Journal of Sohag Agriscience (JSAS) 2023, 8(2): 167-170

ISSN 2305-1088
https://jsasj.journals.ekb.eg
JSAS 2023; 8(2): 167-170

Received: 04-10-2023
Accepted: 31-12-2023

Nageh Sayd Omran
Abd El-Aleem Desoky
Omnia Mamdouh Ahmed

Plant Protection Department
Faculty of Agriculture
Sohag University
Sohag
82524
Egypt

Corresponding author:
Omnia Mamdouh Ahmed
omnyamamdouh@gmail.com

Survey and population density of some rodent species in Kharfa region, Sohag Governorate, on Two cereal crops

Nageh Sayd Omran, Abd El-Aleem Desoky and Omnia Mamdouh Ahmed

Abstract

The aim of this work is to survey the species of rodents present in Sohag Governorate, on Ttwo cereal crops (wheat-maize) during 2021: 2022 and. 2022:2023. Data revealed the presence of three species of rodents on the wheat crop, (10 carats), namely *Rattus Norvegicus*, and *Arvicanthis niloticus*, and three on the maize, 12 carats crop, namely *Rattus Norvegicus*. *Arvicanthis niloticus*, *R.r fragivorus* . The results also showed that the numerical density increases during the summer and the spring seasons with an increase in the sex ratio as well, and decreases during the winter and autumn seasons due to the inadequacy of food or weather conditions in this period. This work aims to identify the species of rodents in order to put them in a future plan to develop an integrated control program in order to control and decreasing the damage caused by these pests to grass crops in Egypt**.**

Keywords: Al-monshah, Sohag Governorate, R.norvegicus, A.niloticus, R.r frugivorus, Survey rodent species, cereal crops.

INTRODUCTION

Rodentia, as a mammalian order, holds significant importance due to its diverse range of rodent species and their consequential impact on the environment. These impacts manifest directly through their destructive feeding behaviors and indirectly by serving as a stable food source for numerous predators within the ecological food chains. In the context of Egypt, alterations within the agro-ecosystem over the past four decades have exerted a profound influence on the distribution and abundance of field rodent populations [1]. Rodents are implicated in a multitude of damages, encompassing crop and tree destruction, structural property and cable impairment, as well as disease transmission. Consequently, rodents are widely acknowledged as one of the most signific. Abd El-Aleem (2018).

MATERIALS AND METHODS

This study was conducted in Sohag Governorate, Al-Monshah, next to the water station, on cereal crops (wheat, maize) during the years 2021: 2022 and. 2022:2023.

25 modern traps were set in corn crop and 20 modern traps in wheat crop. The traps were placed twice a week at 6:30 in the morning and were collected at 7:30 in the evening. The dominant rodent species were classified in addition to the percentage of each species. The percentage of dominant, static, trap indexes, sex ratio and the percentage of adults and non-adults were estimated.

Dominate percentage = (rodent species number/total rodent captured) x 100

Total index = rodent captured / total traps distributed

RESULTS AND DISCUSSION

Table (1) presents the occurrence of two rodent species, *Arvicanthis niloticus* and *Rattus norvegicus*, in a wheat crop within the experimental area. The population density of both species exhibited an increase during the summer months (March-April) and at the onset of planting in November. This pattern may be attributed to favorable food availability and environmental conditions during these periods. The first period coincides with wheat grain planting, while the second period spans from spike formation until harvest. The availability of shelter and food during pre-harvest and harvest periods likely contributes to these increases.

During the spring season, the genus *Arvicanthis niloticus* and *Rattus norvegicus* accounted for 60% of the observed rodents, while their prevalence was lowest in winter. *Arvicanthis niloticus* exhibited the highest density in the field, comprising (53.5%) of the total, followed by Rattus norvegicus at (46.5%). This is consistent with the results of Abd El-Aleem.Abdel-latief and Mahmoud (2021). ABD EL-ALEEM.et al., (2021).

Regarding trap indices, *Arvicanthis niloticus* achieved its highest trap index of (1.8) in April, while *Rattus norvegicus* reached its peak trap index in March (1.85) and April (1.3).

Table (2) presents the occurrence of three rodent species: Rattus norvegicus, Arvicanthis Niloticus, and R.r Frugivorou. Among these species, Arvicanthis Niloticus ranked first, accounting for (52%) of the observed rodents. Rattus norvegicus ranked second with a percentage of 36%, while Arvicanthis niloticus ranked third with a percentage of (12%).

The highest population density was recorded during the spring and summer seasons, while the lowest density was observed during the fall season. In terms of trap indices, Rattus norvegicus achieved the highest index of (1.88) in July, while Arvicanthis niloticus achieved the highest index of (1.32) in May. Rattus norvegicus attained its highest trap index of (0.68) in August. This is consistent with the results of Elrawy. et al., (2021). Abd El Aleem and Baghdadi (2020). Abd El-Aleem (2019).

Table (3). displays the presence of two rodent species, Rattus Narvegicus and Arvicanthis Niloticus. Rattus Narvegicus exhibited a population density of (51.4), while Arvicanthis Niloticus scored a population density of(48.6). This is consistent with the results of Abd El-Aleem(2020).

