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Selection of suitable hybrid varieties of chillies (*Capsicum annum* L.) for scaling up of productivity of spices in dry eco-system

R.A. SINGH, P.V. SINGH, V.K. SHARMA AND H.K. SINGH

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See end of the article for authors' affiliations

Correspondence to :

R.A. SINGH
Directorate of Extension, C.S. Azad University of Agriculture and Technology, KANPUR (U.P.) INDIA

ABSTRACT

An innovative experiment was laid out in hill and valley watershed of Jhansi district of Bundelkhand, U.P. during 2000-01 to 2003-04. The main objective was to innovate the chillies cultivation in the non traditional area for production of more condiment. The experimental site was sandy loam locally known as Rakar soil, having pH 8.0, organic carbon 0.21%, total nitrogen 0.02%, available phosphorus 9.5 kg/ha and available potash 255 kg/ha, therefore, the fertility status was low. The five hybrid varieties *i.e.* Indira, Priyanka, Soldier, Ujala and Priti were tested under 0, 50, 100 and 150 q FYM/ha. Each level of FYM integrated with 90 kg N + 60 kg P_2O_5 + 60 kg K_2O/ha. All tested cultivars of chillies gave higher green fruits at RDF integrated with 150 q FYM/ha. The average yield of green fruits from these hybrid cultivars was recorded to 142.00 q/ha at RDF+150 q FYM/ha. The lowest yield of 128.60 q/ha was harvested at RDF + 0 q FYM/ha. The integrated dose of RDF + 100 q FYM/ha gave green fruits of chillies by 136.80 q/ha while application of RDF + 50 q FYM/ha yielded 132.60 q/ha. The order of varietal performance was Priti (139 q/ha) > Indira (137 q/ha)> Ujala (134 q/ha)> Priyanka (133 q/ha)> Soldier (132 q/ha).

Key words : Dry eco-system, Hybrid chillies, Farm Yard Manure, Watershed, Innovation

India is the largest producer of chillies in the world contributing 25% of the world production. It is used throughout country as a condiment. Chillies grow well in warm and humid climate, but dry weather is also necessary during the maturity of fruits. Being a hot weather crop, it can not be planted until the soil has warmed up and all the danger of frost has passed. High light intensities increase the yield but reduce the *capsaicin* content and fruit colouring is delayed considerably. Supply of low moisture to the soil during blossom development and fruit formation, results in obsession of buds, flowers and small fruits. Therefore, being hot weather crop, its cultivation in dry eco-system of Bundelkhand of U.P. was innovated in the non traditional area with the objective to increase the area and production of this condiment. The cultivation of spices in Bundelkhand tract of U.P. is very difficult task due to abiotic factors.

Climatologically, edaphically and socially the Bundelkhand zone is quite different from other zone of Uttar Pradesh. It is characterized by semi-arid climate, undulating topography, residual soil of erodible nature, deep water strata under lain with hard impermeable rocks, poor crop husbandry. The annual precipitation is of the order of 1014 mm which is largely concentrated from mid June to mid September. The rainfall of this zone is erratic, frogy and uncertain. The rainy day is about 60. During rainy season, the residual nature of soil and rocks reduce the infiltration rate and consequently lead to high runoff. Since the irrigation facilities are available only in 30% of the cultivated area and rest of the 70% area is rainfed. The land suffer from slight to severe erosion.

MATERIALS AND METHODS

The field trial was laidout in the subjected area of hill and valley, situated in catchments of Pahuj river in the Jhansi district of Bundelkhand, U.P. during 2000-01 to 2003-04. The study was based on watershed technology. Prior to start of watershed programme, the chillies cultivation was not in vogne. The experimental site was sandy loam, locally known as Rakar soil, having pH 8.0, organic carbon 0.21%, total nitrogen 0.02%, available phosphorus 9.50 kg/ha and available potash 255 kg/ha, therefore, the fertility status was low. Water surplus is 168.11 mm mostly available from July to September. Water deficit in operational area is 766.15 mm. The moisture availability period for the crop growth in the pilot-area is 127 days. The five hybrid varieties *i.e.* Indira, Priyanka, Soldier, Ujala and Priti were tested under 0, 50, 100, and 150 q FYM/ha. These four levels of FYM conjuncted with 90 kg N + 60 kg P_2O_5 + 60 kg K_2O/ha. The seed of chillies was sown in the nursery during mid June and seedlings transplanted after on set of rains in the July. The seedling transplanted in rows and row to row distance was kept 60 cm. In rows, the distance between plant to