

## EFFECT OF DIFFERENT SOWING DATES ON THE POPULATION DENSITY OF THE MAIN INSECT PESTS ATTACKING COWPEA PLANTS AT MANSOURA DISTRICT

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### Abstract

The present study was conducted to determine the activity of insect pests on cowpea plants (*Vigna unguiculata* L.) at Mansoura district, three sowing dates (1<sup>st</sup> SD) 29<sup>th</sup> March, (2<sup>nd</sup> SD) 14<sup>th</sup> April and (3<sup>rd</sup> SD) 28<sup>th</sup> April. The samples were taken at weekly intervals after ten days from plantation. The result showed that, Significant difference among three sowing dates, the lowest sowing date was the second sowing date during 2012 and 2013. Total number of *Aphis gossypii* Glove, *Aphis carccivora* Koch *Lampides beoticus* L., *Nizara viridula* Linnaeus, *Empoasca lybica* Berg and *Liriomiza trifolii* Burgess 1535, 2326,135 , 273, 414 and 304 individuals in (1<sup>st</sup> SD), respectively, 681, 823, 48, 136, 488 and 88 individuals in (2<sup>nd</sup> SD), respectively and 1313, 2168, 133, 347, 367 and 551 individuals in (3<sup>rd</sup> SD), respectively in season 2012 . While, (1<sup>st</sup> SD) 514, 2026, 145, 199, 394 and 358, respectively (2<sup>nd</sup> SD) 340, 442, 19, 437, 19 and 51, respectively and (3<sup>rd</sup> SD) 1383, 2341, 92, 174, 231 and 706 .

**Keywords:** cowpea, Insect pests population, Natural enemies, Different sowing dates

### INTRODUCTION

Cowpea (*Vigna unguiculata* L.) is one of the important vegetable crops in Egypt and many countries. It's important for human consumption because it's an important source of protein. Several insect pests have been reported to infest cowpea damaging the crop during leaves and pod causing considerable losses (Ghaniem *et al.*, 1988, Amro2004, Boukar and Fatokun2009) .In order to save the crop from the pests

ravages farmer used many chemical pesticides leading to the pests resurgence. One of IPM strategy is different sowing dates to control the population density of main insect pests. Timely sown rapeseed and mustard crops were less infested with aphid than late planted crops (Prasad and Lal 2001) and yield were higher due to low aphid attack (Khattak and Hamed 1993). *Empoaca spp.* reached its maximum density during the first August in summer plantation while in Nili plantation reached their peaks on November 18<sup>th</sup> (Helaly *et al.*,1982) on other hand *N. viridula* increased in the latter planting dates

(Rizek *et al.*, 1990). The degree of damage vary according to the population density and dynamics of the insect pests on the different planting dates of the crops (Uchikawa *et al.*2009 , Salah *et al.*, 2009 and Singh *et al.*, 2010)

## MATERIALS AND METHODS

### **The effect of Different sowing date on insect pests population attacking cowpea plants:**

The experiments were carried out at the farm of Agriculture Research Center of the Faculty Agriculture, Mansoura University. Cowpea variety kream7 was sown during a period of two successive seasons, the samples date started from April 27<sup>th</sup> to Jun 29<sup>th</sup>, August 12<sup>th</sup> to October 22<sup>nd</sup> during 2012 and 2013 respectively. The experimental area was about half feddan divided into four replicated. The normal agriculture treatment of land preparation, Irrigation, mechanical were done. Two methods were used for estimating the population abundance. The first sweep net, (30. cm diameter, 50cm deep) which was used for collecting flying insects from cowpea plants, 40 double stokes were taken across the two diagonals of the field at weekly intervals. The second method was direct counting, twenty random cowpea leaves per plots were examined weekly intervals after ten days from plantation and placed in plastic bags for inspection in the laboratory. The immature stages of lepidopterous insects were reared containing fresh food and kept under laboratory conditions till emergence of adult for identification. Collected specimens were preserved in 70% alcohol for classification and identification. Samples were identified by the classification Research Department at the Plant Protection Research Institute.

