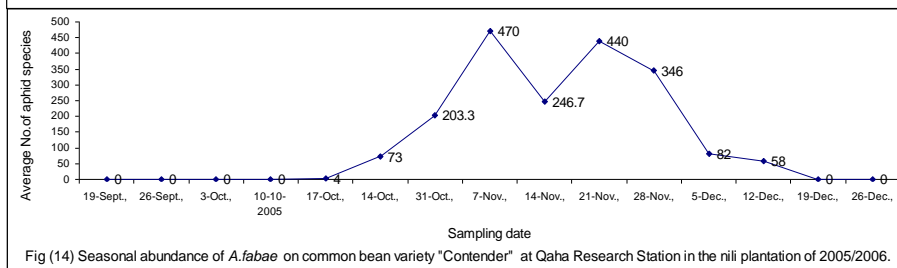
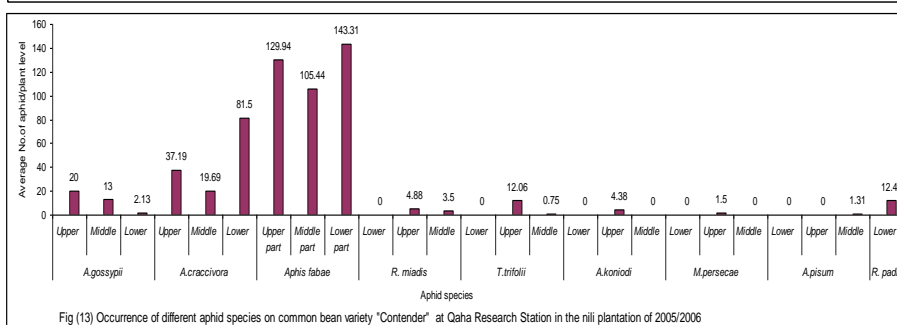
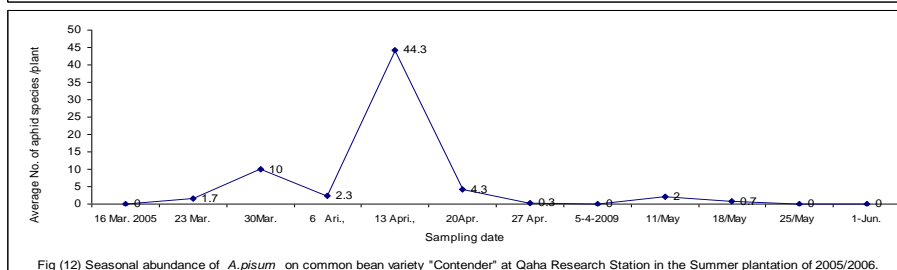
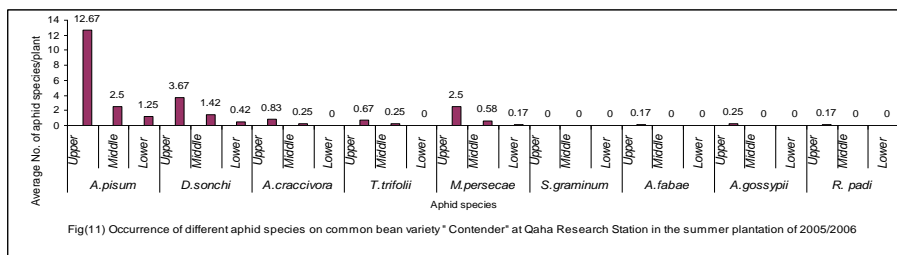


Fig(10) Seasonal abundance of *A. fabae* on common bean variety "Polista" at Qaha Research Station in the nili plantation 2005/2006.

The three species: *A. fabae*, *A.craccivora* and *A. gossypii* occurred in a high numbers.

*A. fabae* was the most abundant one giving 129.94, 105.44 & 143.31 individuals /upper, middle and lower levels of bean plant, respectively. *A .craccivora* average numbers were; 37.19, 19.69 and 81.5 individuals /upper, middle and lower level of bean plant levels respectively. *A. gossypii* was recorded in an average number of (20, 13 & 2.13) individuals/ upper middle and lower levels of bean plant (Fig,13).

