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THE EFFECT OF HUMIDITY LEVELS ON MYCELIAL DRY WEIGHT OF FUSARIUM OXYSPORIUM, *RHIZOCTONIA SOLANI* AND *ALTERNARIA SOLANI*

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Abstract
Seedlings of different vegetables were collected in sterilized polythene bags from different sites in Beed district from January 2018 to December 2018 for the study of the effect of humidity on the growth of fungi, isolatedfrom the vegetables and dry weight of fungiwas studied during present investigation. Thefungiwereisolated by food poisoning techniqueandon P.D.A. medium. The pathogenicity was tested according to Koch's postulates. There was Variation in themycofloraamong various according to the type of vegetableswas observed. The common fungi observedwere fusariumoxysporium,Rhizoctoniasolani and Alternariasolani.
There was highly significant difference in the growth of these fungi Alternaria solani, Fusarium oxysporiumand Rhizoctinasolaniaat differenthumidity levels,maximum growth of these fungi were observed at 90%,while least at 30 %relativehumidity (RH) that was Alternaria 105 mg fusarium 131 mg and Rhizoctina 151mg .Followed by 50 % , 30% and 05 % humidity and least growth was obtained at 30 % humidity was Alternaria 22 mg fusarium 35 mg and Rhizoctina 22 mg. The result of study was indicated that the growth of fungi was high at humidity 90 %and was least at humidity. Therefore humidity is most important environmental factorwhich regulate vegetative and reproductive growth and activity of fungi, in the present study on the influence of humidity the maximum growth was at 90 % humidity level.

Keywords: Vegetables, fungal sporeandhumidity.

Introduction

In Marathwada region of the Maharashtra state several vegetables get affected by various fungal diseases and resulting reduced in the of yields of the crops and fruits. Present investigation was carriedout to undertaken to isolate these pathogens and study their growth pattern on media.Vegetable is recognized as an essential diet with its nutritional and medicinal value, having full of source of vitamins and minerals. India has securing the second positions in the world with total production of vegetables are more than 90million tones in the country.Though the productivity of vegetable per unit area is very low, that means the vegetable in India are produce on small scale and raised with principles of intensive farming, which leads to disease infection specially fungal infection.Vegetable's either raised directly or through transplanted , seedling get infected by various biotic, messobiotic and abiotic causes. Vegetable and their seedlings are suffered from number of diseases caused by species of fungi, bacteria, viruses and nematodes and other living micro organisms. Among this fungal pathogens play most important role in reducing yield and quality in vegetable crops and causing different fungal diseases. Each vegetable seedling may be susceptible to several species and due to multiple soils born pathogen which are present in soil for long period's symptoms of the seedling disease complex appears as patches emergence during the four weeks following seedlings, or up to the four leaf stages. Seedlings diseased damage contain seeds decay that is seed fail to germinate and become soft and pulpy and pre-emergence damping- off i.e. seed

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germinate but do not the developing seedling , decay and fail to emerge sometime seedling could turn to seedling blight, white stem or post emergence damping-off and even seedling root rot occurs in the entire field crop.

India is second most largest fresh vegetable growing country in the world and India produced more than 90 million metric tones of vegetables. In the world area under cultivation of vegetables was cultivated at 10.1 million hectare in the year 2015-16 (APEDA). As in India it is grown in an area of 9.575 million hectares with the productivity of 17.7 mt/ha, which contributes less than 14% total world production of vegetables. Among various state in India, west Bengal, Uttar Pradesh, Madhya Pradesh, Odisha, Gujarat and Maharashtra are the major vegetable growing states in India among which west Bengal contributing 16% followed by Utter Pradesh with 14% total production of vegetables. Further more Madhya Pradesh contributing about 8.6%, Bihar with 8.75%, Gujarat 7% and Maharashtra in 6% contribution in total production. (Illustrate area and production of major vegetables producing state of the country during 2014-2015, production of vegetables was 167.1 million tones having average productivity of 17.6 tons per hectare in India.

Material and Methods

The seedlings of different vegetables were collected in sterilized polythene bags from different sites of Beeddistrict during the year 2018 from January to December 2018for the study of effects of humidity on the growth of fungi.The diseased vegetables were collected observed carefully and the separately in polythene bags to avoid contamination. The symptoms were recorded carefully noted completely rotten vegetables were avoided for isolation as they contained mostly secondary pathogens. If vegetable were present on the infected portions, Slides were prepared by scraping the diseased portionson vegetables. Isolations were made from the juncture of healthy and diseased regions on the peel of the infected vegetables. The diseased tissues For this purpose were surface sterilized with 90% ethyl alcohol and transferred aseptically to Potato dextrose agar medium.[200g Potato, 15g Dextrose 15-20 g Agar-agar and 1000 ml of distilled water] slants. After 8 to 10 days the hyphal tips coming out of the infected tissues were transferred to fresh slants. The fungi were allowed to grow andidentified with the help of standard monographs.[1] Aerobiology to Astrology Scientific Monograph No.1), Tilak S.T. (1987). Air monitoring (practical manual) Vaijayanti Prakashan, Aurangabad. Tilak S.T. (1982). Aerobiology Vaijayanti Prakashan, Aurangabad .Genera of fungi by Clements and Share.Effect of the growth of fungi on different humidity level was noted.Dry weight of the fungi in mg wasalso recorded by digital balance in the laboratory.

Effect of different Humidity level on dry weight of *Alternaria solani, Fusarium oxysporum* and *Rhizoctonia solani* on 10th day of inoculation period were noted.