The experimental data were analyzed by Costst program

## RESULT AND DISCUSSION

Data illustrated in table (1) showed that, significant difference among dates of sowing during 2012 and 2013. Highest Density among the main insect pests attacking cowpea plants was two aphid species were high significant in the first sowing date (1535, 2326), respectively and third sowing date (1313, 2167), while the second sowing date had low significant (681, 823) during 2012. Density of two aphid species during, *A. gossypii* had significant among sowing date high significant was in the third sowing date and low significant was in the second sowing date during 2013.

Table 1. Population density of main insect pests in different sowing date during 2012 and 2013 season.

Season	2012				2013			
	1 <sup>st</sup> sowing date	2 <sup>nd</sup> sowing date	3 <sup>rd</sup> sowing dates	L.S.D 0.05	1 <sup>st</sup> Sowing date	2 <sup>nd</sup> sowing date	3 <sup>rd</sup> sowing date	L.S.D 0.05
<i>A.gossypii</i>	1535a	681b	1313ab	618.93	514b	340c	1383a	107.5
<i>A.craccivora</i>	2326a	823b	2167a	197.25	2026b	442c	2341a	75.17
<i>L.beoticus</i>	135a	48b	133a	56.24	145a	19c	92b	7.74
<i>N.viridula</i>	273a	136b	347a	108.42	199b	437a	174c	13.94
<i>E.lybica</i>	414b	488b	367b	128.59	397a	229b	231b	112.2
<i>L.trifolii</i>	304b	88c	551a	59.72	358b	51c	706a	11.6

*L. beoticus* was lowest density among the main insect pests attacking cowpea plants, through had no-significant differences between the first sowing date and the third sowing date during 2012, While significant difference among three sowing dates the highest date was the first sowing date and the lowest one was the third sowing date during 2013. The density of *L. trifolii* was observed that, significant difference between three sowing dates highest date was the third sowing date and lowest date was second date, while during 2012 and 2013. *N. viridula* had no-significant different between the first and the third sowing dates, while the second sowing date was

significant during 2012, moreover significant different among three sowing dates during 2013.No- significant different between dates of sowing was observed on *E. lybica* during 2012 and 2013.

Data illustrated in Fig. (1) Indicated that, the population density of *A. gossypii* during the second sowing date, three peaks were occurred in the third week of April, First week of May and first week of Jun during 2012 and 2013.

Fig. (2) Showed that, *A. craccivora* had three peaks occurred in the third week of April, the first week of May and last week of May.

Data presented in Fig. (3) Indicated that, the density of *L. beoticus* had four peaks in the second sowing date, occurred in the third week of April, in the first week of May, in the third week of May and in the third week of Jun during 2012, while, had three peaks occurred in the third week of April, in the first week of May and the third week of Jun.

Data illustrated in Fig.(4) showed that , *N. viridula* had two peaks occurred in the last week of April and in the third week of May during the second sowing date 2012, while had three occurred in the third week of April, in the first week of May and in the last week of May during the second sowing date 2013.

Data presented in Fig (5) indicated that, *E. lybica* had three peaks occurred in the first week of May, third week of May and second week of Jun during the second sowing date 2012, however had three peaks occurred in the third week of April, in the first week of May and Second week of Jun during the second sowing date2013.

Fig (6) showed that, *L. trifolii* had two peaks occurred in the third week of April and in the second week of May during 2012, moreover had three peaks occurred in the third week of April, and Second week of May and the third week of Jun.