*A. fabae* was appeared from mid Oct., to late Dec., with two peaks, the first 470 individuals /plant was in early Nov., & the second 440 individuals /plant was in late Nov., Fig (14).





**Seasonal abundance of different aphid species on "Bronco" variety in the summer and nili plantations (2006 / 2007):**

In the summer plantation, Nine aphid species; *A. pisum*, *D. sonchi*, *A. craccivora*, *T. trifolii*, *M. persecae*, *S. graminum*, *A. fabae*, *A. gossypii* and *R. padi* were recorded .

*A. Pisum* on was recorded in few average numbers, 3.45 and 0.92 individuals / upper and middle plant level respectively, the other species recorded in a very low average numbers from 2 to 0.17 individuals/plant (Fig. 15 ).

*A. pisum* was appeared from late March to late April., (Fig ,16) its peak number (12.7 individuals) was in mid April.

While in the nili plantation, all of *A. fabae*, *A. craccivora*, *A.pisum*, *A.konodi*, *T.trifolii* and *A gossypii* were recorded in high numbers as shown in (Fig, 17).

*A. fabae* was recoded in high average numbers (53.06, 48.88 and 56.69) individuals / upper and middle plant levels resp., followed by *A. konodi* 14.88, 43.63 & 22.88 individuals / upper and middle plant levels respectively.

*A. fabae* was the most abundant one, it was appeared from mid Oct., to mid Dec., and its peak number 265 individuals /plant occurred in late Nov., (Fig ,18).

**Seasonal abundance of different aphid species on "Polista" variety summer and nili plantations(2006/2007):**

In the summer plantation, the following 6 aphid species; *A.pisum*, *T. trifolii*, *M.persecae*, *S.graminum*, *A.fabae* and *R. padi* were occurred.

*T.trifolii* was recorded in low average numbers (4.48 & 5.8 individuals/upper and middle levels of bean plant respectively) followed by *A. pisum* (2.92 & 0.75 individuals/upper and middle levels of bean plant respectively) while the 4 other species recorded in a very low numbers (Fig, 19).

*T.trifolii* was appeared from late March to mid May, its peak number 11.3 individuals/plant was in mid April,(Fig. 20).

In the nili plantation nine aphid species were; recorded *A. gossypii*, *A. craccivora*, *A. fabae*, *R. miadis*, *T.trifoli* *A.koniodi*, *M.persecae*, *A.pisum* and *R. padi*.

*A. fabae* was recorded in a remarkably highest average numbers 55.38, 54.94 & 52.44 individuals/ upper middle and lower plant levels, respectively; followed by *A. craccivora* 40.06, 19.06 & 23.63 individuals/ upper, middle and lower plant levels, respectively. The lowest numbers of individuals were recorded for *R. maidis* & *A. pisum*,(Fig, 21).

*A. fabae* was recorded from late Oct., to mid Dec., its peak average number 267 individuals /plants occurred in late Nov., (Fig,22).

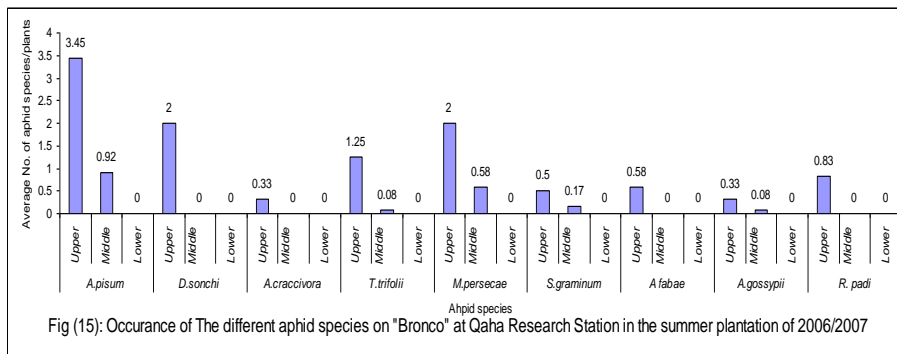


Fig (15): Occurrence of The different aphid species on "Bronco" at Qaha Research Station in the summer plantation of 2006/2007