To Study effect of different levels of humidity the flasks of liquid potato dextrose medium was prepared as mentioned above, the inoculated flask were kept at different levels of humidity 90%, 50%, 30%, 10% and 0% in triplicate, were kept at each humidity level. The dry weight of mycelium was taken on 10th day of inoculation

period of different fungus i.e. *Alternaria solani, Fusarium oxysporum* and *Rhizoctonia solani*.

Maintenance of meteorological data

Meteorological parameters such as Temperature, Relative Humidity and Rainfall were recorded during the entire study period.

Results and Discussions

There was highly significant difference in the growth of Alternaria solani, Fusarium oxysporium and Rhizoctina solani at werenoted at different humidity level maximum growth of these fungi were observed at 90% humidity that was Alternaria 105 mg Fusarium 131 mg and Rhizoctina 151 mg {1,2,3,4 and 5} Followed by 50 % , 30% and 05 % humidity and least growth was observed at 30 % humidity was Alternaria 22 mg fusarium 35 mg and Rhizoctina 22 mg {6,7 and 8}. The result of study indicated that the growth of fungi is high at humidity level 90 % and Least at 30 %

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humidity.(Table1 and Graph 1) Therefore humidity is most important environmental factor which regulate vegetative and reproductive activity of fungi in the present study on the influence of humidity the maximum growth was at 90 % humidity which was noted in our experiment.{12}

Conclusions

Total fungal genera which was isolated from Beed in field soil of vegetable crops (12) and non-field vegetable crop field soil (10) fungi.The result indicated that in the all field soil of different region. The number of fungi is more in comparison to non-field soil, this is because of presence of crop residue, in the field soil, supported the survival of fungi for longer duration. As most of the fungi isolated from the field soil are the parasites which causes different diseases and damaged the crops field in the seedling stage. The reason of less number of fungi observed in non field soil of all the Marathwada region, because of no host plant debris in the non-field soil due to the absence of pathogen in the form of plant residue in the field.

Hence, the number of fungi in field soil is more than non-field soil in all region of Marathwada. Isolation of fungi from diseased seedling of different vegetable from different locality of Beed district of marathwada region the entire crop field . The selected crop were Tomata, Brinjal, Radish, Spinach Cabbage Chili and Fenugreek.

Humidity is most important Meteorological parameters for the regulate of vegetative and reproductive growth activity of fungi, in the present study on the influence of humidity the maximum growth was at Maximum humidity and as thepercentage of relative humidity decreases the vegetative and reproductive growth is also decreases .

Effect of different humidity on of *Rhizoctonia solani, Fusarium oxysporum* and *Alternaria solani*. The maximum growth and biomass were observed at 90% humidity.

Rhizoctonia solani,Fusarium oxysporum and *Alternaria solani*. Are very destructive fungi for vegetable crop because this causes maximum damaged to entire field crop. They have the ability to produce a number of secondary metabolites, typically dependent on environmental factors ranging from nutrient concentrations to color of light, pH, temperature and humidity. Present finding study showed that maximum favorable color of light is green color was also recorded. The optimum pH 5.5 to6.0 is more suitable for growth and development of selected fungi, and 25^0C temperature required for maximum production of spores and biomass and also 90% humidity is stimulated growth of selected fungi was also ecorded.

Table 1: Effect of different humidity level on dry weight of Alternariasolani.,Rhizoctoniasolaniand fusarium oxysporum

Sr.No	Humidity Percentage (%)	Dry Weight In mg		
Sr.No.		Alternaria solani	Rhizoctonia solani	Fusarium Oxysporium
1	90 %	105%	151%	131%
2	50 %	61%	46%	67%
3	30 %	20%	22%	35%
3	05%	00%	00%	00%

Graph 1:

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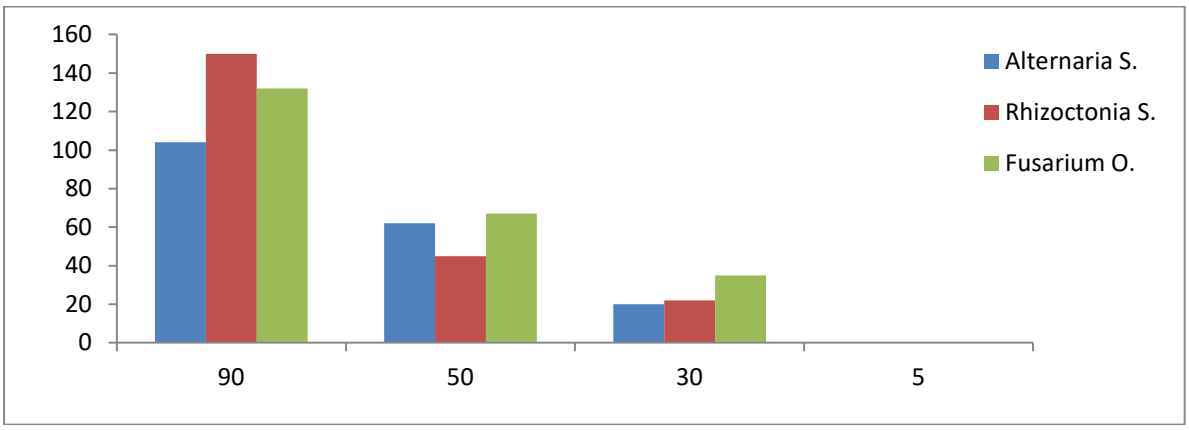

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