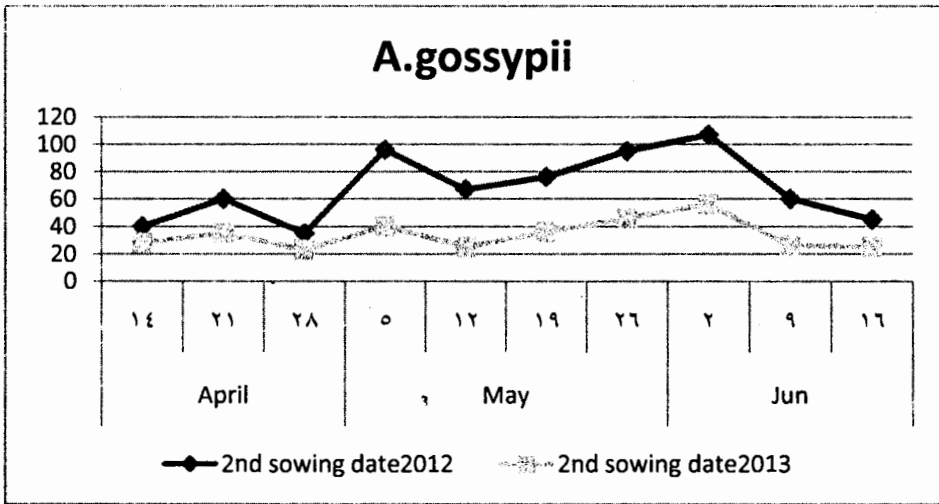


Fig.(1) population density of *A.gossypii* in the 2<sup>nd</sup> sowing date during 2012 and 2013

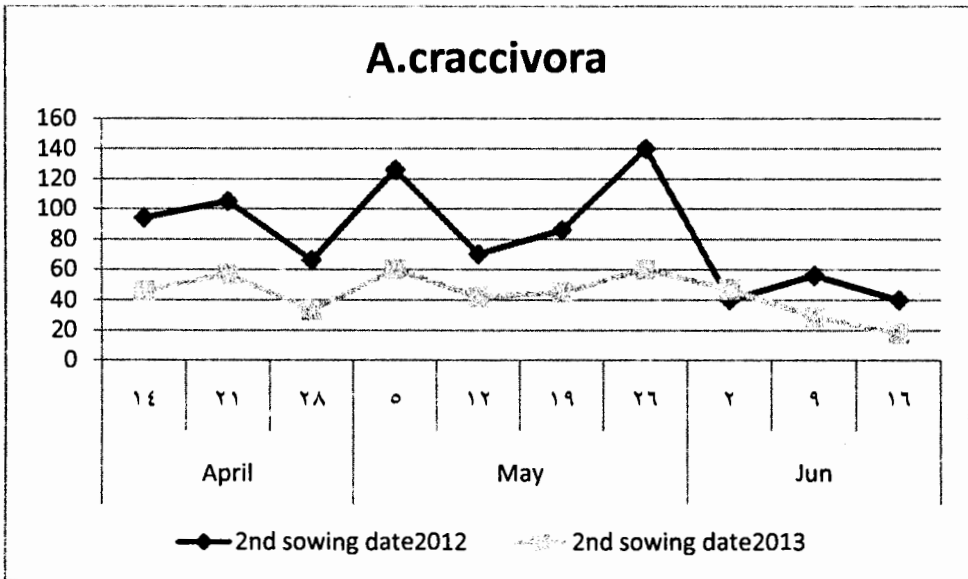


Fig.(2) population density of *A.craccivora* in the 2<sup>nd</sup> sowing date during 2012 and 2013

