

ESTIMATION OF INJURY CAUSED BY HOUSE SPARROW, *Passer domesticus niloticus* (L.) IN WHEAT CROP AT ASSIUT GOVERNORATE

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ABSTRACT

The present work was carried out to estimate the damage caused by the house sparrow (*Passer domesticus niloticus* L.) in the pre harvest stage of wheat crop at the Experimental Farm of Agricultural Research Center of Faculty of Agriculture AL – Azhar University at Assiut governorate, Egypt. This work was an attempt to study, the relationship between the losses caused by house sparrow and the planting nearby of buildings, animal husbandry and trees of orchards. The obtained results revealed that the highest damage of wheat occurred at the nearby cultivations of buildings and animal husbandry (25.87 & 19.20%). On the other hand, the lowest damage was observed in the nearby cultivations of orchards (9.33%). The statistical analysis of data revealed that a highly significant differences between the percentages of damage for the distances toward the middle of the cultivated field, (42.80, 7.40 & 3.30%) respectively. Also, there is a highly significant difference between the percentages of damage for both the date of planting i.e. the early and late date and moderate date. But, it is insignificant difference between the percentages of damage for both the early and late date (14.93 & 14.40%) respectively.

Keywords: house sparrow, wheat crop, damage, nearby cultivations, planting dates.

INTRODUCTION

The House Sparrow (*Passer domesticus*) is a world-wide distribution and affects a variety of habitat types under a wide range of climatic conditions, and it is considered as natural enemies to harmful insects when they feed on them in considerable amounts. Now, the house sparrow, *Passer domesticus niloticus* (L.) is thought to be one of the serious pests of cereal crops in Egypt. During certain seasons of the year it forages in the cropland in large numbers. Such foraging flocks damage the standing crops to a great extent.

As the house sparrow has great predilection for maturing seeds, it inflicts great damage on the maturing crops of wheat, broad bean, sorghum and sunflower. In fact, sparrow damage to cereal crops represents a serious problem as the losses reach up to 10% of the yield (Khattab *et al* 2001. Omar 2005. Mostafa *et al* 2008 & Omar 2010). The sparrow damage is thought to be one of the factors that severely constrain the efforts for achieving self-sufficiency in food production. The sparrow problem in Egypt is complex and wide-spread, varying in size and magnitude from area to other area depending on the variety of cereals grown, the date of ripening of the crops, and geographic location of a given area.

Generally, the early- grown crops are more vulnerable to the house sparrows, especially the areas which nearby of the buildings, animal husbandry, trees and orchards .A number of factors help the local house sparrow in maintaining a high population level in the study area. Extensive areas under cereal crops, availability of trees for roosting, and ever increasing number of huts and houses, where most of the sparrows nest, create an ideal ecological situation for the sparrow to breed and multiply to pest proportions. This study was, aimed to evaluate the losses the house sparrow inflict on the standing wheat crop in the farms of Agricultural Research Center of Faculty of Agriculture AL – Azhar University in Assiut Governorate.

MATERIALS AND METHODS

Study area and sites:

The field experiment was carried out at the Experimental farm of Agricultural Research Center of Faculty of Agriculture AL – Azhar University in Assiut governorate, Egypt during 2014 season. The present study concentrated on the assessment damage caused by house sparrow, *Passer domesticus niloticus* (L.) in wheat crop which cultivated in the mentioned area previously nearby of the buildings, animal husbandry, trees and orchards.

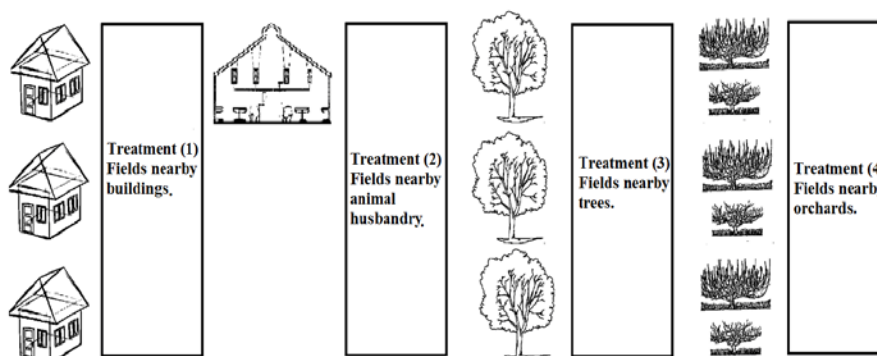


Plate 1) The four sites were planted at wheat crop and to estimated damage caused by house sparrow.

