Summary
And
Conclusion
SUMMARY AND CONCLUSION

Sheath blight of rice caused by *Thanatephorus cucumeris* Frank (anamorph *Rhizoctonia solani* Kühn) is one of the most wide spread and destructive disease of rice in the country. Information on the mode of survival of the pathogen is rather scanty. Survival of the pathogen on crop debris needs reinvestigation to determine the longevity of the pathogen in crop debris under warm humid conditions during the period intervening the two crop seasons. Keeping above facts in mind, a detailed investigation on the survival of pathogen was undertaken. The results are summarized as follows.

A detailed study of symptoms of sheath blight was carried out. Symptoms are described and illustrated. The pathogen produced distinct symptoms, on seedlings, leaf sheath, leaf blade, flag leaf and panicles. The most characteristic symptoms appeared on the leaf sheath as water soaked, circular to oblong, or ovoid, even irregularly elongated discolourations with narrow to dark
brown margins. Infected seeds show greyish brown
discolourations.

Potato Dextrose Agar supported maximum growth of
the fungus followed by PDA + Rice leaf extract Agar, Rice Polish
Agar and v-8 juice Agar. Richard's Agar and Water Agar media
supported poor growth of *R. solani*. Maximum sclerotial
production was observed on PDA, Richard's Agar and Soybean
decoction sucrose Agar.

*Rhizoctonia solani* survived for more than 13 months on
culture medium. The fungus survived in infected plant/crop
debris buried in soil stored at room temperature for 150 days and
as sclerotia upto the next crop season. However, the survival
percentage was decreased with increase in the time of storage. The
fungus has the ability to survive for 150 days in infected crop
debris incubated at 10 to 40°C, the fungus survived only for 120
days at 0°C. After 150 days, the survivability of fungus was
decreased by 42 percent at 40°C over 30°C temperature.
The fungus in the form of sclerotia survived up to the next crop season, in all the samples stored at various temperature. There was corresponding reduction in the survivability of the fungus with an increase in the length of incubation. Survivability of sclerotia buried in soil at 0, 10 and 28°C was reduced to 10, 13.3 and 36.7 percent, respectively, after a period of 330 days. Whereas sclerotia placed in soil at 40°C survived only for 270 days. The findings of the present observation indicate that the survivability of fungus is much better at 28°C as deleterious effects of higher temperature is more inimical for survival.

Survival of *R. solani* was more from sandy loam than from clay loam or *tarai* / local soils. The fungus survived in plant debris up to 33.3 and 40 percent in clay loam and sandy loam, respectively, after 150 days. The sclerotia placed in sandy loam, clay loam and *tarai* soils, survived up to 30.7, 33.7 and 30.0 percent, respectively, after 330 days.
Studies on the survival of *R. solani* in infected plant debris buried at different depths revealed that the survivability of the fungus declined sharply over a period of time and also with the increase in the depth of placement. Infected leaf sheath pieces placed at 2.5, 5.0, 10.0 and 15.0 cm depths in soil showed reduction upto 43.4, 36.6, 33.3, 23.3 and 6.6 percent, respectively, after 150 days. The fungus in the form of sclerotia did not survive at the depth of 2.5 cm and 20 cm after 240 and 300 days, respectively. Maximum survivability of 330 days of the fungus was observed when sclerotia were placed at the depth of 5-10 cm.

In soils having submerged condition, the mycelium of the pathogen survived for 120 days. Whereas, in soil having moisture content of held condition, the fungus survived for 150 days. Under dry condition, viability of sclerotia was 10 percent after 300 days. Whereas under submerged condition, the length of survivability of sclerotia was drastically reduced to 240 days.
Maximum survivability of sclerotia was observed at field conditions.

Soil amended with Neem cake, Rice husk, Castor cake and green manures were found highly effective among the treatments in reducing the survivability of mycelium of *R. solani*. The survivability of sclerotia was completely lost in Neem amended soil and reduced to 3.3 percent in Rice husk, 6.7 percent in Mustard cake and green manures and 10 percent in Castor cake treated soil after 300 days.

K either alone or in combination with N or P reduced the Survivability of mycelium of the pathogen in plant debris. Survivability of sclerotia was significantly reduced in P, K and PK amended soil.

On the basis of findings it may be concluded that:

i) Potato Dextrose Agar supported the maximum growth of fungus.
Survivability of fungus both in mycelial and sclerotial form reduced due to extreme conditions of temperatures, continuous submergence, decrease sandiness of soil, addition of organic amendments viz. FYM, Neem Cake etc. and addition of K fertilizers with N and P fertilizers.