

VARIETAL REACTIONS OF GINGER (*Zingiber officinale*R.)
TOWARDS SOFT ROT CAUSED BY
Pythium aphanidermatum (EDSON) FETZ

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Rhizome rot or soft rot of ginger is known to occur in almost all the areas where this crop is grown and often heavy losses occur in different localities. A number of species of *Pythium*, viz, *Pythium aphanidermatum*, *P. myriotylum*, *P. gracile* and *P. butleri* have been reported to be isolated from rotting tissues. But the parasitism of only *P. aphanidermatum*, *P. myriotylum* have so far been tested and proved. Chemical control of this seed borne/soil borne disease has very often failed in the field. Studies were therefore undertaken at the Horticultural Research Station, Ambalavayal to screen resistant, moderately resistant, moderately susceptible and susceptible varieties of ginger against soft rot.

Material and Methods

Twenty two varieties of ginger were grown at the Horticultural Research Station, Ambalavayal during the year 1973-74 for the study. Plots of 2m x 1m size were laid out in randomised block design. Fertilizers were added to each plot to give a uniform N. P. K. dose of 50:25:50 (Kg/hectare). The varieties of ginger were planted at the recommended spacing and seed rate in each plot with three replications. Pure cultures of one week old *P. aphanidermatum* multiplied in the laboratory were inoculated to the plants uniformly sixty days after germination by thoroughly incorporating into the soil.

Symptoms of the disease were observed approximately 15 days after inoculation. Three observations were made on the incidence of soft rot, at one month interval. Number of infected plants were counted in each plot and the percentage of infection was calculated. The infection rating was done based on the percentage of soft rot incidence as given below.

HR- Highly resistant with no infection,

MR- Moderately resistant with 1 to 5 percent infection.

MS- Moderately susceptible with 6 to 10 percent infection,

S- Susceptible with 11 to 30 percent infection.

HS- Highly susceptible with 31 to 100 percent infection.

Table 1**Relative resistance and susceptibility of different varieties of ginger to soft rot under field conditions**

Name of variety	Percent disease incidence	Degree Of infection
Rio-de-janeiro	19.94	S
Maran	26.64	S
Poona	8.88	MS
Thinladium	15.54	S
Jugijan	11.00	S
Nadiya	2.22	MR
Burdwan	6.66	MS
Himachalpradesh	19.98	S
Bajpai	32.20	HS
Taffinjiva	8.80	MS
Uttarpradesh	4.40	MS
Vengara	13.32	S
Thaiwan	13.32	S
Narasapattam	4.44	MR
Thingpuri	8.80	MS
feiiad-chedndf	8.80	MS
Valluvanad	13.32	S
Wynad local	26.64	S
Ernad-manjeri	26.64	S
Sierra-leone	31.08	HS
Jorhut	13.32	S
Thodupuzha	15.54	S

Results and Discussion

Results obtained are given in table 1.

It is evident that all the twenty two varieties were showing varying degrees of infection. No variety was found to be highly resistant to infection. Indrasenan (1972) obtained similar results when inoculation was done to the rhizome of ginger in the laboratory. Only two varieties namely Nadiya and Narasapattam were observed to be moderately resistant to the disease during the present study. Six varieties were moderately susceptible showing 6 to 10 per cent infection and twelve varieties were susceptible to the disease. The varieties Bajpai and Seirra-leon were highly susceptible to the disease.

The differences in the chemical composition may be accounted for the differences noted in the degree of infectivity of the pathogen on the various varieties tested. Some workers have discussed the role of pectic enzymes produced by *P. aphanidermatum* in the manifestation of disease symptoms (winstead and Mc Combs 1961, Chakravarti and Srivastava, 1967 a & b). Further studies have to be undertaken to find out the factor/factors responsible for the differential behaviour of the varieties towards pectic enzymes produced by *P. aphanidermatum*.

Summary

Artificial inoculation of 22 varieties of ginger in the field with *P. aphanidermatum* showed that none of the varieties tested was resistant to infection. Only two varieties namely, Nadiya and Narasapattam were moderately resistant. Six varieties were moderately susceptible and twelve varieties were susceptible. The varieties Bajpai and Seirra-leone were highly susceptible to the disease.

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സംഗ്രഹം

കൂട്ടിച്ചിട്ട് രോഗത്തിന് കാരണമായ പിത്തിയം അഫാനിഡെർമറ്റം എന്ന ഫങ്കസ്സിനെ ഇരുപത്തിരണ്ടിനും ഇഞ്ചികളിൽ പ്രവേശിപ്പിച്ചുനോക്കിയപ്പോൾ രണ്ടിനും വിത്തുകൾ അതായത് നദിയ, നരസപ്പട്ടം എന്നിവ കറച്ചുമാത്രം കെൽപ്പുള്ളവയാണെന്നു കണ്ടു. ബാജ്-പൈ, സിരാലിയോൺ തുടങ്ങിയവയിൽ രോഗം വളരെ കൂടുതലായി കണ്ടു. എന്നാൽ പൂന, ബർദാൻ, ടാഫിൻജീവ, ഉത്തർപ്രദേശ്, തീങ്ങ്-പൂരി, ഏറനാട്-ചെറനാട് തുടങ്ങിയ ഇനങ്ങളിൽ രോഗം താരതമ്യേന കുറവായി ABCITTO. ബാക്കിയുള്ള എല്ലാ ഇനങ്ങളിലും രോഗം ബാധിച്ചതായി കണ്ടു.

ചുരുക്കിപ്പറഞ്ഞാൽ പരീക്ഷണത്തിന് വിധേയമായ ഒരു ഇനവും രോഗപ്രതിരോധനശക്തിയുള്ളവയായിരുന്നില്ല.

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