Assessment damage on wheat:

Four fields each of two feddans were selected randomly in the experimental areas. The wheat cultivated field was divided into four plots. In each one, fifteen samples were taken and repeated five times in each distance. Three distances were chosen at 10, 30 and 50 meters from the borders towards the middle of the cultivated area. The present course of investigation was extended to study the loss in wheat crop with relation to different planting dates (i.e. early, moderate and late date). The attacked plants and ears were estimated as a percentage from the total examined plants or ears.

The percentage of damaged and undamaged were calculated by using the following equation:

$$\text{Damage} = \frac{\text{No. of damaged ears}}{\text{No. investigated ears}} \times 100 \quad (\%)$$

The obtained data were subjected to the analysis of variance L.S.D. at 0.05 was used to differentiate the means according to Steele and Torrie (1984).

RESULTS AND DISCUSSION

Data presented in Table (1) , and Figure (1) show the highest total percentage of damage caused by house sparrow, *Passer domesticus niloticus* (L.) individuals on wheat fields nearby buildings and nearby animal husbandry were (25.87 & 19.20%). The differences between the percentages of damage for both the wheat fields previously mentioned was insignificant. The moderate percentage of damage was noticed at wheat field nearby trees (14.93%).

Table (1): Average percentage of damage caused by house sparrow in wheat crop at different sites in Assiut Governorate.

Treatments	Distance (m.)	Replicates					Mean
		R1	R2	R3	R4	R5	
Fields nearby buildings	10 m.	74.00	36.00	44.00	100.00	94.00	68.80%
	30 m.	12.00	4.00	12.00	8.00	12.00	9.80%
	50 m.	12.00	6.00	0.00	4.00	0.00	4.40%
	Mean	32.67	15.33	18.67	37.33	25.33	25.87% A
Fields nearby Animal husbandry	10 m.	44.00	42.00	64.00	46.00	50.00	49.20%
	30 m.	12.00	8.00	0.00	4.00	8.00	6.40%
	50 m.	0.00	0.00	0.00	4.00	6.00	2.00%
	Mean	18.67	16.67	21.33	18.00	21.33	19.20% AB
Fields nearby trees	10 m.	64.00	22.00	18.00	46.00	22.00	34.40%
	30 m.	2.00	8.00	0.00	18.00	0.00	5.60%
	50 m.	0.00	0.00	16.00	0.00	8.00	4.80%
	Mean	22.00	10.00	11.33	21.33	10.00	14.93% BC
Fields nearby orchards	10 m.	18.00	22.00	16.00	8.00	26.00	18.00%
	30 m.	4.00	0.00	14.00	10.00	12.00	8.00%
	50 m.	0.00	0.00	0.00	4.00	6.00	2.00%
	Mean	7.33	7.33	10.00	7.33	14.67	9.33% C
L.S.D. 0.05		7.43					

On the other hand, the lowest total percentage of damage was (9.33%) on wheat field nearby orchards. Results in table 1 show that there are a highly significant differences between the percentages of damage for both the wheat fields nearby buildings and wheat fields nearby trees and orchards. The percentage of damage caused by house sparrow increase in wheat field nearby buildings and animal husbandry because individuals of this bird stay more beside and inside nests to fed and look after the young. Metwally *et al.*, (1995) reported that the average of bird damage to

wheat, barley, rice, maize, sorghum, sunflower, broad bean and beans varied according to the type of habitats. The highest bird damage occurred in crops nearby building, while the lowest was in those nearby poultry farm. El – Danasoury (2006) mentioned that the highest total percentage of damage caused by *Passer domesticus niloticus* individuals on wheat fields nearby buildings and orchards were (14 & 13%) during 2003 season at El-Behira Governorate.

