REVIEW OF RESEARCH
ISSN: 2249-894X
IMPACT FACTOR : 5.7631(UIF)
VOLUME - 9 | ISSUE - 9 | JUNE - 2020

AIRSPORA STUDIES OF VEGETABLE MARKET AT NANDED, MAHARASHTRA

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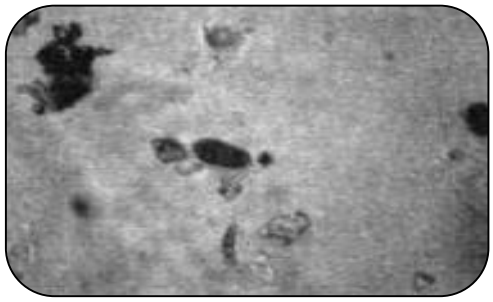
ABSTRACT

The study on air spores of the vegetable market at Nanded was carried out with the help of a rotrod air sampler to monitor the bio-pollutants. The study was conducted from June 2019 to October 2019. The investigation found 57 types of bio-pollutants, including 52 fungi, and five pollen, algae fragments, hyphae fragments, insect and insect parts. Spores of Curvularia, Negrospora, Cladosporium, Alternaria, Helminthosporium, Sclerospora, Epicocom, Tecospora and Chetomyum are commonly found. The spores found in the study, which have already been shown to be allergic, are Curvularia, Aspergillus, Cladosporium, Alternaria, Helminthosporium, Chetomyum, Smut spores and Epicocom.



KEYWORDS: *bio-pollutants , Helminthosporium, Sclerospora, Epicocom.*

INTRODUCTION

The atmosphere contains gases, water droplets, microscopic and submicroscopic particles, pollen, dust and microorganisms such as bacteria, mold, yeast and viruses (Jones and Harrison 2004). The vegetable market is one of the many environments that produce microorganisms and other organisms in the air. Vegetable markets, where the number of fungal microorganisms in the air can be significant, are exposed to a large number of human populations. Fungi in the air are also considered an indicator of the level of bio-pollution in the atmosphere. Fungal infections in the air can pose a health risk to all segments of the population. Aerobiological studies allow us to check the concentration of fungal spores in the atmosphere. This study focuses on the detection of fungal spores in the air from 1st June 2019 to 31st October 2019. Such studies are useful for detecting allergic fungal spores in the vegetable market. The presence of fungal spores in vegetables and fruits is important in relation to airborne infections and diseases of vegetables, fruits, animals and humans.

METHODOLOGY:

Air sampling can be carried out continuously for two years by running an air sample in the centre of the soybean crop field. It may be at constant altitude with the orifice west of the ground level.

Air sporahas been studied on about acres of land in the vegetable field at Khandar. Farming around the sampling site under irrigation and continuous cultivation of brinjal, onion, chilli, tomato etc…

Temporary, daily rainfall and humidity records have obtained from the local cotton research centre.

SAMPLE SELECTION:

The sample will be selected from some farmers in an area of about one hectare in each village in Khandhar taluka of Nanded district. According to the present study, changes in population distribution patterns and local patterns have been reported in Nanded district. The district had an unequal distribution of population. This difference is mainly related to the topographical features of different parts of the district. Population spread, aggregation, linear propagation etc. This reflects local distribution. The easiest way to describe the distribution of population is the distribution of the percentage of the population over a geographical area. Economic characteristics play an important role in the overall development of the region. These features reflect the economic status of any region at any given time. Therefore, it is necessary to study the distribution of population in the field of study. The geographical distribution of most of the tehsil population in the district is also not standardized for the population growing in different parts of the district at different densities. The population of the district is allocated for cultivation by land availability, soil quality, availability of water resources, geography and transportation and urban amenities.

According to this study 3-5 hector in a village in Kandhar district of Nanded district. Soybean and cultivated grains, pulses and some vegetables are grown on hectare area. This crop is dedicated to the soybean crop in the growing season.

