International Conference

Saffron and Seed Spices - Innovative Technologies for Sustainable Development

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THEME – A

Climate Resilience in Spice Crops Production and Mitigating Climate Change

Sher-e-Kashmir
University of Agricultural Sciences & Technology of Kashmir

INTERNATIONAL CONFERENCE

"SAFFRON AND SEED SPICES - INNOVATIVE TECHNOLOGIES FOR SUSTAINABLE DEVELOPMENT"

NOVEMBER 7-8, 2021

This is to certify that **Dr. Hamid-Reza Fallahi, Professor, Plant and Environmental Stresses Research Group, University of Birjand, Birjand, Iran** *presented a Lead Talk* **"Saffron (*Crocus sativus* L.) Adaptability Approaches to Climate Change"** *in the International Conference through virtual mode held at Sher-e-Kashmir University of Agricultural Sciences & Technology of Kashmir from November 7 to 8, 2021.*

B. A. Alie
Organizing Secretary

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A-1

Saffron (*Crocus sativus* L.) Adaptability Approaches to Climate Change

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Flower initiation and flower emergence stages in saffron, which occur in around mid-summer and mid-autumn respectively, are influenced by increased temperatures due to climate change. Heat stress causes abortion of flowers in the mid-summer and delays flower emergence in autumn. Decreasing the amount of rainfall during the growing season of saffron and the early end of vegetative growth of the plant in spring (reduction of corm weight) are the other negative effects of climate change on saffron. Therefore, providing strategies to enhance saffron adaptation to climate change is highly important. In this regard, several experiments were performed in the climatic conditions of Khorasan province, Iran. Application of organic mulch (wheat residue at the rate of 5 t ha^{-1}) reduced soil temperature (at the depth of ~15 cm), by 3.6 and 10.1 ^{o}C, compared with soil tempreture in no-mulch treatment and air tempreture, respectively. Shading of saffron fields using fiber material with polyethylene coating, can also reduce the soil temprature by ~ 4.8 ^{o}C, in mid-summer. Corm storage outside the soil under controlled conditions (temperature of 25 ^{o}C, darkness and appropriate humidity) during the flower initiation stage, and then planting them in soil is another possible strategy to reduce the effect of heat stress on saffron. Howevre, in our experiment, the corms moisture was lost due to low ambient humidity during storage, and reduced their flowering. Controlled and prudent application of white slurry on the field surface, which reduces the entry of thermal energy into the ground, can be considered as a possible strategy in the future studies. In areas where the above adaptative strategeis are not effective due to heat intensity, saffron production under controlled environment can be considered. Our reserches showed that its possible to produce saffron under controlled conditions with higher yield and acceptable quality than the traditional field production system. In addition, exprimental results showed that application of superabsorbent polymer and increasing the amount of soil organic matter, mainly by manure, are two practical ways to maintain soil moisture and reduce the negative effect of lack of rainfall during saffron vegetative growth.