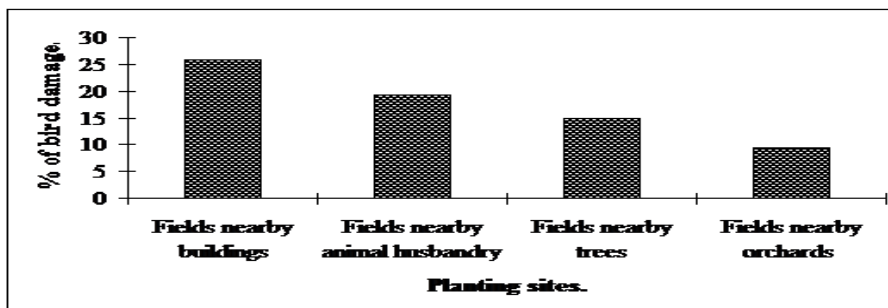


Fig. (1): Average percentage of damage caused by house sparrow in wheat crop at different sites in Assiut Governorate.

On the other side, the results in table (2)), and Figure (2) clear that, the highest loss caused by house sparrow on wheat fields was recorded at the first 10 meters from the border and decreased in the middle of the field. The differences between the percentages of damage for both the distance towards and the middle of the cultivated field, (42.80, 7.40 & 3.30%) respectively was highly significant. The highest damage at the edge of the field may be related to the presence of the bird nests in the trees near the field borders. El-Bakoury (1981) recorded that, the damage was concentrated beside the field edge and decreased gradually towards the middle of wheat and sorghum fields in agreement with the present study.

Table (2): Average percentage of damage caused by house sparrow in wheat crop at three distances at Assiut Governorate.

Distance (m.)	Replicates					Mean
	R1	R2	R3	R4	R5	
10 meters	50.00	30.50	35.50	50.00	48.00	42.80% A
30 meters	7.50	5.00	6.50	10.00	8.00	7.40% B
50 meters	3.00	1.50	4.00	3.00	5.00	3.30% B
L.S.D. 0.05	7.51					

Afterwards, data in table (3), and Figure (3) represent the percentage of house sparrow damage to wheat at three planting dates during 2014 season. The largest amount of damage was recorded in the first and third dates (14.93 & 14.40%) respectively, while the lowest sparrow's damage was recorded in the second date (5.20%). It is clear that, difference in planting date caused variable amount of damage. The cultivation of crop at early one date seems to minimize sparrow's damage.

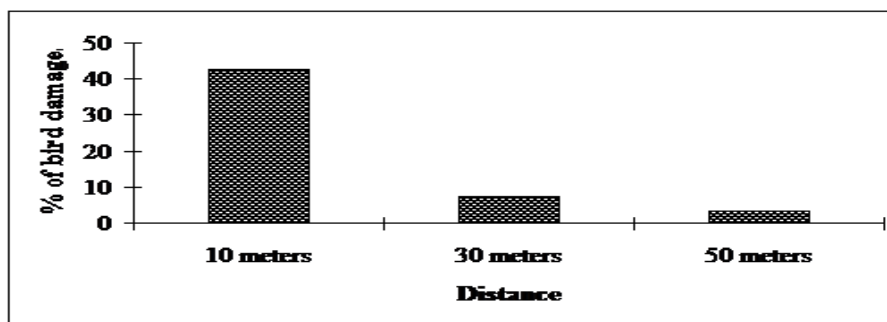


Fig. (2): Average percentage of damage caused by house sparrow in wheat crop at three distances in Assiut Governorate.

These observations cleared that, the infestation of plants at the first date of planting was higher because of the wheat was only field crop grown at this time, while the lowest damage at the second planting date may be due to the appearance of the broad bean horns in the experimental area. The difference between the percentages of damage for both the early and late also moderate date was highly significant. **Tolba (1999)** reported that, the highest damage was recorded in first 10 meters and decreased gradually towards the field center in the two wheat varieties (Giza 164 and Sakha 69).

