

Effect of different nitrogen sources on the mycelial growth of *Phytophthora colocasiae*

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Phytophthora leaf blight caused by *Phytophthora colocasiae* is the most destructive disease of colocasia. Effect of eleven nitrogen sources on mycelial growth of *Phytophthora colocasiae* was evaluated *in vitro*. Among the nitrogen sources, maximum mycelial growth was recorded on peptone, followed by ammonium oxalate and calcium nitrate while poor growth was found on thiourea.

Key words : Mycelial growth, nitrogen sources, *Phytophthora colocasiae*

Colocasia or Taro [*Colocasia esculenta* (L.) Schott.] is grown throughout the humid tropics for its edible cormels. It is an important staple or subsistence crop for millions of people in the developing countries. Leaf blight of colocasia caused by *Phytophthora colocasiae* is a major disease and has the potentiality of devastating the crop when occurs. *Phytophthora colocasiae* Raciborski causes serious leaf blight disease in colocasia leading to yield loss of 25-50 % (Jackson *et al.* 1980; Misra, 1997). Nitrogen plays an important role in fungal metabolism. Different fungi have different requirements of nitrogen for their optimum growth (Lilly and Barnett, 1951). The present study has been carried out to ascertain the effect of different nitrogen sources on the mycelial growth of *P. colocasiae* and the results are presented herein.

To study the effect of different nitrogen sources on the mycelial growth of the fungus in colocasia, basal liquid Richard's medium was used for culturing the fungus. Eleven nitrogen sources viz., potassium nitrate, calcium nitrate, ammonium molybdate, ammonium oxalate, ammonium nitrate, peptone, sodium nitrate, thiourea, ammonium acetate, ammonium sulphate and ammonium thiocyanate

were substituted singly for potassium nitrate in the medium. Uniform amount of nitrogen was maintained with all the nitrogen sources. Medium without nitrogen, served as control. An aliquot of 75 ml of the Richard's medium (6.5 pH) was taken in conical flasks, sterilized and inoculated with 5 mm inoculum disk of the fungus obtained by a cork borer. Fungus was isolated from infected colocasia leaf on Papaya Dextrose Agar (PDA) medium (Misra and Chowdhury, 1997). Fungus was grown in petridishes for seven days. Five sets of flasks were kept for each source of N. The flasks were kept incubated for 20 days at 24°C. The mycelial mats were filtered through Whatman's filter paper no. 1 and dried in oven at 55°C till the constant weight, then cooled in desiccator and taken as dry weight of fungal mycelial growth on every nitrogen source employed.

The results presented in Table 1 depicted that all the nitrogen sources tested were significantly superior than control. Maximum mycelial growth of the fungus was obtained in peptone as nitrogen source, followed by ammonium oxalate and calcium nitrate. Mycelial growth in ammonium oxalate and calcium nitrate amended media was found to differ

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statistically. Ammonium sulphate and ammonium thiocyanate were at par statistically. Minimum growth was recorded in thiourea incorporated medium.

Table 1 : Effect of different nitrogen sources on mycelial growth of *Phytophthora colocasiae*

Nitrogen sources	Average mycelial weight (mg)
Peptone	783.20
Ammonium oxalate	395.00
Calcium nitrate	328.40
Sodium nitrate	286.50
Potassium nitrate	238.00
Ammonium molybdate	207.00
Ammonium nitrate	185.50
Ammonium sulphate	172.20
Ammonium thiocyanate	167.30
Ammonium acetate	158.00
Thiourea	153.70
Control	150.20
S.E.M.	3.82
C.D. (0.05)	7.72

Similar result was reported by Maheshwari *et al.* (2000) and Susuri and Hagedorn (1986) who recorded that peptone was the best source of nitrogen for mycelial growth of *Alternaria alternata*.

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