

**DISEASE AND INSECT PEST OF ONION CROP IN NEWASA TAHSIL DISTRICT  
AHMEDNAGAR (M.S.) INDIA**

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**ABSTRACT:**

Survey on major onion diseases and insect pests was conducted in Newasa tahsil from Ahmednagar district in 2020-2021 cropping season. The aim of the study was to determine phenomenon and assess impacts of major diseases and insect pests of onion. Periodic field visit during every growing period of the crop was done to generate comprehensive information for every 1 to 2 km interval. Field data were collected at every 5m interval in each sample and quadrat (1m x 1m) diagonally across the field. The number of diseases and insect pests in the surveyed area was recorded and identified. Some major and some minor pests were observed during the survey. Purple blotch, downy mildew, damping off and iris yellow spot virus were the most important diseases of onion. Insect pests such as trips, cut worm and caterpillar were the major pests. Overall, the result shows that diseases and insect pest recorded as a major pest requires research and development in intervention at the moment. Most of the farmers did not have access to information on pest management, pesticide use and safety, or insect and diseases identification. Besides, regular observation strategies have to be designed in between, once a minor pest has become a major pest.

**Key Words:** Onion, Insect pests, Diseases, Iris yellow spot

**INTRODUCTION:**

Onion (*Allium cepa*.) is the important commercial vegetable crops in worldwide. Among the onion rightly called "queen of kitchen" belongs to family Alliaceae and considered as one of the most important vegetable, medicines and spice crops produce in large scale in Ahmednagar district and cultivated during dry and rainy season. (Bewuketu et al., 2016). Onion is extremely important commercial vegetable crop not only for internal consumption, but also for highest foreign exchange. Onion is valued for its bulbs having characteristics odour, flavour and pungency. Value addition in onion is done by marketing dehydrated onion and onion flakes (More, Shelke, Pathade et al., 2018).

India stands second position in onion production after China in the world. In India Gujarat stand second position in onion cultivation after Maharashtra state. The productivity of onion 12,580 kg per hectare all over the India while in Gujarat state the productivity is the highest 22,120 kg per hectare. Onion is a cool season crop however it can be grown under a wide range of climatic conditions. It grows well under mild climate without extreme heat or cold or excessive rainfall. In areas where average annual rainfall exceeds 75-100 cm in the monsoon periods, it can be grown only as a summer crop.

The ideal temperature requirement of the onion crop is 12.8-21 degree Celsius for growth and development and 15.5-25 degree Celsius for bulb development. Very low temperature in the early stages favors bolting, whereas sudden rise in temperature favors early maturity in rabbi, resulting in small sized bulbs. (AESAR based IPM-onion MPKV, Rahuri, 2020).

The onion crop is attacked by many diseases and insect pest at different crop growth stages which causes considerable losses in yield and it also poses harmful effect during harvesting, post harvesting, processing and marketing stages which lower the quality and export potential of the crops that significantly causes the economic loss. (Mishra et al., 2014). The yield and total

production of onion is very low in Newasa Tahsil. Like other onion producing areas in the district. The consistent use of chemicals to control the plant disease and insect pest not only poses a serious threat to the environment and mankind but also slowly built-up resistance in the pathogens and insect pest. The present study was therefore, conducted to determine occurrences and assess impacts of major diseases and insect pest on onion crop in Newasa Tahsil.

#### **MATERIALS AND METHODS:**

##### **DESCRIPTION OF THE STUDY LOCATION:**

The study was conducted on Ahmednagar District of Newasa tahsil (M.S.) India in the year 2020-2021.

Ahmednagar district is known as the land of saints. 'It is located in the central part of Maharashtra between 180-2' to 190-9' North latitude and 730-9' and 750-5' East longitude.' The area of Ahmednagar district is 17412 square kms and area wise it is the largest district in Maharashtra and occupies 5.56% of the total geographical area of Maharashtra. For administrative purposes, the district has been divided into 14 talukas.

There are total 14 talukas in Ahmednagar District and Newasa is one of them. The taluka head quarter of Newasa lies on 190.34' North latitude and 750 East longitudes. Newasa town is 61 km from Ahmednagar, the Dist. H. Q. Newasa lies on the North of Ahmednagar. The geographical area of Newasa taluka is 1286.55sq.kms, with 129 villages. Area wise Newasa taluka ranks eight in Ahmednagar District (profile of Ahmednagar district and Newasataluka).

##### **SURVEY METHOD:**

Survey was conducted to assess major diseases and insect pest of onion in Newasa. Periodic field visit during every growing period of the crop was done to generate comprehensive information for every 1 to 2 km interval. In each sample field data were collected at each 5m interval and a quadrat (1m×1m) thrown following diagonal pattern in the field. The plant in each quadrant were taken as the sample unit where leaves, roots and stems of the plant were highly inspected. Most of the diseases were damaging field symptoms. Further confirmations were made in Mizon plant protection laboratory. The intensity of the diseases was recorded as low (X) intermediate (XX) and high (XXX) depending on the load of infection. Low intensity means below 5% intermediate means below 25% and high means about 25% of infection (percentage area or proportion of the plant part covered by the symptoms) is estimated visually. Similarly necessary insect pest data were recorded depending on the kind of pest damaging the onion crop. Generally observed, part of plant affected symptom/damage observed, stage of insects a percent of infestation and status of insects per plant here also Recorded. Moreover insect pest was categorized as major and minor pest to understand its status for further research intervention. Accordingly pest incidence of 90% recorded was considered as a major insect's pest in the command area.