Table (3): Average percentage of damage caused by house sparrow in wheat crop at three planting dates in Assiut Governorate.

Planting date	Replicates					Mean
	R1	R2	R3	R4	R5	
Early	22.00	10.00	11.33	21.33	10.00	14.93% A
Normal	11.33	5.33	4.00	2.67	2.67	5.20% B
Late	10.67	15.33	21.33	14.00	10.67	14.40% A
L.S.D. 0.05	7.28					

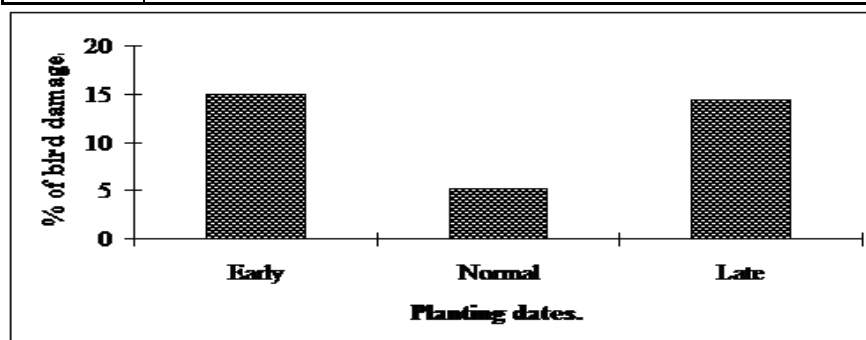


Fig. (3): Average percentage of damage caused by house sparrow in wheat crop at three planting dates in Assiut Governorate.

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تقدير الأضرار الناجمة عن عصفور النيل الدوري في محصول القمح بمحافظة أسيوط.

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أجريت هذه الدراسة بحقول مركز البحوث الزراعية بكلية الزراعة - جامعة الأزهر بأسيوط بهدف تقدير الأضرار التي يسببها عصفور النيل الدوري على محصول القمح وعلاقة هذه الأضرار بالحقول القريبة من المباني ومزارع الإنتاج الحيواني والفاكهة وأشجار الزينة ، كما استهدفت الدراسة أبعاد الإصابة عن مصدر العشوش ، أيضاً دراسة الاختلاف في مواعيد الزراعة لمحصول القمح وعلاقة ذلك بالخسارة الاقتصادية الناتجة عن ذلك. وأظهرت الدراسة النتائج الآتية:

- 1- سجلت الحقول القريبة من المباني أعلى نسبة مئوية للخسارة (25.87%) يليها الحقول قرب مزرعة الإنتاج الحيواني (19.20%) بينما كانت نسبة الخسارة متوسطة في الحقول قرب الأشجار (14.93%) ، كما أظهرت النتائج أن أقل نسبة خسارة كانت في الحقول القريبة من البساتين (9.33%). وربما يرجع ارتفاع نسبة الخسارة في الحقول القريبة من المباني ومزارع الإنتاج الحيواني إلى أن طيور عصفور النيل الدوري تفضل بناء أعشاشها في شقوق وأسقف المباني أثناء موسم التزاوج لتوفير حماية أفضل لصغارها عن الأماكن الأخرى التي تتعرض لهجوم الأعداء الحيوية بدرجة كبيرة.
- 2- فيما يتعلق بدراسة بعد الإصابة عن مصدر التعشيش أظهرت النتائج في كل الحالات السابقة أن الإصابة تكون أعلى ما يمكن في حواف الحقول وبالقرب من أماكن تواجد العشوش ونقل تدريجياً كلما اتجهنا إلى الداخل.
- 3- تشدد الإصابة في مواعيد الزراعة المبكرة والمتأخرة أيضاً مقارنة بالزراعة في المواعيد العادية والموصى بهالذا ينصح بعدم التبكير أو التأخير الزائد في زراعة محصول القمح مع توحيد مواعيد الزراعة في الحقول المجاورة ليقبل الضرر.

Omar, M. M. A. et al.

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