

**OBSERVATIONS ON THE POST INFECTIONAL CHANGES OF RICE
PLANTS INFECTED BY THE SHEATH ROT FUNGUS
ACROCYLINDRIUM ORYZAE SAW**

Importance of sugars and phenolics in imparting resistance or susceptibility in a number of host parasite relationships has been discussed by many workers (Allen, 1942; Walker and Stahmann, 1955; Horsfall and Diamond, 1957; Inman, 1962; Dayal and Joshi, 1968).

Present study was conducted at the College of Agriculture, Vellayani on the quantitative changes of total sugars and total phenolics in leaf sheaths of rice plants, variety Triveni infected with *A. oryzae*. Plants for this purpose were raised in uniform size earthen pots under identical conditions. These plants were inoculated with a spore suspension of the pathogen (10^7 spores per ml of distilled water). The spore suspension was inoculated by means of a hypodermic needle behind the first three sheaths numbered 1, 2 and 3 from top to bottom. Control plants were inoculated with sterile distilled water and all plants were incubated at identical conditions. On 15th day samples of all the three sheaths from both the diseased and control plants were collected separately and chemically analysed. Total sugars and total phenolics were determined quantitatively following the methods of Yem and Willis (1954) and Bray and Thrope (1954) respectively.

The results showed that the infection by the pathogen resulted in a considerable reduction in total sugars in each of the three sheaths (Table 1). The maximum per cent of decrease was noticed in the case of third sheath (93 per cent) and the least decrease in the first sheath (55.37 per cent). This phenomenon of reduction in tissue sugars followed by infection has been discussed by Reddy and Sridhar (1976) in the case of blast of rice. An important observation in the present study was the sheath No. 1 (flag leaf sheath) contained the maximum tissue sugar which showed the prominent symptoms and maximum susceptibility to the disease.

The infection caused a reduction in total phenolic content also (Table 1). It is a general observation that the phenolic compounds and their related oxidases will accumulate near the infected tissues since they are associated with the defence

Table 1

Changes in total sugars and phenolics on leaf sheaths of rice plants due to infection by *Acrocylandrium oryzae*

Sheath number	*Total sugars		*Total phenolics	
	Healthy	Diseased	Healthy	Diseased
1	168	75 (-55.37)	725	105 (-85.5)
2	160	16 (-90.00)	630	160 (-74.0)
3	90	6 (-93.00)	615	210 (-65.85)

* $\mu\text{g/g}$ of fresh sheath sample

The values in the parenthesis represent per cent decrease in quantity over healthy.

mechanism of host plants. But Sridhar and Ou (1974) in the case of rice blast, proved that the presence of an augmented level of oxidase enzyme during disease development in certain varieties enhanced the oxidation process of phenolics which resulted in a decreased level of phenolics in the infected tissues. This might be the reason attributed to the decreased level of phenolics in the infected tissues of variety Triveni used for the present study also.

സംഗ്രഹം

ത്രീവേണി നെല്ലിനത്തിൽ പോളയ്ഷുകൾ രോഗം ബാധിച്ച ചെടികളും അല്ലാത്തവയും രാസവിശകലനം ചെയ്തു പരിശോധിച്ചതിൽ ഷുഗറിന്റെ അംശം കൂടിയ പോളകളിലാണ് രോഗം വളരെ വേഗം പിടിപെടുകയും വ്യാപിക്കുകയും ചെയ്യുന്നതെന്നു കണ്ടു. കൂടാതെ രോഗം ബാധിച്ച പോളകളിൽ ഷുഗറിന്റെയും ഫീനോളിക്കിന്റെയും അളവ് താരതമ്യേന കുറഞ്ഞുവരുന്നതായും കണ്ടു.

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