The highest trap index was recorded in March for both species; however, the genus Rattus Narvegicus outperformed the genus Arvicanthis Niloticus with a trap index of (2.5), whereas the latter achieved a trap index of (1.75). Notably, during this season and within the same experimental site, an increase in population density percentage was observed compared to the findings presented in Tables (1) and (2). Arvicanthis Niloticus occupied the first rank, Rattus Narvegicus the second rank, and R.r Frugivorou held the lowest rank.

Table (1) Seasonal distribution and trap index of certain rodent species on wheat crop, in Kharfa region(Almonshah city, Sohag governorate) during November 2021 till April 2022.

Season	Months	*Arvicanthis niloticus*			*Rattus Norvegicus*		
		No	**%**	**Trap index**	**No**	**%**	**Trap index**
Autumn	Nov	6	54.5	0.3	5	45.5	0.25
Winter	Dec	9	60	0.45	6	40	0.3
	Jan	4	50	0.2	4	50	0.2
	Feb	17	60.7	0.85	11	39.3	0.55
Sparing	March	32	44.4	1.6	37	55.6	1.85
	April	23	46.9	1.15	26	53.1	1.3
Total		91	53.5	4.55	89	46.5	4.45

Table (2) Seasonal distribution and trap index of certain rodent species on maize crop, in Kharfa region(Almonshah city, Sohag governorate) during 2022.

Seasons	Months	*Arvicanthis niloticus*			*Rattus Norvegicus*			*R.r frugivorus*		
		No	***%***	**Trap**	***No***	***%***	**Trap**	***No***	***%***	**Trap**
Spring	May	46	51.1	1.84	33	36.6	1.32	1	12.3	0.04
Summer	June	11	44	0.44	12	48	0.48	2	8	0.08
	July	47	56.6	1.88	30	36.1	1.2	6	7.3	0.24
	Aug	15	39.4	0.6	6	15.7	0.24	17	44.9	0.68
Autumn	Sep	3	33.3	0.24	4	44.4	0.16	2	22.3	0.08
Total		122	51.9	4.8	85	36.1	3.4	28	12	1.12

Table (3) Seasonal distribution and trap index of certain rodent species on wheat crop, in Kharfa region(Almonshah city, Sohag governorate) during. Nov 2022 till April 2023.

Season	Months	*Arvicanthis niloticus*			*Rattus norvegicus*		
		No	***%***	**Trap**	***No***	***%***	**Trap**
Autumn	Nov	18	60	0.9	12	40	0.6
Winter	Dec	23	53.4	1.15	20	46.6	1
	Jan	3	33.3	0.15	6	66.7	0.3
	Feb	31	72	1.55	22	28	1.1
Spring	March	35	41.1	1.75	50	58.9	2.5
	April	18	62	0.9	11	38	0.55
Total		128	51.4	6.4	121	48.6	6.05

CONCLUSION

In the conclusion of this study, the distribution and population density of rodents in the Kharfa region of Sohag Governorate, Egypt, on certain cereal crops were investigated. Three species of rodents were found on the maize crop, and two species were found on the wheat crop. The results showed an increase in population density during the summer and spring seasons, while it decreased during the winter and autumn seasons. The aim of this study is to identify the rodent species and develop a future plan for an integrated control program to mitigate the damage caused by rodent infestation in grass crops in Egypt.

Based on the findings, measures can be taken to control rodents during the summer and spring seasons, such as using modern traps and improving environmental conditions to limit their reproduction. Innovative rodent control programs can also be developed, targeting specific rodent species that cause the greatest damage to the crops.

Overall, rodent control is essential for maintaining agricultural stability and reducing economic losses. Continuous efforts should be made to improve rodent control programs and develop effective strategies to address this issue in agricultural areas.

REFERENCES

Abd El-Aleem(2018).Rodent Damage in Maize Fields and their Control.Acta Scientific Agriculture (ISSN).

ABD EL-ALEEM .et al .,(2021). SURVEY AND POPULATION DENSITY OF RODENTS IN SUGAR CANE FIELD IN SOHAG GOVERNORATE, EGYPT.Asian Journal of Advances in Research. 6(4): 23-27, 2021.

Abd El-Aleem. Abdel-latief and Mahmoud (2021). survey and population density of rodents in sugar cane field in sohag governorate, egypt.Asian Journal of Advances in Research.6(4): 23-27, 2021.

Abd El-Aleem (2018).Rodent Damage in Maize Fields and their Control.Acta Scientific Agriculture (ISSN). (ISSN: 2581-365X) Volume 2 Issue 7 July 2018.

Abd El Aleem and Baghdadi (2020).A Study of Distribution for Rodent Species in Old Agricultural and Newly Cultivated Lands in the Desert of Sohag Governorate, Egypt.Journal of Plant Protection and Pathology ., Vol 11 (5):241 - 242, 2002.

Abd El Aleem(2019).Survey and Seasonal Distribution of the Rodents in El- Kawther City, Sohag Governorate, Egypt.World Journal of Agriculture and Soil Science. ISSN: 2641-6379.

Elrawy. et al.,(2021).Studies on the Definition of Rodent Species at Farshut District, Qena Governorate, Egypt.Advances in Agricultural Technology & Plant Sciences. ISSN: 2640-6586.