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Editorial

Recent Systematic Study Outcomes in Agrotechnology

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Over the past several years of research and development, new technologies have been developed that are specific to certain geo-climatic conditions to stabilize the crop yield under varying and harsh environmental conditions, particularly with regards to dryland farming. Conservation technologies have also evolved to manage fragile ecosystems for the sustainable use of limited soil and water resources. In the context of global climate change, agrotechnology provides effective solutions for addressing the issues of low productivity, especially among rainfed crops. Implementation of agrotechnology leads to attaining food security in the future.

Agrotechnology is an open-access journal publishing peer-reviewed scientific literature since the year 2012. The Journal covers several aspects of agrotechnology including, watersheds, nutrient management technology, weather forecasting, technologies to counter abiotic stress, crop selection, land reclamation & remediation technology, recycling of organic components, agro-meteorology, nursery management, agroforestry, agro-hydro modeling, dryland farming, The journal focuses on promulgating recent advancements and innovation in both concepts and techniques for sustainable development, management technology, resource conservation, crop production, and development.

The topics that were covered in the issues released in the current year included climate change, crop model, supplemental irrigation, adaptation strategy, yield sustainability, irrigation water stress, and water use efficiency. Climate change impacts the agriculture sector directly and profoundly. To sustain food production crop management becomes essential. Therefore, Misganaw and Mohammed [1] have conducted a simulation study on climate change impact and management options for sorghum crop production based on the daily weather variables such as rainfall, maximum temperature, minimum temperature, and solar radiation recorded over the past several years. The authors have simulated the phenology, growth, and yield of sorghum, to predict the impact of projected climate change on sorghum production and also evaluated the effect of supplemental irrigation as a management option on sorghum productivity in the semiarid environment. The study revealed that the grain yield of sorghum predictably increased significantly and the grain yield of sorghum could be substantially increased using supplemental irrigation using long maturing cultivars in future climate conditions and such higher grain yield of the long maturing cultivar was associated with the increase in rainfall. On the other hand, the high temperature was predicted to affect crops by speeding up their development and growth stages and reducing their life cycle resulting in short maturing cultivars.

Climate change refers to increasing levels of atmospheric carbon dioxide, rising temperature, and altered frequency of natural events leading to droughts and floods. These changes affect water resources, crop productivity, livestock, and also the distribution of agricultural diseases and pests. Ethiopia is highly affected by climate change since 80% of the population is dependent on rain-fed agriculture and varied geographical locations. Misganaw et al., [2] reviewed the Impact of climate change on crop production and associated adaptation management options on Agriculture in Ethiopia. They have emphasized that environmental changes lead to change in the growing season, affecting food security. Some of the adaptation strategies include technological advancement, technology adoption, governmental programs, crop insurance, modified farming practices, reforestation, agroforestry, soil & water conservation, and land rehabilitation. The review identified that climate change affects crop production through direct impacts on their biophysical growth, limiting crop yields, inducing heat & water stresses thus leading to changes in the length of the growing season, and indirectly affecting demand for agricultural products. This review is valuable for devising effective strategies to counter climate change impact and improve the economic status of the population dependent on agriculture and agricultural resources.

The interaction between the genotype and the environment of the organism determines its stability under different conditions. Bassa et al., [3] evaluated Andean red bean genotypes at multiple sites during cropping season in terms of seed yield. The study revealed that environment followed by genotype and environment interactions accounted for most of the variation. The authors have identified varieties that were stable in seed yield and which showed adaptation to different environments and further recommended them for production in Ethiopia. This study is of significance in plant breeding experiments for identifying stable genotypes that show constant yield despite the change in the environmental conditions.

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Meskelu et al., [4] have attempted o identify growth stages of Artemisia that are sensitive to water stress to determine the critical time for irrigation by growing them in the dry season in a randomized complete block design experiment. The study revealed that water stress has significantly affected height, weight, biomass, essential oil yield, and irrigation was found to be beneficial in maintaining their normal growth and development pattern at all stages leading to higher yield and essential oil content. The study, therefore, recommended irrigation of Artemisia during all growth stages. The study is relevant for improving the agriculture practices and adoption of new irrigation technologies for enhanced yield and productivity in semi-arid areas.

The novel approach by the editorial board members has enabled the scope-specific compilation of the issues and their release with publication timeliness. The manuscript peer-reviewers have endeavored to bring out a scientifically sound presentation of the articles. I express my gratitude to the contributing authors for sharing their recent findings. I look forward to the production of further issues in Agrotechnology.

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