Journal of Advances and Scholarly Researches in Allied Education
Vol. 16, Issue No. 9, June-2019, ISSN 2230-7540

Incidence of Black Point Disease in Agra Region During 2017-2018

Dr. Sarika Yadav*

Assistant Professor, Department of Botany, Agra College, Agra

Abstract – During the wheat crop of 2017-2018, black point disease was studied in 553 samples of wheat grain collected just after harvest in the month of May 2018. The average percent incidence in Agra was found to be 54.6%. The maximum incidence (73.0%) was recorded from wheat samples collected from Kheragarh tehsil and the minimum incidence (45.2%) was noted in samples collected from Karaoli tehsil. study relating to fungi associated with discolored wheat kernels revealed the presence of 11 fungal species, out of which Alternaria alternate showed maximum present incidence and abundance. The next prominent world was Curvularia lunata followed by Alternaria triticina and Helminthosporium naturism. Other fungi of minor importance include Aspergillus flavors, A. ochraceus, A. Niger. Bipolaris sorokiniana Cladosporium herbarium fusarium graniunearum and nigrospors oryzae occur during the harvest period in western U.P including Agra. Therefore, it was considered important to assess seed lots of wheat for the occurrence of black point disease which decreases the quality and germinability of wheat grains.

----------X----------

INTRODUCTION

In India no major crop has achieved the growth rate comparable to wheat in production with this increase in production and area awareness of diseases and pests has also increased certain disease which was considered unimportant in the past have become disease is “black point of wheat”, which is also known as “smudge” in many parts of the world and can be identified as a disease with superficial black to brown lesions on wheat grains (Neergaard 1979). The introduction of Mexican blood in the Indian wheat cultivars has undoubtedly resulted in the development of high yielding wheat varieties but the point (Agarwal and Verma, 1975)

The black point disease of wheat was reported for the first time in India by Dasthur in 1932 from the central provinces (Dasthur, 1932). Thus disease has been reported from Canada, the USA, Argentina, Germany, Italy, Morocco, South Africa, India, and java. In India the disease is prevalent in almost all the states where wheat crop is grown Joshi et. al., (1969) reported an outbreak of the disease in an epidemic form in 1967-68 in the northern wheat belt of the country . they stated that due to the prolonged wet weather in Punjab, Haryana, Delhi and Uttar Pradesh in 1967-68 just before harvest, black point disease had a widespread occurrence. Khethrpal et al. , (1980) also observed that high relative humidity with frequent rains was conducive to the incidence of black point disease. In the past 3-4 years, unseasonal rains occur during the harvest period in western UP including Agra. Therefore, it was considered important to assess seed lots of wheat for the occurrence of black point disease, which decreases the quality and germinability of wheat grains.

MATERIAL AND METHODS

A total of653 samples of freshly harvested wheat grains were collected from villagers of 5 tehsils viz., Sadar, Etmadpur, Kheragarh, karaoke, and bah of Agra district were collected in sterilized polythene bags in May 2018 these samples were visually observed for black/brown coloration on glass plates and percent incidence of black point disease of wheat was calculated (Table 1).

Later,400 grains from each sample showing a discoloration of seeds were surface-sterilized with2% sodium hypochlorite solution for 5 minutes and then washed with sterile water twice and subsequently plated on Petri dishes containing solidified PDA medium@10 grains per plate. The plates were finally incubated in B.O.D. incubator at 28+ 1degree centigrade for 6 days in an alternate cycle of 12 hours fluorescent light and 12 hours darkness following rules of international rules of seed testing Association (Anonymus,1966) after incubation period the plates were studied with the help of stereo binocular and normal compound microscope for the association of molds with the discolored portion of wheat grains. Finally, fungal species were separated, purified, and identified with the help of descriptions given by Barnett

(1960) and Subramaniam (1971). the results are mentioned.

RESULTS AND DISCUSSIONS

Table 1: Percent incidence of black point disease of wheat in different tehsils of Agra during 2017-18

S. No.	Tehsil	No. of seed samples collected	No. of seed samples affected	% of seed samples affected
1	Agra Sadar	97	51	52.5
2	Etmadpur	175	91	52.0
3	Kheragarh	100	73	73.0
4	Kiraoli	84	38	45.2
5	Bah (Fatehabad)	97	49	51.5
	Total	553	302	54.6

Table 2: fungi associated with black point affected samples of wheat just after harvest