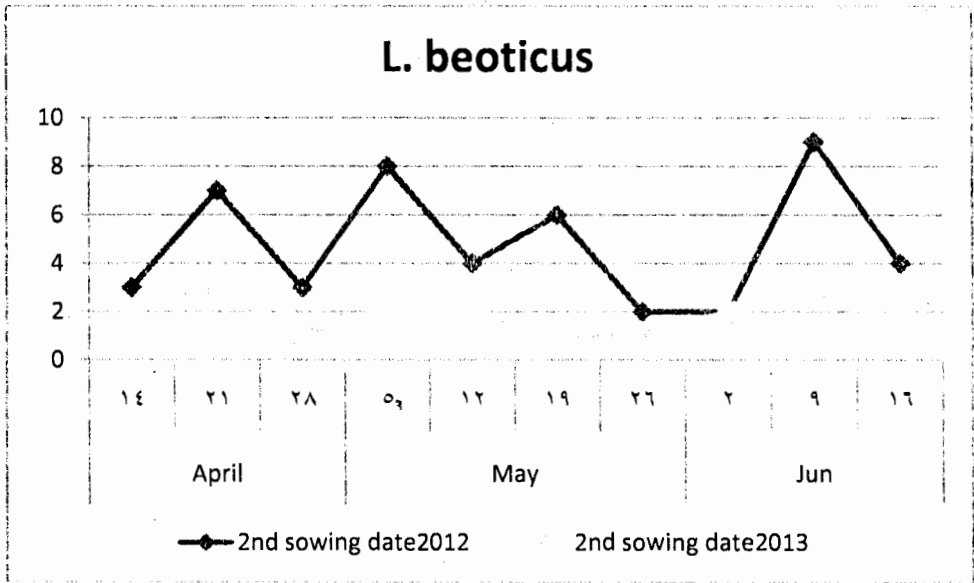


Fig.(3) population density of *L. beoticus* in the 2<sup>nd</sup> sowing date during 2012 and 2013

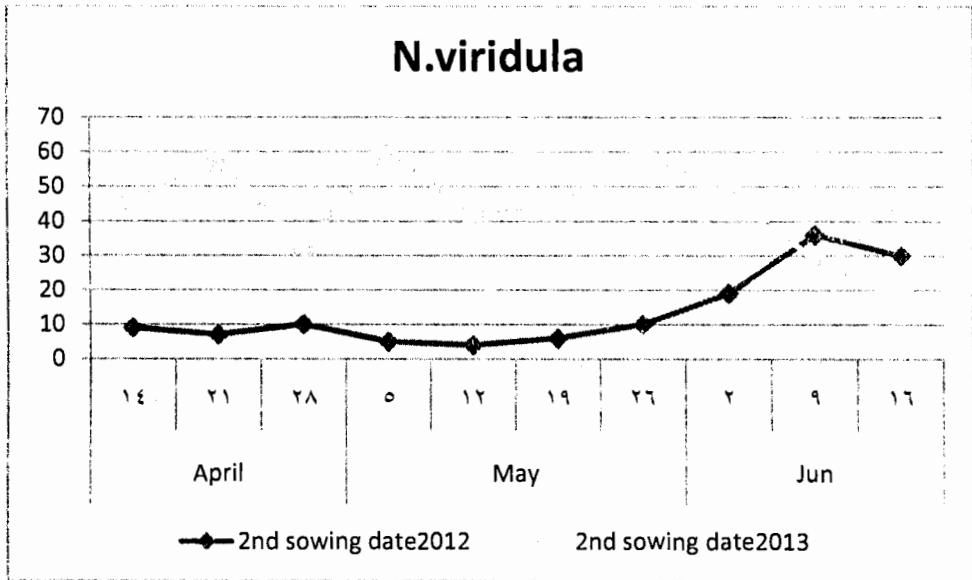


Fig.(4) population density of *N. viridula* in the 2<sup>nd</sup> sowing date during 2012 and 2013