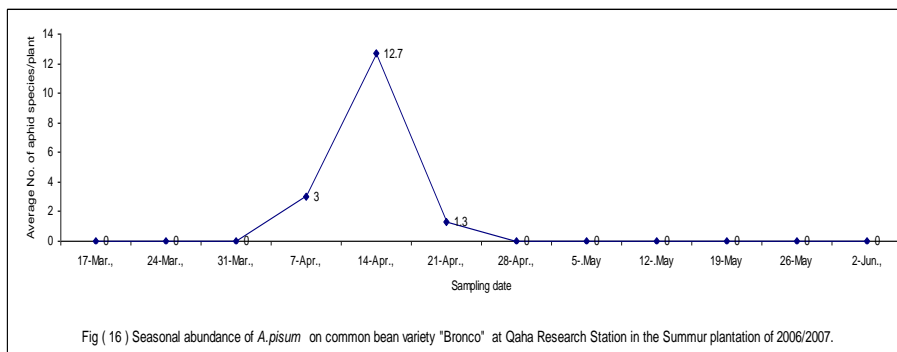
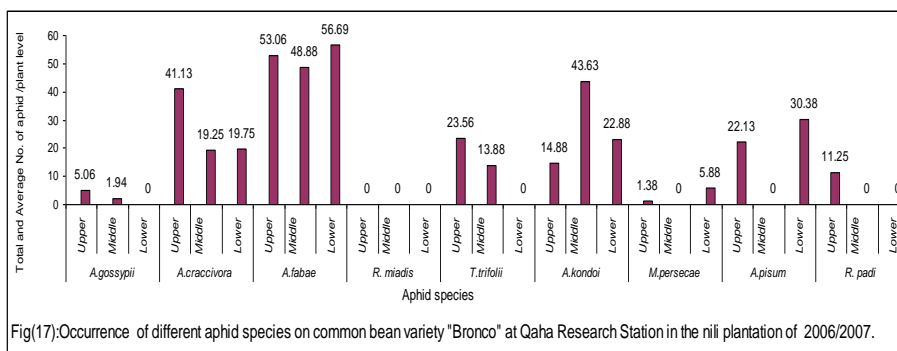


Fig (16) Seasonal abundance of *A.pisum* on common bean variety "Bronco" at Qaha Research Station in the Summer plantation of 2006/2007.



Fig(17):Occurrence of different aphid species on common bean variety "Bronco" at Qaha Research Station in the Nili plantation of 2006/2007.

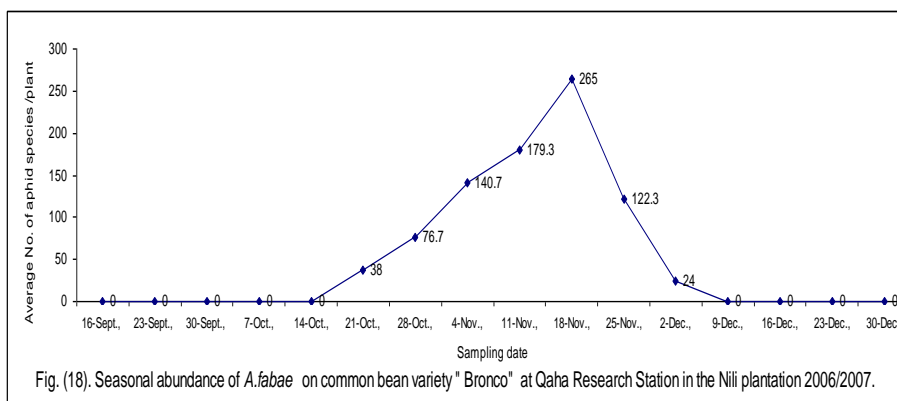


Fig. (18). Seasonal abundance of *A.fabae* on common bean variety "Bronco" at Qaha Research Station in the Nili plantation 2006/2007.

