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The Effect of some Location Specific Rhizobial Strains on Height and Dry Weight of Plants of Soybean from Maharashtra

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The genetic diversity of Rhizobia is also based on geographical location of the organism which can influence on nodulation capacity of the species, having further effect on other parameters like height of the plant and dry matter content. In the present work some location specific strains of Rhizobia were isolated and were tested to find out their effect on dry matter content and height of Soybean plant from the Marathwada region of Maharashtra State. The strain SR5 from Parbhani dist seems to be a promising strain in increasing the dry matter and height of the plant of Soybean.

Keywords: *Rhizobium*, Marathwada, Dry matter, Height, Soybean.

Soybean is cultivated in Maharashtra State now a days on large scale. The Rhizobia plays a great role in nature in fixing Nitrogen particularly in leguminous plants like Soybean which has become a popular source of protein for the developing countries like India (Patil *et al.,* 2002; Randhawa *et al.,* 2003).

The location specific Rhizobia are having an inherent genetical capacity which can cause an increase in nodulation capacity of the Legume (Rathor and Rajbhoj, 2008). Selection of these efficient strains will not only increases the nodulation capacity of these N2 fixing species but also it will ultimately have an effect on other parameters of the plants like dry matter content and height of the plant.

MATERIALS AND METHODS

The root nodules were collected in Kharif season from various locations in 2000-2002 from three districts of Marathwada i.e. Nanded, Hingoli and Parbhani (Table 1).

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The nodules having pink colour were choosen for further study. The bacteria were isolated from these selected nodules as per routine methods. The bacterial colonies appeared after 5-6 days on YEMA. The isolates were used for further studies. To find out the most effective strains from different isolates a pot culture experiment was conducted using a Soybean cultivar PK472. The evaluation was made in terms of number of nodulations per plant and most

Table 1. Location wise isolates of *Rhizobium* obtained from Soybean

Sr. No.	Isolates No.	Location	Revenue Dist.
1	SR1	Degaon	Nanded
2	SR2	Dhamdhari	Nanded
3	SR3	Dour	Nanded
4	SR4	Kharbi	Nanded
5	SR5	Chudawa	Parbhani
6	SR6	Wanegaon	Nanded
7	SR7	Hingoli	Hingoli
8	SR8	Chitgiri	Nanded
9	SR9	Gour	Parbhani
10	SR10	Limbgaon	Nanded

effective strain in terms of nodulation per plant was determined (Rathor & Rajbhoj, 2008). These strains were also further tested for their capacity about enhancement of height and increase in dry matter of the Soybean plant. The dry matter and height was determined by usual oven method and measurement after 40 days. The results are presented in Fig. 1 & 2.

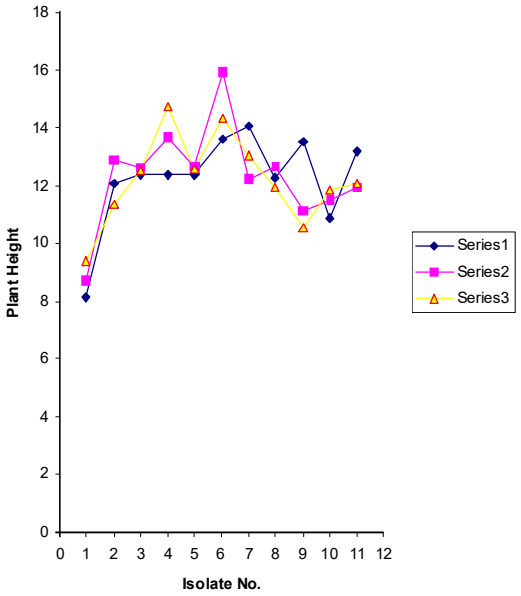

Fig. 1. Effect of different isolates of *Rhizobium* on height of Soybean after 23rd day of sowing plant. (Plant height in cm.)

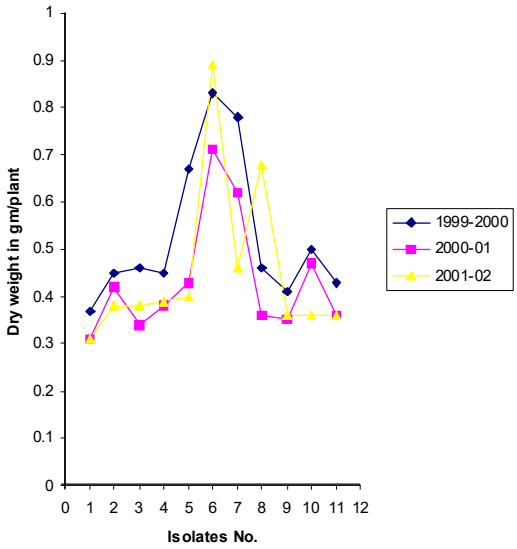

Fig. 2. Effect of different isolates of *Rhizobium* on Dry Weight of Soybean Plant (Dry weight in gm/plt.)

RESULTS AND DISCUSSION

The result clearly indicates that the strain SR5 which has produced highest number of nodules in Soybean variety PK-475 has also increased the dry matter significantly, similarly it has a profound effect on the height of Soybean plant after 23rd day of sowing. The over all enhancement of number of nodules increase the carbohydrate metabolism of the plant (Streeter, 1980). Hence, there is increase in dry matter content and ultimately there is an increase in the height of the plant (Darmola *et al.,* 1994).

The collection identification and investigations on biodiversity of higher plants and microorganism still continuous process. (Balmford *et al.,* 2005) however studies on diversity of location specific Rhizobia with particular effect are useful in these directions of biodiversity investigation and the practical utility of biodiversity of microorganism.

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