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**Research Article** 

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# Cultivation of radish (*Raphanus sativum* L.) in Gangetic riverbed under natural farming.

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### Abstract

The field study was conducted during autumn season of 2008-2009 to 2009-2010 at village Kallopurwa of Unnao district under Farmers Participatory Action Research Project on Water/Water Harvesting (Scheme Funded by Central Water Commission, New Delhi). The pilot project located in Gangetic riverbed in the catchments area of river Ganga. The main objective was to cultivate the radish crop under '**natural farming**' with the use of '**organic manure**'. The crop was fertilize with 200 q/ha FYM and 5 q/ha mustard cake, which provided 41.60 kg N + 41.0 kg  $P_2O_5$  + 85 kg K<sub>2</sub>O/ha in available form to roots production of radish. The riverbed sown radish gave roots yield by 197.00 q/ha, which was 92.05 % in comparison to radish sown on sandy loam soil with the use of chemical fertilizer under conventional system (214.00 q/ha). The other features i.e., tapering, roots tastes and other eating quality were found in favour of riverbed grown radish.

Keywords: Catchments area, Natural farming, Organic farming, Riverbed, Tapering feature.

## Introduction

Radish is one of the common root crops grown all over India on light soils. It has been grown in our country for several decades. It is consumes almost in every house whether rich or poor. It is eaten both raw as 'salad' and cooked in various ways. It has cooling effect and increases the appetite. It has some medicinal values too. The 100 g of contain water. edible roots 93.7% 4.2% carbohydrate, 1.1% protein, 0.1% fat, 0.7% fiber, 30 IU vitamin A, 24 mg vitamin C, 37 mg calcium, 31 mg phosphorus, 260 mg potassium,

15 mg magnesium, 37 mg sulphur and chlorine (**Aykroyd, 1963**). It is cool season crop, its cultivation is preferred during winter season in the plain. It can be sown any time between September to January in northern plains but summer is mild, it can be grown throughout the year except during few month of summer. Higher yields of good quality roots of radish obtain from October sowing than early or late sowing.



Radish cultivation under natural farming is an intensive but profitable venture with higher output in terms of yield and income per unit area and time. In order to maximize the output, there has been no use of inorganic products like fertilizers, insecticides, fungicides, weedicides and other chemicals. With the continuous applications of pesticides, radish plant develop resistance to insect, pests and diseases and causing polluted roots production of radish. Hence the farmers and consumers are looking for environmentally friendly avenues to overcome this problem and in recent days and natural farming seems to be awareness farmers creating among and consumers

The lession learnt from the riverbed cultivation of cucurbitaceous crops and thought like to these crops pollution free roots of radish can also be easily harvested from such type open beds of river Ganga. The flexible plan was made in the partnership of participants for conducting the experiment. Therefore, the reaping of radish roots from riverbed of Ganga is the subject matter of this manuscript.

## **Materials and Methods**

The introductive field experiment was laidout during autumn season of 2008-09 to 2009-10 at village Kallopurwa of Unnao district under Farmers Participatory Action Research Project on Water/Water Harvesting (Scheme Funded by Central Water Commission, New Delhi). The pilot project located in Gangetic riverbed in the catchments area of river Ganga. The main objective was to cultivate the radish crop under 'natural farming' with the use of 'organic manure'. The selected soil was sandy, having almost nil plant nutrients. The silt particle was associated in the sandy soil. Since, the fertilizer requirement of radish is 80 kg N + 40 kg  $P_2O_5$  + 20 kg K<sub>2</sub>O/ha, this was supplied through 200 q/ha FYM and 5 q/ha mustard cake, which provided 41.60 kg N + 41.0 kg  $P_2O_5$  + 85 kg  $K_2O$ /ha in available form to the roots production. The sowing of seed @ 15 kg/ha was done in first week of February after receding of water in both experimental years. Cultivar Pusa Rashmi was sown with country plough at row distance of 30 cm. Plant to plant distance was maintained 10 cm. The sowing was done in east-west direction for good sunshine. The crop was irrigated as and when required. The uprooting was done at tender stage. It was necessary that the roots harvested at the right stage because they tend to become fluffy and unmarketable thereafter.

## **Results and Discussion**

The pooled data and other features of two years of radish are presented in Table-1 and discussed here under appropriate heads.

Since, it was innovative and introductive experiment on radish cultivation under natural and organic farming, which was also compared to the radish grown on sandy loam soil under conventional farming by farmers themselves in the vicinity of river bank **Ganga**. The collected average data also given in Table-1.

Table-1: Radish yield along with its features (Pooled study of two years).

S. No.	Variety	Days to maturity	Das to first uproot- ting	Root length (cm)	Roots size	Roots taste	Leaf size and colour	Yield (q/ha)	% age yield
1.	Pusa Rashmi sown in riverbed	55-60	25	35	Tapering	Sweety Pungent	Small and green	197.00	92.05
2.	Radish sown in sandy loam soil under conventional system by farmers	60-65	30	30	Mild tapering	Pungent	Long and dark green	214.00	100.00

#### (A) Growth and yield traits:

The uprooting of radish in riverbed soil was started after 25 days of sowing, which was five days earlier in comparison to normal soil sown radish. The sandy texture of riverbed soil was responsible for early uprooting. The highest root length was measured by 35 cm in riverbed sown radish, while radish sown in sandy loam through normal condition produced root length by 30 cm. the loose and friable riverbed sand were responsible for higher root length.

The other features i.e., tapering and roots taste were found in favour of riverbed radish.

#### (B) Roots yield (q/ha):

The riverbed sown radish displayed that the roots yield by 197.00 q/ha, which was 92.05% in comparison to radish sown on sandy loam soil with chemical fertilizer (214.00 q/ha). Therefore, sandy loam soil grown radish gave 17.00 g/ha higher yield over riverbed radish productivity. All most similar yield given by riverbed sown radish to the radish yield of sandy loam soil mainly due to increase in length of roots. The results indicate that in sandy loam soil, where radish grown with chemical fertilizer through conventional system, the long and dark green colour leaves produced highest roots yield because it had better source sink relationship that mean amount of dry matter or photosynthates produced by source organs translocated towards sink organ (economic part) and produced higher root yield (q/ha). These results are commensurable to the findings of Panwar et al., (1986), Shrivastava and Bharadwaj (1986) and Pachpor and Shete (2010).

#### Conclusion

The farm families residing in the vicinity of river side and doing cultivation of summer vegetables in riverbed between the season of winter and spring may be advocated of harvesting of pollution free roots of radish from the riverbed with the application of FYM @ 200 q/ha and mustard cake @ 5 q/ha.

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