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Analysis of Rice Genotypes with Environment

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Editorial

Rice which was originated from the tropics and subtropics is widely cultivated in diverse environments. The tremendous growth of human population worldwide has increased the demand for rice production, requiring an improvement of 50% by the year 2025 [1]. Due to its origin in tropical and subtropical regions, rice is more sensitive to cold stress than other cereals crop such as Wheat and Barley. Therefore, the production of rice is severely limited by cold stress in temperate areas. Cold stress is the major factor affecting rice growth, productivity, and its distribution worldwide. Production of rice is affected primary due to its vulnerability to cold stress at seedling stage, as well as reproductive stage leading to spikelet sterility.

In Africa, rice also constantly increasing as staple food and there has been increasing demand in Africa in the past three decades from 1999-2018; however, these demands have not been commensurate with the total production and most of African countries are net importer of milled rice, which costs 6.4 billion USD annually. Although rice has recently introduced to Ethiopia, recognizing its importance as a food security crop and a source of income and employment opportunity. The production, productivity and consumption of rice in Ethiopia is constantly increasing in the country [2]. Ethiopia's geography is noticeable by immense depressions and mountains. Consequently vast arable lands are located at high altitudes more than 2000 meter above sea level. Rice can grow in wide agro climatic zones; however, low temperature stresses are serious challenges for rice farmers at high elevations in the tropics. Lack of cold tolerant rice varieties in the high lands of Ethiopia is the main constraints for the promotion of rice. Therefore, the main objectives of these studies was to evaluate the performance and stability of cold tolerant lowland greed super rice genotypes for their wider or specific recommendation in the North-West Ethiopia and similar agro-ecologies. The experiment was conducted for 3 years in two locations; Fogera and Shire-Maitsebri, The locations are where the trials conducted differ in soil type, annual rain fall, altitude and annual temperature based on the experiments nature. A total of 15 genotypes including two checks used. The trial was laid out in randomized complete block design with three replications with a plot size of 7.5 m^2 [3]. Seed rate of 60 kg/ha was used and direct seeding methods in a row was applied. Fertilizer (UREA and DAP) were applied based on each location recommendation. All DAP was applied at the time of sowing. For UREA, split application was applied; 1/3 at sowing, 1/3 at active tillering and the remaining 1/3 during panicle initiations. Other agronomic practices were applied according to each location recommendations. The data were subjected to the GLM procedure for analysis of variance using SAS software V.9.0. And Genotype x environment and stability analysis were done by using Genstat 18th edition software [4]. The combined analysis of variance for grain yield of fifteen rice genotypes presented. Genotype, environment and genotype x environment interaction were highly significant for grain yield [5]. The combined analysis of variance for grain yield, days to maturity, days to heading, panicle length and filled grain per panicle, plant height and thousand grains weight showed significant difference.

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Conflict of Interest

None

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