Tapioca pearl as a substitute for Agar in culturing *Radopholus similis* on carrot discs

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The burrowing nematode, *Radopholus similis* (Cobb, 1893) Thorne, 1949 can be cultured on carrot discs (O' Bannon and Taylor, 1968; Koshy & Sosamma, 1980; Mustika, 1990) and carrot callus tissue (Reise *et al.*, 1987). Nene & Shiela (1994) used small grained tapioca pearl obtained from tubers of cassava *(Manihot esculenta* Crantz*)* as a cheaper substitute for agar in culture media for fungi and bacteria. Therefore, an attemt was made to study the usefulness of tapioca pearl for culturing *R. similis* on carrot discs.

Agar (10g/1) and Tapioca pearl (100g/1) media were prepared by using distilled water and 40 ml. of medium was poured into 100 ml. wide mouthed Erlenmeyer flasks. Fresh carrot tubers were washed in water and dipped in 95% ethyl alcohol. Carrots were then peeled and sliced into discs of 8-10 mm. thickness and one disc was placed on the media. The flasks were kept at 29°C in the laboratory for 48-72 hrs. to observe for contamination, if any, and also for an initiation of callus growth. *R. similis* obtained from cocunut roots was used for the present study. Method described by Koshy & Sosamma (1980) was used for nematode sterilisation and inoculation. One hundred juveniles and females were inoculated on to the carrot discs and stored in dark at 21°C. There were twenty replications per treatment. In general, 25 per cent contamination was noticed on carrot discs in both the media. Ultimately there were 15 replications per treatment. Forty five days after inoculation, carrot discs were blended in a blender for one minute at slow speed to separate the nematodes. Different stages of *R. similis* (egg, juveniles, females and males) were counted separately.

TABLE 1. Effect of media on multiplication of *Radopholus similis* on carrot discs (mean of 15 replicates).

Stages of *R. similis*	Population of *R. similis* (45 days after inoculation at 21°C) Tapioca pearl (100g/1)	Agar (10g/1)
Egg (E)	1428	1016
Juvenile (J)	4467	4681
Female (F)	2259	2466
Male (M)	763	811
E+J+F+M	8953	8974
Pf/Pi	90	90
F:M:J:E	3:1:6:2	3:1:6:1

Pi : Initial population (100 nematodes juveniles and females); Pf :Final population (45 days after inoculation)

Multiplication of *R. similis* on carrot discs on the two media are presented in Table 1. Final nematode population was 8953 and 8974 in Tapioca pearl and Agar, media respectively. Male-Female ratio was found to be same (1 : 3) in both the media. Callus initiation started in seven days after inoculation on Tapioca pearl and Agar media. Cost of Agar (10g) for preparing one litre media was Rs. 15/- (Rs. 1500/- per kg) whereas cost of Tapioca pearl (100 g) for preparing one litre media was Rs. 1.50 (Rs. 15/- per kg). Thus tapioca pearl at 100g/ 1 was ten times cheaper than Agar at 10g/1. From the above, it is concluded that large number of *R. similis* can easily be reared on carrot discs on Tapioca pearl media (100g/1), thereby reducing the cost of culturing *R. similis*.

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Reaction of rice cv. Pathara to root-knot nematode, *Meloidogyne incognita*

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Infestation of upland rice to root-knot nematode, *Meloidogyne graminicola* Golden and Birchfield, has been reported from various places, but its reaction to root-knot nematode *Meloidogyne incognita* Kofoid and White, has not been studied. This was studied in a *M. incognita* infested field which was being continuously cultivated with vegetable crops at Regional Research Station, Semiliguda, Orissa. The land was medium type with red acidic soils of pH 5.0 and sown with rice during July Ist week. The population density of root-knot nematode (J_2) in soil remained low until mid August and then a high peak was observed up to (20 J_2 per cm. soil) in some samples. Root examination revealed heavy galling with excessive branching giving a bunchy appearance. At this stage, the nematode was present in the rice roots at various stages including egg masses in gelationous matrix embedded in root tissues. Galls, when dissected, revealed large numbers of females (25-60/gall). The adult female invariably retained 20-25 eggs.

Effect of various plant extracts on mortality of *Radopholus similis*

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The burrowing nematode, *Radopholus similis* is the most important nematode problem on coconut, arecanut, black pepper and banana in South India. In this investigation, an attempt has been made to study the effect of plant products against *R. similis* under laboratory conditions.

Fresh leaves of nine plants (Table 1) and blub of onion *(Allium cepa* Linn.) were collected and their extract was prepared in acetone. Fresh leaves and bulbs were thoroughly washed in sterile water.