

UREDINALES THE RUST FUNGI**Dr. Teena Agrawal***

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Corresponding Author*Dr. Teena Agrawal**Assistant Professor,
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Fungi belonging to the order uredinales are commonly termed as the Rusts. It has been estimated that there are about the 140-150 species of the rust fungi and they belong to the about of the 5000 species of the rust. Economically they are the most important species of the uredinales. All are parasitic on the higher angiosperms plants and they cause the tremendous diseases. The stem rust of the wheat and the white pine blister rust of the gymnosperms ahs causes the serious damage to the plantation. In addition to that coffee rust, asparagus rust, bean rust, cedar apple rust, snadaragasn rust, carnation rust are the

another example of the rust which have been studied in the detail in the literature. The majority of the rust completes their life cycles on the two hosts and they have overall the five kinds of the spores, in addition to the basiodiospores. Rust fungi also produce the specialised sex organs. They are the obligate parasites of the plants. Generally the life cycles of the rust are the macrocyclic kind types. There are the five stages of the rust fungi exist on the earth, they have been classified as the spermagonia, aeciaspores, Uredinia, Telispores and the basidiospores. In this review article we are presenting some of the aspects of the rust fungi in detail, some of the aspects of the rust fungi in addition to their life cycle pattern. However rust are the such a marvellous fungi of the plant kingdom they whatever we write, it will be the short communications. However such of the review article are good for the students of the fungi and the fungal study at the initial levels.

KEYWORDS: Rust Fungi, uredinales, macro cyclic, spermagonia, basidiospores.**INTRODUCTION**

fungi belonging to the orders uridenales are commonly known as the Rust fungi it is supposed that there are about the 140-150 genera of the rust fungi exist ,and the number of the species is commonly known as about the 5000.^[10] Among the all basidiomycetes species

the members of the uredinales are commonly known as most severes and most dangerous among the all other fungi.^[10] All of the genera's are great parasitic of the plants some of them are parasitic of the cultivated crops and they cause the severe damage. The black stem rust of the wheat and the white pine blister rust have been studied most commonly, some of the serious rust fungi which have been reported in the world are enlisted as coffee rust, asparagus rust, bean rust, cedar apple rust, sanpdargon rust, carnation rust, fusiform gall rust of pine.^[10]

The diseases have been reported from the ancient times in the different crops of the world. Roamns believe that there was the epidemic due to the devi prokop called robigalia, so they usually form the festival known as the robigalia for the honour of the rust.^[10] They believe that the festival is he reasons for the eradication of the rust from the environments so they celebrate the robigalia for the eradication of the rust.^[10]

Most of the rust fungi exhibited the complicated life cycles, they are harbour on the two unrelated taxonomically hosts, the life cycle involves the five kinds of the spores and they have been classified as the macrocyclic, microcyclic demicyclic, hemicyclic.^[10]

Rust fungi produces the speclised sex organs, these structures forms on the mycelium by the special kinds of the basidiospores by the process of the germination of the basidiospores.^[10]

The two sexually compatible mycelium forms the mycelium on the whole of the leaf. Dikartoytic phase persist on the host and they are the means of the perpetuation.^[10]

The rust fungi are supposed to be the obligate parasites, however leaving some of the axenic cultures, the rust fungi have not been cultured in successfully. the mycelium gain entry in to the host by means of the haustoria it absorbs the nutrition of the host metabolism and they are responsible for the decreases growth of the host plants and host growth .sometimes the host growth is so stunted that it is the reason for the depletion of the growth of the whole the crops.^[1,2,3,4,5]

The structures in which the fusion takes place are termed as the teliospores, they are the site for the formation of the dikaryotic phase. This is the structure in which the karyogamy takes place, so technically they are the part of the basidium. Upon the germination the promycelium comes out and they form the extensive mycelium in the host.^[6]

Although majority of the host fungi never kills their host, but the continuous persistence of the pathogen in the host makes them susceptible for further growth. The decline of the growth of the host and sometimes they are the reasons for the death of the host. These cases have been seen in cedar apple rust as well as in white pine blister rust and wheat rust. Some of the infections are responsible for the formation of huge galls and tissue malformation either in the form of fusiform or globose galls, sunken necrotic lesions known as cankers, and the abnormal branching pattern that leads to the development of witches' brooms.^[7,8,9]

Recently a new case of rust fungi has been seen on brassicaceae in the genus *Arabis*, the fungus *Puccinia monocia* mimics the flower and forms flower-like structures which is an abnormal development of the rust-plant interaction. The formation of the pseudoflower is so analogous to the exact flower that it exactly looks like the original flower and attracts pollination and other purposes.^[10]

Rust-infected fungi cause damage to plants and crops, stunting growth of crops as well as being responsible for damage to plant parts, so the overall growth of plants is reduced very much and farmers face major problems in terms of money as well as overall production.^[10]

The life cycle of rust fungi is extremely plastic and they usually have a complex series of events. Rust fungi have five types of spores, these spores are enlisted as stage 0, stage I, stage II, stage III, stage IV.

