

SHORT COMMUNICATION

# Performance of garlic (*Allium sativum*) var. Agrifound Parvati under different planting system in cold arid condition of Ladakh (J&K)

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Ladakh, the northern part of India located in the Trans Himalayas at an altitude of 11,500 ft. above MSL. The climate of cold arid region is a blunt of arctic and desert climates characterized by long severe winter where mercury drops down to -40°C while summer is short hot with cooler nights and dries with scanty rainfall. Garlic (*Allium sativum*) is the second most widely used cultivated vegetable *Allium sativum* after onion it is being used in several food preparations. This is an essential part of the fresh vegetable provided to the troops of Ladakh due to its high medicinal value. According to the ration scale of the Army, it is provided at a scale of 20gm/person/day (Sharma et al., 2009). If the same scale used, there is an average requirement of 1800 MT fresh Garlic annually in Ladakh region for local population as well as army deployed in this sector (FRL Report, 2003). As on date, the complete requirement is met by airlifting Garlic from others part of the country, so in order to achieve this targets, there is need to develop the production technology and to enhance the production of Garlic. Therefore, an attempt was made on the production and performance of Garlic under different planting methods in Leh conditions.

A field experiment was conducted at RARS, SKUAST-K, Leh, Ladakh (J&K) during 2006 and 2007. The soil are sandy loam in texture, slightly alkaline in reaction (pH - 8.2), medium in organic carbon (0.62%), low in available phosphorus (8.2 kg ha<sup>-1</sup>) and medium in available potassium (225 kg ha<sup>-1</sup>). The experiment was laid out in Randomized Block Design under two planting

methods (Raised bed system and flat bed system). The test variety of Garlic was Agrifound parvati. The nitrogen was applied @ 80 kg ha<sup>-1</sup>, half dose of nitrogen was applied at field preparation and remaining half 15-20 days after emergence. Phosphorus (60 kg ha<sup>-1</sup>) was applied through DAP and potassium 40 kg ha<sup>-1</sup> through MOP as a basal dose at field preparation. Sowing was done on 15<sup>th</sup> and 17<sup>th</sup> October during 2006 and 2007, respectively, at a spacing of 15 cm between rows and 9 cm between plants. The field was covered by the leaf litter of poplar and willow trees during winter season (November to April) of the year. After removing the leaf litter from Garlic field need based agricultural practices were performed in the Garlic field in the month of April.

The survival per cent of Garlic var. Agrifound parvati was similar in both the raised bed system and flat bed system. The yield of Garlic under raised bed system was higher during both the years (2006 and 2007) as compared to flat bed system or conventional system. On an average yield of Garlic was 104.09 qha<sup>-1</sup> and 86.38 q ha<sup>-1</sup> under raised bed and flat bed system respectively (Table 1) the variety of Garlic (Agrifound parvati) raised bed system shown 20.14 % higher in yield over flat bed system. The highest yield (106.67 qha<sup>-1</sup>) was obtained in the year 2006 under raised bed system and lowest (85.76 q ha<sup>-1</sup>) in flat bed system during 2007. During the year 2006 and 2007, the yield of Garlic was significantly differ among the planting systems. It may be due to more values of yield attributes characters of Garlic under raised bed system and irrigation water creates the compaction of the soil within 4-5 days after irrigation, which causes average relative humidity <45% and high wind speed under the flat bed system. The trend of variation in yield components

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**Table 1.** Yield and yield attributes of Garlic (var. Agrifound parvati) under cold arid condition among the different planting system

Characters	Raised bed system			Flat bed system		
	2006	2007	Mean	2006	2007	Mean
Number of bulbs/m <sup>2</sup> at harvest	60	56	58	57	59	58
Survival per cent	77.92	77.2	75.32	74.02	76.62	75.32
Bulb size in length (cm)	3.94	3.79	3.87	3.11	3.13	3.12
Bulb weight (gm)	17.80	18.13	17.97	15.40	14.92	15.16
Cloves / bulb	7.75	7.51	7.63	6.91	6.82	6.87
Cloves weight (gm)	2.97	2.91	2.94	2.34	2.23	2.29
Yield (q ha <sup>-1</sup> )	106.67	101.50	104.09	87.00	85.76	86.38
Per cent increase over FBS	22.61	18.35	20.48	-	-	-
CD at 1% for yield	4.073	4.062				

viz. bulb size, bulb weight and cloves weight was similar to that of yield of Garlic between raised bed system and flat bed system. On the basis of this study, for Ladakh condition, where the pan evaporation is high and dry environment (average RH <45%), the propagation of cultivation of Garlic on raised bed system can be suggested to achieve the demand targets and get maximum earn from cultivation of Garlic under raised bed system by farmers of Ladakh region.

It is concluded that the survival percentage of Garlic var. agrifound parvati was similar in both the planting system viz. raised bed and flat bed system. The variety of Garlic under raised bed system showed superiority w.r.t. bulb size, bulb weight, cloves bulb, cloves weight and yield (104.09 qha<sup>-1</sup>) over flat bed system. The variety under raised bed system showed 20.14 per cent higher in yield over flat bed system.

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