

## Follicolous fungi occurring at Biratnagar, Nepal

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There are different types of vegetables cultivated in different seasons. Vegetables are attacked by different types of pathogens such as fungi, viruses, nematodes and bacteria. Out of all these pathogens the fungi play an important role in mass destruction of vegetables. They reduce the quality and quantity of vegetable production. There are different kinds of diseases caused by fungi in vegetables and most commonly they are found to attack the leaves of the plants.

The fungi attacking the leaves of the plants are called the 'foliicolous fungi'. There are many foliicolous fungi which produce different types of symptoms. There is considerable reduction in the photosynthetic area of the plant when fungi start to infect the leaf. Sometimes complete defoliation also occurs by these types of infection and the productivity of host plant substantially reduces. Thus foliicolous fungi are of great concern. The present paper provides detail information about the foliicolous fungi of Biratnagar particularly occurring on the vegetables.

Biratnagar is situated at 26°20'N latitude and 87°16'E longitude and altitude 72 m above sea level. Biratnagar is surrounded by Singhia river in the east, Kesalia river in the west, Tanki Sinwari Dhat in the north and Jogbani (India) in the south. The soil is a part of alluvial Gangetic plain of northern Indian sub-continent. About 59% of the areas are being utilized for agriculture, 25% for residences, 4% for commercial and 3% for industrial purpose (Subedi, 1997).

The collections of foliicolous fungi on vegetables were taken from different vegetable cultivating localities of Biratnagar like P.G. Campus, Biratnagar, Barganchhi, Abhibadantole, Tintolia, Mills area and most of the kitchen gardens of houses from these areas. The diseased parts of the leaves were examined and the specimens were collected in polythene bags. The collected specimens were identified with the help of available literature (Barnett, 1965; Mehrotra, 1969; Budhathoki, 1988; Rangaswami, 1996). The places and dates of collection were noted in the field diary.

From the collected specimens, the infected tissues were separated by cutting or by teasing and slides were prepared in lacto phenol for permanency. The slides were made semi-permanent by coating them with nail polish and were preserved for further use. The prepared slides were critically studied with camera lucida for drawing morphological characters of the fungi. Spores and conidia were measured by the help of ocular and stage micrometer.

The vegetables collected during the survey were *Solanum tuberosum*, *Brassica oleracea*, *Brassica campestris*, *Solanum melongena*, *Lycopersicum esculentum*, *Cucurbita pepo*, *Cucurbita maxima*, *Raphanus sativus*, *Momordica charantia*, *Coccinea cordifolia*, *Amaranthus spinosa*, *Hibiscus esculentus*, *Capsicum annum*, *Vicia faba*, *Colocasia esculenta*. The fungi collected were *Alternaria* sp., *Cercospora* sp., *Uromyces* sp., *Albugo* sp., *Phytophthora* sp., *Erysiphe* sp. and *Peronospora* sp.

Table 1. List of foliicolous fungi and its hosts at Biratnagar.

S.N	Vegetable	Pathogen	Disease name	Family name
1.	<i>Amaranthus spinosa</i>	<i>Albugo sp.</i>	White rust	Albuginaceae
2.	<i>Brassica campestris</i>	<i>Alternaria brassicae</i>	Early blight	Dematiaceae
3.	<i>B.nigra</i>	<i>Alternaria sp.</i>	Early blight	Dematiaceae
4.	<i>B.oleracea</i>	<i>Alternaria sp.</i>	Early blight	Dematiaceae
5.	<i>B.oleracea</i>	<i>Peronospora sp.</i>	Downy mildew	Poronosporaceae
6.	<i>B.raphanus</i>	<i>Alternaria sp.</i>	Early blight	Dematiaceae
7..	<i>Capsicum anum</i>	<i>Cercospora sp.</i>	Leaf spot	Dematiaceae
8.	<i>Coccinia cordifolia</i>	<i>Erysiphe sp.</i>	Powdery mildew	Erysiphaceae
9.	<i>Colocasia esculenta</i>	<i>Phytophthora sp.</i>	Late blight	Phythiaceae
10.	<i>Cucurbita maxima</i>	<i>Erysiphe sp.</i>	Powdery mildew	Erysiphaceae
11.	<i>C.pepo</i>	<i>Erysiphe cichoracearum</i>	Powdery mildew	Erysiphaceae
12.	<i>Hibiscus esculentus</i>	<i>Cercospora sp</i>	Leaf spot	Dematiaceae
13.	<i>Lagenarai siceravia</i>	<i>Erysiphe sp.</i>	Powdery mildew	Erysiphaceae
14.	<i>Lycopersicum esculentum</i>	<i>Alternaria sp.</i>	Early blight	Dematiaceae
15.	<i>Momordica charantia</i>	<i>Cercospora sp.</i>	Leaf spot	Dematiaceae
16.	<i>Raphanus sativum</i>	<i>Albugo sp.</i>	White rust	Albuginaceae
17.	<i>Solanum melongena</i>	<i>Alternaria sp.</i>	Early blight	Dematiaceae
18.	<i>S. melongena</i>	<i>Cercospora sp.</i>	Leaf spot	Dematiaceae
19.	<i>S. tuberosum</i>	<i>Alternaria solani</i>	Early blight of potato	Dematiaceae
20.	<i>S.tuberosum</i>	<i>Ptythophthora infestans.</i>	Late blight	Phythiaceae
21.	<i>Vicia faba</i>	<i>Uromyces sp.</i>	Rust	Pucciniaceae

Out of all collected fungi *Alternaria sp.* and *Cercospora sp.* were frequently found. Thus they were the most common pathogens found during summer season. *Erysiphe sp.* was found mostly from damp areas and *Alternaria sp.* from open field where the wind favours the dissemination of spores. Most of the fungi have been seen to have an epidemic effect on the plant covering almost all the nearby cultivated land e.g. *Alternaria sp.*

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