



Study On The Population Of Onion Thrips (*Thrips Tabaci Lindermann*) In Tirhut Region

Sonam Kumari¹

Dr. Manendra Kumar²

¹Research Scholar, University PG Dept. of Zoology, B R A Bihar University, Muzaffarpur

²Professor & Head, University PG Dept. of Zoology, B R A Bihar University, Muzaffarpur

Abstract

Onion thrips, *Thrips tabaci* Lindermann, is one of the most serious pests of onion throughout the world. The population of onion thrips on the transplanted farm plot was studied during the research work. There was transplantation of onion variety on five different dates in the rabi crop of onion. There was a study on the population growth of nymph and adult thrips of onion with the variety of Bhima Shakti of onion in the Tirhut locality. According to survey and data collection, the highest population of nymphs and adults of thrips was recorded on the 5th transplantation date (303 ± 7.66), 4th TD (216 ± 8.56), 3rd TD (196 ± 8.22), 2nd TD (126 ± 6.44), and on 1st TD (119 ± 8.33); on 5th transplantation date (112 ± 7.22), 4th TD (108 ± 7.32), 3rd TD (107 ± 8.43), 2nd TD (90 ± 6.41) and on 1st TD (88 ± 5.87) respectively. The population of nymphs and adults was maximum on the 5th transplantation date.

Keywords: Onion thrips, rabi crop, population of nymphs and adults, transplantation date

Introduction

Onion (*Allium cepa* L.) is an important vegetable and the most frequently used spice in Indian kitchens. It is the most important field crop in many parts of the world. In Egypt, it is a field crop of outstanding importance on account of its great value for local consumption and exportation to different countries. It is a cross-pollinated crop that has diploid chromosome number $2n$. It has special qualities that add taste and flavor to food as well as medicinal value. China is the highest producer of onion in the world with annual production of around 24 million tones. It is followed by India, Egypt, and the USA in terms of the production of onions in the world. The annual production of onion in India ranked # 2, the country accounts for 22.83% of the total world onion production. Maharashtra, Karnataka, and Madhya Pradesh are the largest onion-producing states in India. Among these, some other states like Gujrat, Andhra Pradesh, Rajasthan, Bihar, Haryana, and Punjab also cultivated onion crops on a small scale (Indian Horticulture Database, 2011). It is a cross-pollinated crop having diploid chromosomes. It is one of the major crops grown in different parts of the world mainly in 170 countries for culinary purposes and has medicinal values (Singh et al., 2017; FAO, 2018). Compared to other states onion production is less in Punjab but it is cultivated in Kharif and Rabi seasons. Onion is infested by a variety of pests (Lorbeer et al., 2002) and among them, *Thrips tabaci* is an important one (Trdan et al. 2006; Ansari and Moralet et al. 2014, Shiberu. 2020) Attack of Thrips on onion can be observed at all stages of crop growth and

but their count increases from bulb initiation and high up to its development. Onion is considered the most preferred host crop of *Thrips tabaci* Lindermann globally (Montano et. al.,2011; Gill et. al., 2015; Pal et. al., 2019; Ain et. al., 2021; Shiberu, 2022) and is one of the limiting factors posing a serious threat to onion production in all the onion growing region of the country (Sekine et al., 2021).

Methodology

The present investigation was conducted during 2021-2022 on the farm of Pilkhi Gajpatti area of Muzaffarpur which is surrounded by the Bandra block towards the East, Sakra block towards the South, Gaighat block towards the North, and Pusa Block towards the East. It is located at 26⁰⁷'N latitude and 85⁰²⁴'E longitude. During experimental work, there was the use of the BhimaShakti variety of Onion for transplantation. Transplantation was done on five different dates in the rabi crop of onion. One month of seedling of the Bhima Shakti variety was transplanted from the first week of October. During each date of planting non replicated area of about 15x5 m² was used and crop spacing was maintained at 20cm by 10 cm between row to row and plant to plant respectively. With the help of nursery management uniform growth of onion bulbs was maintained.

