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Sustainability of Arid Land Food Systems in Iran and the Status of Activities in Agroecology

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1. INTRODUCTION

Iran occupies a vast area of land with a diverse climatic conditions and topography, hence a wide array of biological and socio-cultural diversity. The long historical background of the farming communities associated with domestication of plants and animals and therefore evolution of farming systems for a period of several thousand years has built a strong interrelationship between crop and animal husbandry, land use systems, community participation and collaboration with sustainable natural resource management. The farmers of this region were able to manage sustainable agroecosystems in arid lands under a harsh and resource poor environment, making these some of the first agroecologist. The ethics embodied in proper resource management, respects for the nature and living elements and viewing the soil and water as fundamentals for life, have been the basis of believes for sustainable land management, hence creating a strong agroecological dimensions to the farming systems. However, this was displaced by the modern food production systems characterized by high external inputs and low biodiversity in the last century. Although based on the nature of small holdings, which dominants the farming systems of the arid lands in the country, the foundation of agroecological knowledge for the arid lands is still apparent in the form of indigenous knowledge, this seems inadequate for an era of strong competition existed between the conventional and the agroecological practices involved in food production. Therefore, an integration of ecological principles and the better understanding of local knowledge is crucial for suitable food production in the country. As the consequence, tendency towards safe and healthy food has grown in recent years and the acreage of organic crop production has reached more than 30,000 hectares. In this paper an attempt has been made to review the present status and the future trend of agroecological activities including research and education in the country.

2. DISCUSSION FOCUS

Sustainable dryland farming

1-Dryland farming requires moisture conservation based on several practices, whereas rainfed farming is a general terms for growing crops without additional water from irrigation.

2-Dryland farming is normally an integration approach associated with rangeland management and animal husbandry. These two (dryland farms and rangelands) are interchangeable based on the amount of rainfall in a particular year.

3-Leaving the land bare (fallow) is important in dryland farming for one year or two for the purpose of moisture preservation
4-In most case weeds in the fallow year is grazed. It is normally recommended to keep the land weed free by proper cultivation leaving a soil mulched with a layer of smooth soil
5-Continuous cropping is practiced where ample rainfall is the case
6-Cereals are the most important component of dryland farming, mainly wheat and barley
7-Annual legumes could be grown with cereals and the forage is grazed with the remaining straw and stubbles. This practiced is called" Ley farming"
8-Save moisture from the fallow year to the next growing season. However, with the best technology available this could not be more than 25% of the years rainfall transferred to the next one
9-Proper tillage, practicing fallow, good nutrient management (particularly N)are essential for a good dryland farming
10-Water harvesting and spreading are also practiced to preserve moisture in the soil from the adjacent areas.
11-Different crops can be grown under dryland farming (cereals, oil crops, industrial crops, medicinal plants, fruits such as grapes and tree crops, such as almonds , olives etc)

In general:
- Reducing evapotransportation

and
- Increasing water use efficiency

Are two main approaches in dryland farming

WUE=Y/ET
Y= yield
ET= Evapotraspiration

Different yield components responses differently to water deficit and therefore water shortage affects yield component in different ways.

KEY REFERENCES

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