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Abstract

Performance of Garlic (*Allium sativum*) Varieties under Zero Tillage Mulch Condition in Southern Coastal Region of Bangladesh †

Rina Rani Saha *, Md. Abul Khayer Mian, Subarna Kundu and Khokan Kumer Sarker

Bangladesh Agricultural Research Institute (BARI), Gazipur 1701, Bangladesh; mianmd.abulkhayer@yahoo.com (M.A.K.M.); kundubarna@gmail.com (S.K.); ksarkerwrc@gmail.com (K.K.S.)

* Correspondence: saharinarani@yahoo.com; Tel.: +88-01718118906

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Abstract: The experiment was carried out under ACIAR-KGF project at farmers' field of Tildanga village at Dacope Upazilla under Khulna District during rabi season of 2018–19 after harvest of previous transplanted aman rice to find out the suitable variety of garlic (*Allium sativum*) for cultivation in southern coastal region of Bangladesh and to observe the effect of straw mulching on the yield of garlic. The experimental area faces slight to moderately drought and saline prone at later part of winter season and beginning of summer. The salinity causes unfavorable environment and hydrological situation restricting the normal crop production. Farmers generally cultivate only single transplanted aman (T.aman) rice in a year at south and south-western coastal saline areas. Garlic is one of the important spices crop in Bangladesh. The treatments of the experiment were five garlic varieties viz., V_1 = BARI Roshun-1, V_2 = BARI Roshun-2, V_3 = BARI Roshun-3, V_4 = BARI Roshun-4 which were developed by Bangladesh Agricultural Research Institute (BARI) and V_5 = Local cultivar. The experiment was laid out in a randomized complete block design with three replications. All five varieties of garlic were sown on 17 December 2018 under zero tillage condition. BARI Roshun-1 gave the highest number of bulb/m^2 (57), pseudostem height (37 cm), weight of individual bulb (7.65 g) and bulb yield (5.81 t/ha). BARI Roshun-3 gave the lowest yield (3.87 t/ha). It was also observed that the soil moisture of the farmers' field were higher during sowing of garlic which was not suitable for ploughing the land. So timely establishment of garlic is possible by following hand dibbling methods under zero tillage condition on the muddy soil surface and also cost effective. Mulching can protect the evaporation loss and reduces the salinity stress which ultimately influence the crop establishment and yield. Earlier farmers of Tildanga at Dacope under Khulna District had no idea about the cultivation of garlic under zero tillage along with straw much. When the experimental results were demonstrated and discussed about the technology to the farmers gathering during Field Day then they were impressed and interested to grow garlic. Fallow land of coastal areas of Bangladesh could be utilized through disseminating this technology and ultimately cropping intensification increased.

Keywords: garlic; coastal zone; saline soils; zero tillage