A number of nymphs and adult onion thrips on different dates of transplanting in Pilkhi Gajpatti of Muzaffarpur:

A field experiment was carried out to determine the fluctuation of onion thrips population on different transplanting dates during the rabi season of 2021-2022. The seedlings of the Bhima Shakti variety of onion were transplanted on five different dates such as, the first transplanting date was 8th October 2021, the second transplanting date was 18th October, the third transplanting date was 6th November, the fourth transplanting date was 5th December, and fifth transplanting date was 6th January 2022. The number of onion thrips was counted with the help of a hand lens.

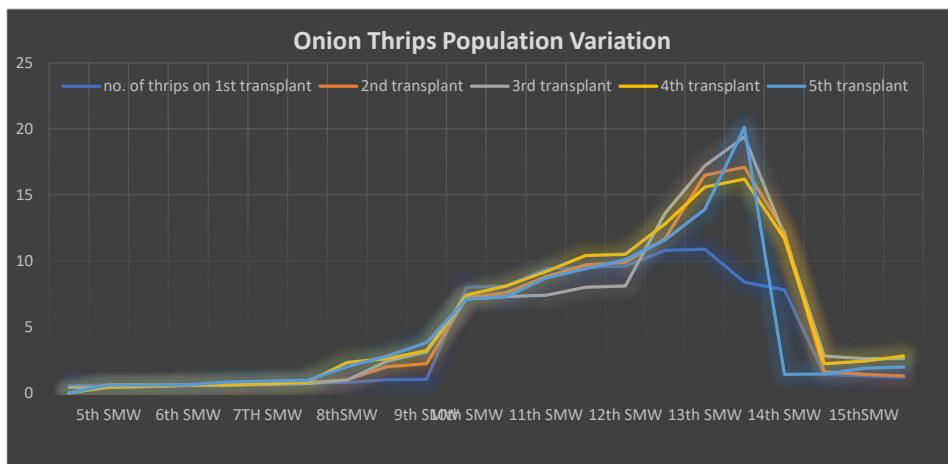
Observations

A survey of the experimental site was done from time to time according to the date of indication (transplantation date). During the survey, it was shown that there was the effect of thrips on the onion started on the 5th standard meteorological week (SMW) on the 1st and 3rd transplants. It was observed that there were other natural opposites that could also destroy the onion crop. Average thrips populations ranged from 0.54-10.9, 0.61-17.1, 0.41-19.4, 0.45-16.2, and 0.58-20.1% in 1st, 2nd, 3rd, 4th, and 5th transplants respectively. Peak population 10.9 for 1st transplant at 13SMW, 17.2 for the 2nd transplant at 13 SMW, 19.4 for the 3rd transplant at 14th SMW, 16.2 for the 4th transplant at the 13th SMW, and 20.1 for the 5th transplant at 13th SMW. Throughout the cropping season, maximum thrips number (303±7.66 of nymph & 112±5.87 of adult) on the 5th and 1st transplant respectively. The population declined suddenly from 13th to 15th SMW.

DATA ON THE NUMBER OF NYMPHS OF *Thrips tabaci* Lindermann OF THE SITE Pilkhi Gajpatti area of Muzaffarpur

No. of Transplantation	Number of nymphs	No. of adults
1 st Transplantation	119±8.33	88±5.87
2 nd Transplantation	126±6.44	90±6.41
3 rd Transplantation	196±8.22	107±8.43
4 th Transplantation	216±8.56	108±7.32
5 th transplantation	303±7.66	112±7.22

Onion Thrips Population Variations in the sites of Onion plantation



Conclusion

Based on this study, it can be concluded that in well well-known portion of the Tirhut region of Bihar, Onion Thrips infection was initiated during the last week of January and carried on till harvesting of the crop to mid-day of May and the peak population was calculated during 2nd week of April. Investigation indicates that there are fluctuations in the number of nymphs and adult *Thrips tabaci* on the onion bulb. That fluctuation was affected directly by plant conditions, environmental factors, and care by farmers.

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