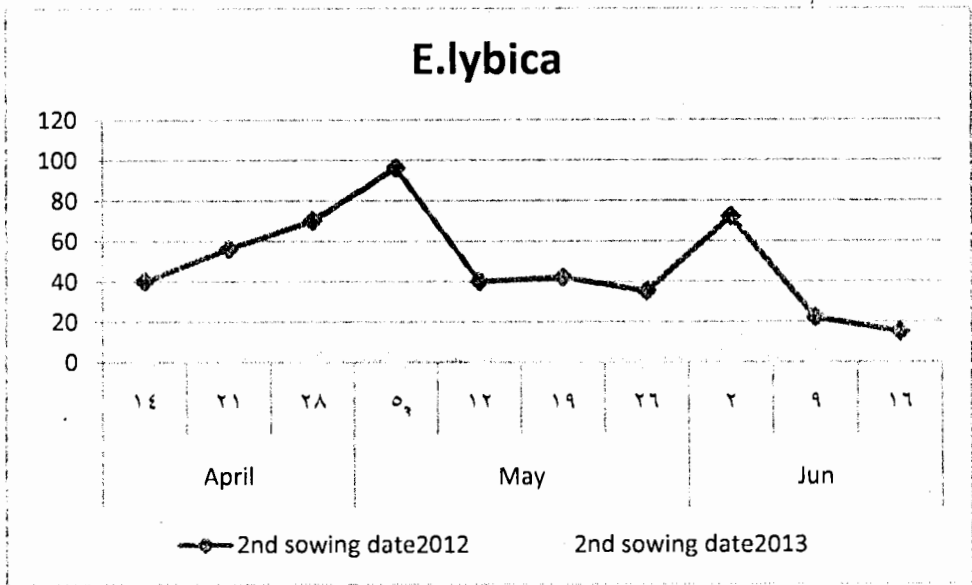


Fig.(5) population density of *E.lybica* in the 2<sup>nd</sup> sowing date during 2012 and 2013

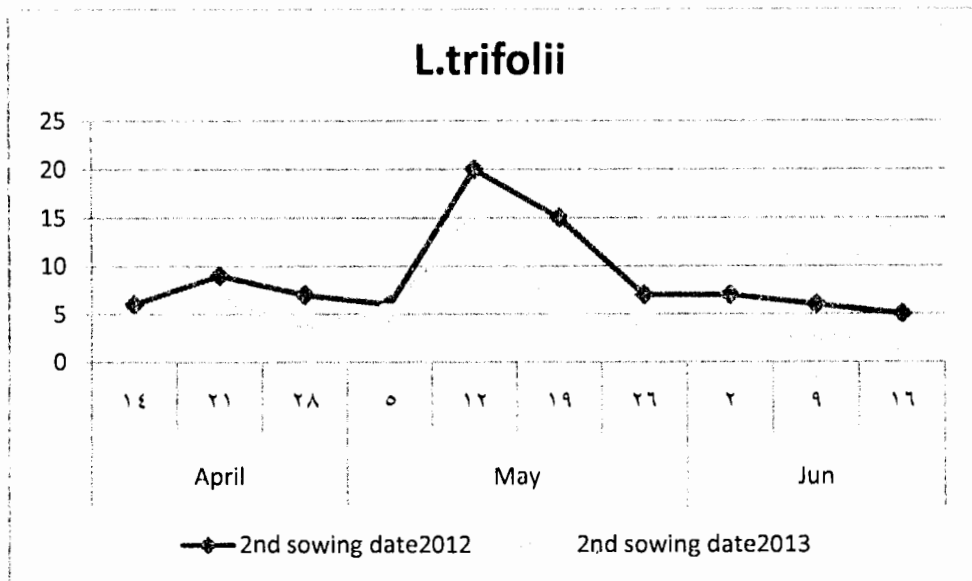


Fig.(4) population density of *L.trifolii* in the 2<sup>nd</sup> sowing date during 2012 and 2013

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## تأثير اختلاف مواعيد الزراعة على الكثافة العددية للأفات الحشرية التي تصيب محصول اللوبيا في منطقة المنصورة

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تهدف هذه الدراسة الى معرفة تأثير اختلاف المواعيد الزراعية لنبات اللوبيا على اهم الافات التي تصيب المحصول مثل من القطن، من اللوبيا ، ابودقيق البقوليات ، البقة الخضراء، نطاط الاوراق ، صانعات الانفاق .

وكانت مواعيد الزراعة كالتالى ٢٩مارس، ١٤ ابريل ، ٢٨ ابريل خلال سنتين متتالين ٢٠١٢ و ٢٠١٣ . وقد سجلت النتائج اقل تعداد بأقل فرق معنوى خلال فى الموسم الثانى من الزراعة سنتين الدراسة لتلك الحشرات على التوالي للميعاد الثانى ٦٨١، ٨٢٣، ٤٨، ١٣٦، ٤٨٨ ، ٨٨ لسنة ٢٠١٢ اما الميعاد الثانى لسنة ٢٠١٣ فكان كالتالى ٣٤٠، ٤٤٢، ١٩، ٤٣٧، ٢٩٩، ٥١.