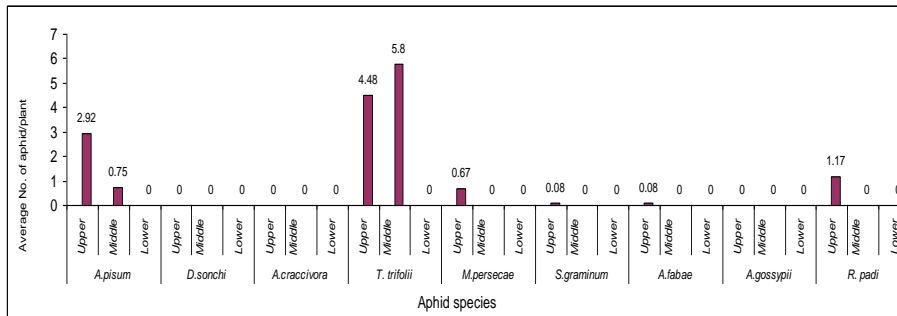


Fig.(19).Occurrence of different aphid species on common bean variety "Polista" at Qaha Research Station in the summer plantation of 2006/2007

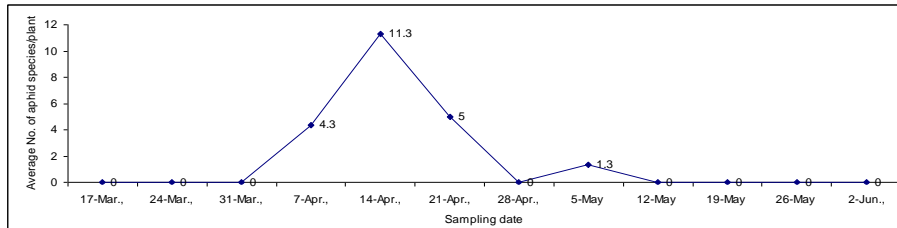


Fig ( 20) Seasonal abundance of *T. trifolii* on common bean variety Polista at Qaha research station in the Summer plantation 2006/2007.

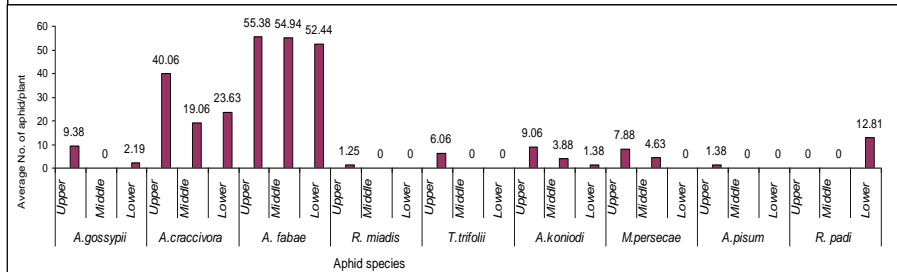
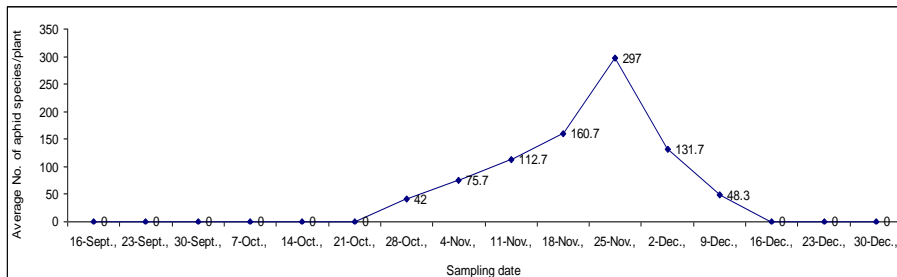


Fig (21) :Occurrence different aphid species on common bean variety "Polista" at Qaha Research Station in the Nili plantation of 2006/2007



