

Improving agricultural production under water scarcity in Fars province, Iran

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ABSTRACT

Water scarcity is one of the major problems in the world which significantly affecting the agricultural production and livelihood of millions of people who live in arid and semi-arid regions, and provide major limiting factor for improving agricultural production as well as bringing about better livelihood for the vast majority of rural population.

Iran is located in the centre of arid and semi-arid region of the Middle East bordered by Armenia, Azerbaijan, the Caspian Sea and Turkmenistan in north, Afghanistan and Pakistan in east, the Gulf of Oman, the Strait of Hormuz and the Persian Gulf in the south, and Turkey and Iraq to the west. The climate of Iran is one of great extremes due to its geographic location and varied topography and has a conversional value. For instance, less than 50 mm of rainfall in the desert as well as 2275 mm of rainfall near Caspian Sea in north.

Over the years, Iran has attempted different approaches and techniques to address the water scarcity problem with varying degree of success. For example, changing the method of irrigation and use the new technology for saving water in agricultural area, construction of dam to save the water for dry seasons is another instance.

My poster mainly present the result of research analysis about effectiveness degree of Silica Moisture Absorbent Medium (SMAM), commonly know as Sanoplant with regard to water saving, shortening the crop growth period, mainly the root and shoot development stage. A detailed cost-benefit analysis is also carried out the long term economic viability of SMAM.

This research integrated by some Literature review that consisted of up to date secondary documents on plant development, soil fertility, climate change and MSTATC software. Field measurement and observation concerned with the actual measurement of plant development, namely the root, shoot, leaves as well as percentage of nitrogen which is available in plants also the dosage of SMAM and water applied. In order to make statistically correct analyse with MSTATC. As far as the effectiveness of SMAM in water saving, enhancing plant growth and reducing mortality rate of crops, 15 scenarios were set for each of the three widely cultivated plants in Iran, namely Orange, Olive and Date.

The scenarios were separated by changing the dosage of Sanoplant and different irrigation to find the best solution that can help green areas, also by mentioning to the Cost/Benefit of this project. The main result which obtained shows that by using the SMAM, the best and acceptable result which can cover our aim such as; root and shoot development and decreasing the water demand can be reach by using the 50gr of SMAM and decreasing 50% of normal irrigation.

Keywords: Water scarcity, Soil amendment, Plant improvement, Water saving