Identification of most insect pests was made under field condition with the help of field guide books and other references. Photo of damaged part of the studied plant were taken and then compared with the collected data. Identification of most insect pests was made under field condition with the help of field guide books and other references. Photo of damaged part of the studied plant were taken and then compared with the collected data.

##### **RESULT AND DISCUSSION:**

In survey area of Newasa tahsil, Iris Yellow Spot Virus, and Iris dwarf virus are the major diseases of onion attacking the plant at vegetative stage. The infestation was severe across all surveyed area and the intensity was above 25% in assessed areas. The observed Iris Yellow Spot Virus disease might be due to the occurrences of thrips in onion field, since onion thrips transmit IYSV and disease severity is positively correlated with thrips population in the field. (Haile et al.2016). Damping off was also one of the major diseases of onion production. These disease intensity at seedling stage in the assessed areas was above 25%. Damping off is important disease of onion during the nursery stage which causes about 70 to 80% damage to the crops.

According to the field survey powdery mildew disease found in Bulb initiation stage. Downy mildew and Stemphylium blight were severe in all over tahsil but its intensity was below 25%.

Bulb rot, White rot and Basal rot/Bottom rot is found to be less frequent diseases with less than 5% plant infestations in surveyed area. This disease found in during maturity stages. This disease is not serious problem in Newasa tahsil.

Table 1: Status and distribution of onion diseases in Newasa tahsil.

Disease	Scientific name	Pathogen	Growth Stage	Intensity
Damping Off	Fusarium spp.	Fungus	Seedling stage	XXX
Irris Yellow Spot Virus.	Topso Virus	Virus and Thrips vector	Vegetativestage	XXX
White rot	Sclerotium Cepivorum	Fungus	Maturity	X
Bulb rot	Fusarium spp.	Fungus	Maturity	X
Basalrot/ Bottom rot	Fusarium spp.	Fungus	Maturity	X
Downy mildew	Fusarium spp.	Fungus	Bulb initiation stage	XX
Purple Blotch	Alternaria parii	Fungus	Bulb initiation stage	XXX
Stemphylium Blight	Stemphylium Blight	Fungus	-	XX
Onion Yellow Dwarf Virus	Topso Virus	Virus and Thrips vector	Vegetativestage	XXX

When <5 of plant infested (X), 5 to 25% of plant infested (XX), >25% of plants infested(xxx).

Table 2: Status and q of insect pests of onion in Newasa Tahsil.

Insect name	Scientific name	Stage of insect	Growth stage of the plant	Status
Thrips	Thrips tabaci.	Nymph/Adult	Seedling and bulb initiation	Major
Maggotes	-	Nymph	Maturity	Minor

Pest incidence >25 percent was considered as major insect pest in the area.

#### INSECT PEST OF ONION :

The survey results indicated that the production of action in Newasa Tahsil is subjected to only two insect pests. In this field survey, major and most important insect pest observed were Thrips. There infestations are more it was above 25% and the maggots are not a serious problem in onion crop in Newasa tahsil.



Fig.1. Purple blotch

Fig.2 Damping Off



Fig 3. Iris Yellow Spot Virus



Fig 4. Downy Mildew



Fig 5. White Rot



Fig 6. Thrips



Fig.7. Basal rot/ Bottom rot.

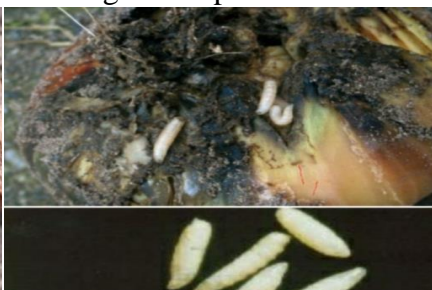


Fig.8. Onion maggotes.



Fig. 9. Stemphylium blight

### CONCLUSION:

Onion is the important commercial vegetable crops in worldwide. But onion crop is attacked by many diseases and insect pest which causes the losses of yield. The present work is studied in location Newasa tahsil to survey of Disease and insect pest of onion crops.

In this survey, the Damping off, Onion yellow Dwarf Virus and purple blotch is a more serious disease observed, its infestation is above 25%. The disease Downy mildew and Stemphylium blight is a medium in range, its below 25% infection. The White rot, Bulb rot and Basal rot/ Bottom rot is a very low, it is about 5% infection.

In surveyed area the Thrips are major insect pest its infection is more than 25% its causes the more losses of yield and a maggotes are less intensity of a infection in surveyed area. It is less than 5% infection.

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