Fig(22) Seasonal abundance *A. fabae* on common bean variety "Polista" at Qaha Research Station in the Nili plantation of 2006/2007

**Seasonal abundance of different aphid species on Contender variety in the summer and Nili plantations (2006 / 2007):**

Nine aphid species were recorded, but in a relatively low numbers; *A. pisum*, *D. sonchi*, *A. craccivora*, *T. trifolii*, *M. persecae*, *S. graminum*, *A. fabae*, *A. gossypii* and *R. padi*. The maximum average numbers recorded was for *A. pisum* (14.92, 1.83 & 33 individuals/ upper, middle and lower plant

levels) respectively (Fig, 23) it was appeared, from early to late April its peak was (32 individuals/plant) was occurred in mid April. (Fig, 24).

In the Nili plantation, the eight aphid species; *A.gossypii*, *A. craccivora*, *A. fabae*, *R. miadis*, *T.trifolii*, *A.konioidi*, *M. persecae* and *A.pisum* were occurred in a higher average number than in the summer one. The highest abundant species appeared in this plantation was *A. fabae* (54.5, 45.69 & 44 )individuals/ upper, middle and lower plant levels, respectively. *A.craccivora* came second in that order 49.13, 15 & 31.31 individuals/ upper, middle and lower, plant levels respectively. (Fig, 25).

*A. fabae* was appeared from mid Oct., to early Dec., its peak average number was 223.3 individuals occurred in mid Nov., (Fig, 26).

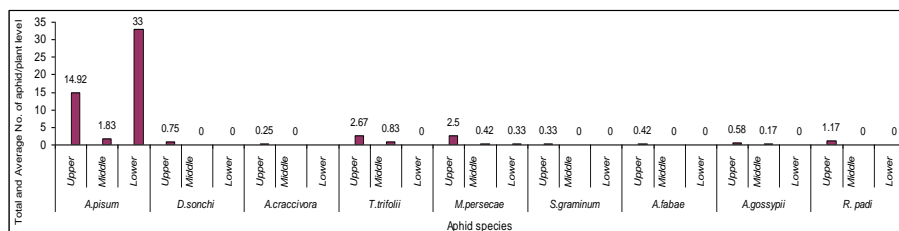


Fig (23): Occurrence of different species of aphid on common bean variety "Contender" at Qaha Research Station in the summer plantation of 2006/2007.

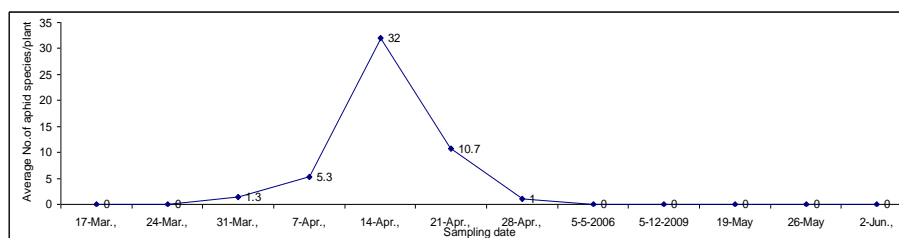


Fig (24): Seasonal abundance *A. pisum* on common bean variety "Contender" at Qaha Research Station in the Summer plantation 2006/2007

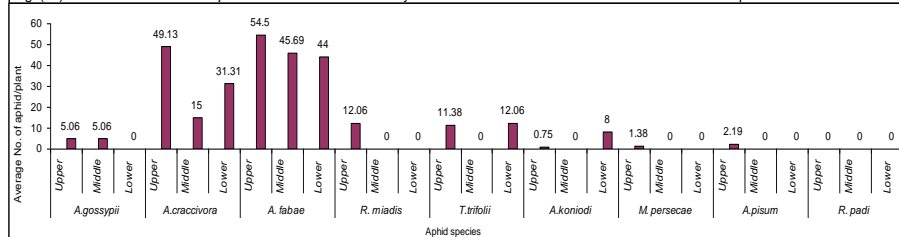


Fig (25): Occurrence of different species of aphid on common bean variety "Contender" at Qaha Research Station in the nili plantation of 2006/2007.