To understand the composition of aerospace, the incidence of the disease on soybeans and other crops, mainly at weekly intervals, will be reported from time to time in a wide field observation. Different stages of crop growth will be monitored. Approximate distribution of diseases in the field, loss in this regard will be recorded. The past history of farms, cultured methods of soil treatment (fertilizers) will record different crops to establish correlation in air and environmental conditions. Results will be recorded in the form of tables, graphs and photographs. The percentage of all fungi trapped in the air of the soybean field was calculated. Results will be available by day, month and year.

FIELD OBSERVATION:

Air samples were taken from the date of sowing of seeds and continued for a few days after harvesting of vegetable crops. Vegetable growth was monitored from time to time and parts of infected vegetable seedlings were collected at regular intervals to detect the presence of disease along with the spore content in the environment.

RESULT:

In the current investigation, air samples were taken for two seasons using Tilak air sampler.

1. The first season from 1 October 2019 to 27 December 2019
2. The second season from 1 October 2002 to 15 December 2020

In the vegetable fieldin both seasons, tomato and onion were the main vegetables mixed with other vegetables. Crops of brinjal, cabbage, onion, chilli, ladies finger were grown around the vegetable sampling site.

Apart from dust particles, 56 types of fungal spores, hyphae fragments, insect parts, pollen and protozoan cysts were caught on the cellotape of the drum in the air sampler. This investigation was carried out to find seasonal differences in air components, their distribution and concentration. Such studies form the basis for the development of disease prognosis.

Below is a list of catches identified from the slide. These are arranged alphabetically within each group.

Spore of Fungal:

Phycomycetes

Albugo	pears Kuntze

Ascomycetes

Bitrimonospora	Talde& Tilak, Sivanesan,
Chaetomium	Kuntze, ex, Fr.
Didymosphaeria	Fuck
Erysiphae	HedwF.DcFlor, Fr.
Hypoxylon	Bull, ex, Fr.
Leptosphaeria	Ces and de, Not.
Lophiostoma	Ft. ces& de Not
Pleospora	Rabenh
Pringsheimia	Schulz
Sporormia	de Not.
Sordaria	ces& de Not
Xyleria	Hill, ex, Grew.

Basidiomycetes

Ganoderma	Karst.
Rust spore	
Smut spore	
Telito spore	

Deuteromycetes

Altemaria	Nees, ex, waller.
Annelophora	Huges
Aspergili	Link
Beltrania	Penzia
Bispora	Corda
Botryodiplodi	Sacc
Brachisporium	Saac
Ceratophorum	Saac
Cercospora	Fries
Cladosporium	Link ex, Fr.
Cordana	Preuss emsacc.
Curvularia	Boedijn
Deigthoniella	Hughes
Diplodia	Fr.
Epicoccum	Link and waller
Fusariella	Sacc.
Fusoma	Corda
Haplosporella	speg.
Harknessia	Cooke
Helminthosporium	Link, ex, Fries
Heterosporium	Klotzch ex, Cooke.
Memnoniella	Hohnel.
Nigrospora	Zimm.
Periconia	Tode ex schow.
Pestalotia	de Not.
Pithomyces	Berk & Br.
Pseudotorula	Subram.
Aspergili	Link
Beltrania	Penzia

Bispora	Corda
Botryodiplodia	Sacc
Brachisporium	Sacc
Ceratophorum	Sacc
Ccrcospora	Fries
Cladosporium	Link ex, Fr.
Cordana	Preuss emsacc.
Curvularia	Boedijn
Deigthcniella	Hughes
Diplodia	Fr.
Epicoccum	Link and waller.
Fusariella	Sacc.
Fusoma	Corda
Haplosporella	speg.
Harknessia	Cooke
Helminthosporium	Link, ex, Fries
Heterosporium	Klotzch ex, Cooke.
Memnoniella	Hohnel.
Nigrospora	Zimm.
Periconia	Tode ex schow.
Pestalotia	de Not.
Pithomyces	Berk & Br.
Pseudotorula	Subram.
Pyricularia	Sacc.
Ramularia	Atk.
Spegazzinia	Saac
Stemphyllium	Waller.
Tetrapba	Berk & Br.
Torula	Pears) Link ex fries.
Trichothecium	Link ex fries.
Other types	
Fungal hypha	
Insect part	
Pollen grain	
Protozoan cyst	
Trichome	
Unclassified group	

For the general level of 51 individual calculated fungal spore types and for 6 other types including hyphae fragments, insect parts, pollen protozoan cysts and unclassified spore groups large heterogeneous groups. 57 gaseous components were measured separately, of which 34 were deuteromycetes 12 to escomycetes, 4 basidinocytes, 1 to phycomycetes and 6 other types. Some of the salient features for each air duct are described below.