S. no.	Stages	Spores
1	Stage 0	Sporangia bearing sporangia
2	Stage I	Aecia bearing aeciospores
3	Stage II	Uredinia bearing urediniospores.
4	Stage III	Telia bearing teliospores
5	Stage IV	Basidia bearing basidiospores.

However, not every genus of fungi produces all the spores in its life cycle. Based on the life cycle pattern, uredinales have been divided into three categories: macrocyclic forms, demicyclic forms, and microcyclic forms.

Macrocyclic forms have all five spores in their life cycle; demicyclic forms lack the uredinales; and microcyclic forms lack the uredinales as well as the aeciospores.

The fungi have the heterocious nature, they completes the life cycles on the two of the hosts, theses hosts are the alternate hosts, some of the common economically valuable plants are the alternative hosts.

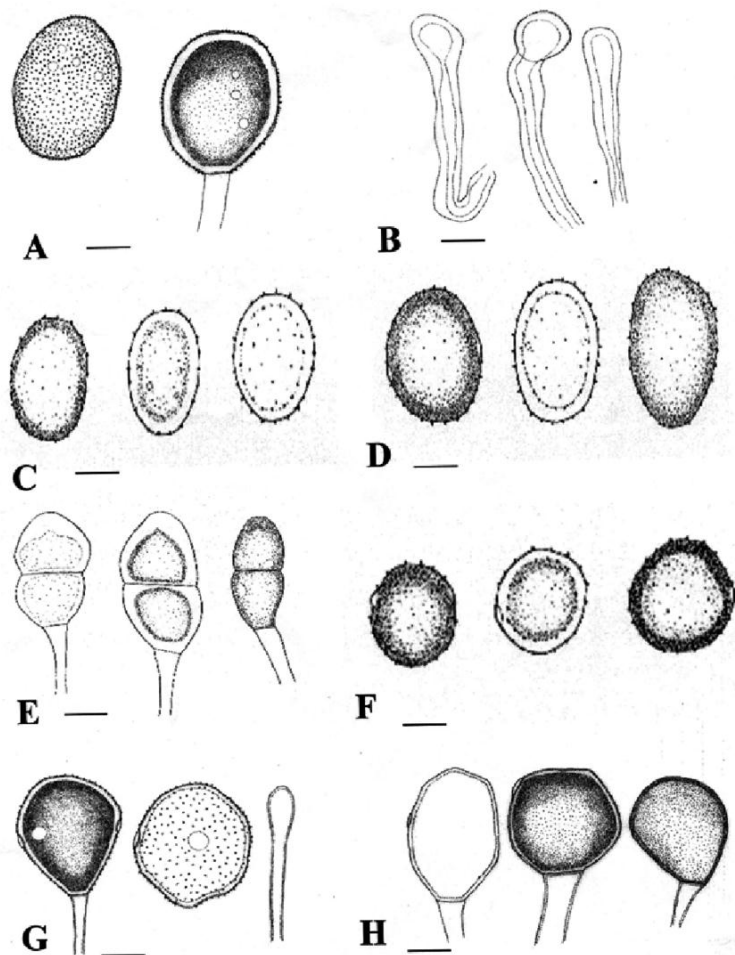


Figure 1: Different kinds of the Rust spores Teliospores.

The life cycle spores of the rust fungi are as follows Spermogonia, Aecia and the aeciospores, Uredinia and the uridinospores, Telia and the teliospores the basidia and the basidiospores.^[10]

CONCLUSION

Overall the rust fungi are the very important fungi of the nature, they always causes the devastating effects on the plants and they damage the crops very much, many times they cause the severe epidemic and they are responsible for the civilization movement. the treatment of the rust fungi is still an great dilemma and the versatile nature of the rust fungi always produce the problem in the exact solution of the diseases, however the rust fungi can be controlled by the chemical treatment and the by the role of the fungicides and the

biological treatments and the eradication of the alternate hosts from the field. In addition to that several other remedies are also in the way of the invention for the curing of the rust fungi.

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