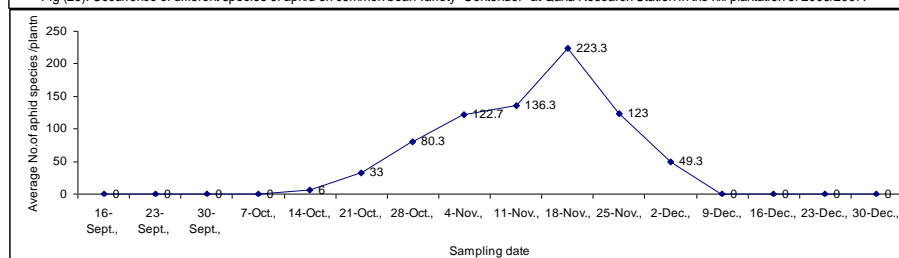


Fig (26) Seasonal abundance *A. fabae* on common bean variety "Contender" at Qaha Research Station in the Nili plantation of 2006/2007

## DISCUSSION

During the present study ; eleven different aphid species were found to infest the three different common bean varieties; from 8 to 9 aphid species attacked the summer and nili plantations .The most common species were *A. fabae* followed by *A. craccivora* then *R .padi* and *A. pisum*. This result goes in line with Robertson *et al.*, (1958) who made aphid surveys, in dry bean fields, and found that Seventeen species of aphids were added to the list of known species.

Whereas, Nault (2004) reported that, The pea aphid, *Acyrtosiphon pisum* (Harris), was the most common aphid species captured in early-planted snap bean fields in 2002 and 2003 (56 and 23% of total, respectively), whereas the corn leaf aphid, *Rhopalosiphum maidis* (Fitch), also was common in 2003 (15% of total).

In contrast, the yellow clover aphid, *Therioaphis trifolii* (Monell), and soybean aphid, *Aphis glycines* Matsumura, were the most abundant species trapped in late-planted snap bean fields in 2002 (77% of total) and 2003 (64% of total), respectively.

This study showed that most of the recorded aphid species occurred in small numbers *e.g.* *M. persicae*, *Aphis gossypii*, *R.padi*, and *R. maidis*. This results agree with Robertson *et al.*, (1958), they reported that, aphids were unable to colonize on beans and usually only alate viviparae and some young nymphs were found on the foliage, apparently because the aphids are caught by the hooked hairs on the bean leaves and live only a short while.

All of *A. fabae*, *A. craccivora*, *A. pisum* and sometimes *D. sonchi* were recorded in a moderate numbers and not in a high density like the case on faba bean.

This results agrees with that of Gary and Schuii (1941). They found that, aphids rarely colonize the bean plants, but moderate to large populations of alate aphids were present from late June of the remainder consisted of pea aphids, *Macrosiphum pisi* (Harris), and English grain aphids, *Macrosiphum granarium* (Kirby). Also, result goes parallel with Honda and Natl (2000). Reported that *Aphis fabae* could be reared on *Vicia faba*, *Phaseolus vulgaris*, *P. angularis*, *Pisum sativum*, *Beta vulgaris*, *Rumex obtusifolius* but not on *Trifolium repens*

From our results we show the seasonal of the most abundant aphid species on all plantations , is important to predict presence of the insect vector and its relation to the virus infection when it starts this also., Nault *et al.*, (2004).They found that the alate aphid play an important role in transmission of viruses from the near and around alfalfa field at list distance about 1kilometer far away from the bean field, Since , Alfalfa is a source for viruses that may be acquired by aphids and transmitted to

Also, Rohrtson *et al.*, (1961) reported that, the pea aphid transmitted viruses only from broad bean. It was concluded that virus spread in the bean fields was due to migrant aphids, especially the green peach aphid, and, because of the short transmission feeding times, vector control methods would likely be of little value in controlling the mosaic diseases. Also EL-Attar

*et al.*, (1971), reported that all varieties of bean were susceptible to the aphid borne virus (BYMV) infestation.