CONCLUSION:

Out of 56, 01 aerobic component is of phycomycetes, 12 of iscomycetes, 03 of basidiomycetes, 34 of deuteromycetes and 06 of other types. Albugo in phycocytes causes white rust disease in many vegetable crops and they were contributing 0.73 to the total airspore in both seasons.

The Ascomycetes group ranks second in dominance. Concentration was higher in most Escospor species such as Bitrimonospora, Chetomyumdidimosphere, Sordaria, Sporonia. They are usually found in the air in humid conditions.

ASCOMYCETES:

Tilak and Talde, Bitrimonospora. Sivanesan:

Spores contributed 0.09% to the total air spora in both asons. The first and second seasons had concentration and percentage contributions (490/m^3 and 98/m^3 of air) to the total airspace with 0.15% and 0.05%. Their maximum monthly concentrations (252/m^3 and 70/$m^3$of air) were recorded in the first and second seasons in October and December and the minimum in the first season in December 2019 (28/$m^3$of air).

Chaetomium. Cunze ex fr.

They contributed 0.61% to the total airspace. Both seasons had a concentration and percentage contribution (2772 / m3 and 1540 / m3 of air) to the total airspace with 0.75% and 0.48%. Their maximum concentrations (2184 / m3 and 686 / m3 air) were seen in both December 1999 and January 2001 seasons. Minimum concentration (56 / m3 and 406 / m3 air) was observed in both December 2020 and November 2020.

Garg and Singh (2012) recorded its circular period and showed that the maximum number of spores was caught late at night. These spores are placed in the group "Night Spora". Peaks were observed between 12.00 and 2.00 hours. The peak is stable for a short time then the daytime concentration decreases rapidly and at night the concentration is restored after 22.00 hours. Agnieszka (2009) collected Chactam reflexes in the Arctic region of Poland. Kurkela of Cardiff (1997) is a distinct chetomium spore from aerospora specimens. They also saw the positive effect of wet and damp air on spore release. However, the direct effect of raindrops was more effective in releasing spores. Gaikwad (1974) recorded 0.04% spores from Ahmedpur. Mane (1978) recorded 0.15% spores from Vaijapur Verma (1990) Spores were recorded from Jabalpur (0.23%). Jagannath (2002) reported these spores in a cotton field in Ahmedpur.

Didymosphaeria Fuck:

The spores were stuck during the investigation. Concentration and percentage contributions were reported (1943 / m3 and 4317 / m3 air) in the total airspace during both seasons of 0.53% and 1.48% respectively. They contributed 0.96% to the total airspace.There is maximum concentration (1281/m^3 and 1713/$m^3$of air) in November 2019 and December 2020 in the first and second seasons and minimum (117/m^3 and 972/$m^3$of air) in November 2019 and December 2020 second season. Their highest daily concentrations (1342/m^3 and 355/$m^3$of air) were recorded in the first and second seasons on 12 November 2019 and 5 November 2020, respectively.

These spores were correlated with precipitation and humidity conditions. Even low rainfall also resulted in spore release which later increased the concentration of spores in the airspora. Some workers reported this type of spores in the air. Meredith (1962) in Jamaica reported that these spores appear regularly between midnight and morning but are insignificant in number. Kulkarni (1971) recorded 0.34% on sorghum area Patil (1985) recorded 1.80% on sorghum area. Ramchandra Rao (1987) reported 0.67% in the sunflower field at Aurangabad. Patil (1992) recorded 1.86% in sorghum field at Jalgaon. Bagwan (2001) the vegetable market at Udgir recorded 5.43% and 6.87% of the total airspace. The roots recorded 0.33% spores in the tomato field at Udgir.

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