S. No.	Fungi	% Incidence	% Abundance
1	Alternaria alternata	82.50	22.50
2	Alternarua triticina	35.00	4.10
3	Aspergillus flavus	32.50	3.80
4	Aspergillus ochraceus	32.00	3.20
5	Aspergillus niger	21.00	1.20
6	Bipolaris sorokiniana	27.50	3.25
7	Cladosporium herbarium	22.50	1.30
8	Curvularia lunata	45.00	4.50
9	Fusarium graminearum	28.00	3.25
10	Helminthosporium laturium	35.00	3.50
11	Nigrospora oryzae	28.00	2.45

A perusal of Table 1. This indicates that the percent incidence of black point disease of wheat varies from place to place in Agra district. The maximum percent incidence (73.0) of this disease was recorded in samples of Karaoli. The average percent incidence of black point disease in wheat was noted to be 54.6%. the results presented in Table 2 indicate the percent incidence and abundance of fungi found to be associated with a black coloration of wheat grains in the Agra plate technique. This table shows the presence of 11 fungi, of which Alternaria alternate showed maximum percent incidence and percent abundance. On the other hand, the minimum incidence and abundance were shown by Acremonium crits. The next abundant mold was curunlaria lunata followed by Alternaria triticina and Helminthosporium Saturn. Further, Aspergillus flavors and Aochracens revealed an incidence of 32.50 and 32.00% respectively. Other forms showed less than 30% incidence. According to Bolley (1913), species of Alternaria and Helminthosporium are the chief causes of wheat grain discoloration. Galloway (1935) reported that 70% of wheat grains affected by black point in India, had Helminthosporium sativum and that the mycelium was present in the seed coat. However, dastur(1948) isolated cochliobolus tritici, nigrospora sphaerica, sclerotium roofs, Helminthosporium sp, and Rhizoctonia sp. from the black point affected wheat kernels. London and Srivastava were (1953) reported that blackening of wheat grains was due to unusual rains during March and April and the blackening was confined not only to grains but was also present on the glumes. The fungus is mainly responsible for this blackening was Alternaria tenuis (now known as Alternaria alternata). Further, Parashar and prayer (1965) also reported that wheat crops in Punjab were severely damaged by black point caused by Alternaria tenuis (syn. Alternaria alternata) and Helminthosporium sanatorium. However, Hasija (1964) found the presence of auricularia pallascens in black point affected grains of wheat. Thus, these reports support our findings that the black point of wheat is mainly caused by Alternaria alternata, Helminthosporium satire, and auricularia lunata and is favored by high humidity and moderate temperature.

ACKNOWLEDGMENT

The author is highly thankful to the principal, Agra College, Agra, and Dr. P.B. Jha, Head, Botany Department Agra College for providing lab facilities and encouragement.

REFERENCES

1. Agarwal, V.K, and Verma, H.S (1975) Discoloration of seeds. Seed Tech, News 5; pp. 1-2.

2. Anonymous (1966) International Rules for Seed Testing, Proc.Int. Seed Testing Assoc. 31; pp. 1-52

3. Bolley, H.L (1913) wheat: Soil troubles and deterioration North Dakota Agr. Exp. Sta. Bull, 107

4. Dastur J.F (1935) Microscopic characters of black point disease of wheat in the central provinces proc. World Gram Exhib.Conb., Regina, Canada 2; pp. 253-255

5. Bernett, H.L (1960) illustrated Generaof imperfect fungi burgers pub. Co., 426 Sixth Street, Minneapolis, USA.

6. Galloway, L.D (1935) New plant disease recorded in 1935 Int. Ball. Plant Prot.10; pp. 121-22

7. Hasija, S.K (1964) A new record of Curvularia pallescens based on wheat grains. Indian Phythopath. 16; pp. 375-77

8. Joshi, L.M., Dharamvir, Adlakha, K.L. (1969). Black point disease of wheat. Proc. Ind.Sci.Cong 56 p. 12

9. Khetarpal, R.K, Agrarwal, V.K. and Chauhan, K.P.S (1900) Studies on the influence of weather conditions on the incidence of black point and Karnal bunt of triticale Seed Res. 8; pp. 108-10

10. Neergaard, P. (1979) Seed Pathology Vol 1, The MacMillan Press Ltd. London pp. 839

11. Parasher, R.D, and Pracer, C.S (1965) Black point or Kernel Smudge disease of wheat. J.Res Ludhiana 2; pp.. 115-119.

12. Subramaniam, C.V. (1971) Hyphomycetes ICAR, New Delhi,

13. Tandon, R.N and Srivastava, J.P (1953), Black Point disease of wheat. Proc. 40th Indian Sci Congr. Pt III pp-77

Corresponding Author

Dr. Sarika Yadav*

Assistant Professor, Department of Botany, Agra College, Agra