Aphids did not colonize in large numbers of individuals on the plant Robert explained that, bean aphids prefer to colonize the young inner leaves instead of the intermediate aged or older leaves. Thus, consider a plant infested when from 4-8 of the new leaves have any number of aphids on them. The plant is considered not to be infested if less than four inner leaves have bean aphids on them. Also, of major importance, is to inspect plants in several sections of the field to determine the actual percentage of plants infested. Bean aphid infestations are generally spotty and control decisions could be incorrect without a thorough examination of the field.

From this preliminary study we can conclude that, the three common bean varieties; Bronco, Polista and Contender were infested by a relatively large different numbers of aphids at least 8 to 9 species from the total surveyed 11 species found attacking the common bean plants in the summer or nila plantations and varieties. the infestation was high on the variety "Bronco" in all nila plantations, "Contender" variety was the lowest one although, the aphid population was not in a high density like in the case on other legumes *e.g. Faba bean*.

It seems that aphids do not colonize on common bean, but it is important to know that very low number of aphids can play an important role as vectors for many of plant viruses especially legume viruses such as FBVDV, BLRV, PEMV, BBWV, and others.

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## الوفرة الموسمية لحشرات المن على ثلاثة أصناف من الفاصوليا المنزرعة بمحافظة القليوبية في مصر

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أجريت هذه الدراسة بمحطة تجارب قها بمحافظة القليوبية، لدراسة التعداد و الوفرة الموسمية لأنواع المن المرتبطة بثلاثة اصناف من الفاصوليا Bronco, Polista and Contender ودراسة تأثير الصنف وميعاد الزراعة الصيفى ، النبلى) على وفرة تعداد حشرات المن خلال موسمى الزراعة 2005/2006 and 2006/2007 .

و تشير النتائج المتحصل عليها الى تواجد ١١ نوع من حشرات المن سجل تواجدها على اصناف الفاصولياء المختلفة خلال الموسمين . كما اشارت الدراسة الى تواجد من البسلة الأرزق لأول مرة فى مصر. اسفرت الدراسة عن تواجد من ٦-٩ انواع من حشرات المن على اصناف الفاصوليا المختلفة خلال الموسمين على العروات الصيفية و النيلية.

أوضحت الدراسة ان على الرغم ان اعداد من البسلة لم تكن كبيرة جداً الا ان هذا النوع من المن كان الأكثر انتشاراً على جميع اصناف الفاصوليا خلال العروات الصيفية على مدار الموسمين الزراعيين بالمارنة ببقية الانواع الاخرى.

في حين ان من الفول الأسود كان اكثر انواع المن وفرة على العروات النيلية و قد سجل بمتوسط تعداد (466.66 & 995.9) فرد/للنبات في كلا الموسمين على التوالي. وكان يلية في التعداد من البقوليات *A. craccivora* (258.9 & 480.25) في كلا الموسمين على التوالي.

وكان من نتائج هذه الدراسة خلال الموسم الاول:  
كان من البسلة هو السائد في الانتشار على الصنف برونكو وكانت ذروة تعده ٢٢,٧ فرد للنبات في منتصف ابريل خلال العروة الصيفية.

اما في العروة النيلية كان السائد هو من الفول الذي وصل ذروة تعده ٥٠٦,٧ فرد للنبات في منتصف نوفمبر. وكان يلية في التعداد خلال هذه العروة من النجيليات *R. padi* ثم تبعه من البقوليات . بينما لم يتواجد كل من من القمح ومن الجعبيض خلال هذه العروة

اما الصنف بوليسا فقد سجل عليه من البسلة من منتصف مارس الى نهاية مايو خلال العروة الصيفية ٤,٧ افراد/ للنبات في منتصف ابريل . اما خلال العروة النيلية كان السائد هو من الفول الأسود و الذي سجلت ذروة تعده ٥٩١,١ فرد/ للنبات في اواخر نوفمبر و قد تلاه في التعداد من البقوليات ، في حين ان كلا من من الجعبيض من النجيليات و من الذرة لم يتواجدا خلال هذه العروة أيضاً.

بالنسبة للصنف كوتندر في العروة الصيفية:  
فقد كان من البسلة هو الأكثر وفرة و سجل وتواجده من منتصف مارس الى اواخر مايو وكانت ذروة التعداد ٤٤,٣ فرد/للنبات في منتصف ابريل يليه من الجعبيض . و في العروة النيلية لهذا الموسم, فقد كان من الفول الأسود هو الأكثر شيوعاً فقد تواجده من منتصف اكتوبر حتى منتصف ديسمبر وقد سجلت ذروه تعده مرتين الاولى بداية نوفمبر ٤٧٠ فرد/نبات و الثانية نهاية نوفمبر ٤٤٠ فرد/نبات . بينما من البقوليات سجل بتعداد ٨١,٥ فرد/ للنبات.

#### بالنسبة للموسم الزراعي الثاني ٢٠٠٧/٢٠٠٦

سجلت حشرات المن على الثلاثة اصناف في كلا العروتين على النحو التالي:  
سجلت ٩ انواع من حشرات المن على الصنف برونكو خلال العروة الصيفية وفيها تواجده من البسلة في الفترة من اواخر مارس حتى اواخر ابريل قد سجلت ذروه تعده ١٢,٧ فرد/للنبات في منتصف ابريل. أما في العروة النيلية فقد كان من الفول الأسود هو السائد حيث تواجده في الفترة من منتصف اكتوبر حتى اوائل ديسمبر وسجل أقصى تعداد له ٢٥٦ فرد/للنبات في الثلث الاخير من نوفمبر. الصنف بوليسا في العروة الصيفية فقد كان من البرسيم اكثر الانواع تواجده على الرغم من اعداده القليلة فقد سجل أقصى تعداد ١١,٣ فرد/للنبات في منتصف ابريل  
بينما في العروة النيلية كان النوع السائد هو من الفول الأسود و الذي ظهر من منتصف اكتوبر حتى اوائل سبتمبر وسجل أقصى تعداد له ٢٩٧ فرد/للنبات في اواخر نوفمبر. اما من الذرة و من النجيليات و من البسلة كانت اقل الانواع تواجداً خلال هذه العروة.

الصنف كوتندر /العروة الصيفية كان من البسلة اكثر الانواع تواجده من اواخر مارس الى اواخر ابريل وكان أقصى تعداد ٣٢ فرد/للنبات في منتصف ابريل. أما في العروة النيلية كان من الفول الأسود هو الأكثر وفرة , تواجده من اوائل اكتوبر حتى اوائل ديسمبر ذروة التعداد كانت ٢٢٣,٣ فرد/للنبات كانت في اواخر نوفمبر.

النتائج المتحصل عليها تشير الى ان تواجده حشرات المن في العروة النيلية اعلى من تواجدها في العروة الصيفية , تواجده الحشرات على الصنف كوتندر اقل من الاصناف الاخرى .  
ان حشرات المن تظهر في العروة الصيفية انتدأ من مارس وتستمر حتى اواخر مايو وذروة التعداد في منتصف ابريل , اما بالنسبة لتواجده المن في العروة النيلية كان من اوائل اكتوبر و استمر حتى اوائل ديسمبر وأقصى ذروة لتعداد المن كانت في نوفمبر.

يستفاد من هذه النتائج في اختيار ميعاد الزراعة الافضل و كذلك الصنف الاقل اصابة و الاعلى انتاجية . كذلك امكانية التنبؤ بظهور وانتشار حشرات المن و التي وان كان يبدو ان تعدادها ليس عالى جدا الا ان ضررها غير المباشر يكمن في نقل الامراض الفيروسية المختلفة و التي تسبب فقد عالى في محصول الفاصوليا مثل فيروس موزيك الفاصوليا الأصفر .

**الكلمات المفتاحية :** أنواع المن ، الوفرة الموسمية ، اصناف الفاصوليا، العروات الزراعية.