

Combating Malnutrition in the Thar Region: Enhancing Food Security through Arid Horticulture Units

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Abstract

Malnutrition remains a critical global issue, contributing to child mortality, impaired development, and increased illness susceptibility. In India, the situation is exacerbated by poverty, underdevelopment, and low socioeconomic status, with women and girls particularly affected due to gender disparities. This study examines malnutrition in the Thar region, a drought-prone area in Rajasthan, highlighting alarming statistics: 35.5% of children under five are stunted, 32.1% are underweight, and 57% of women aged 15-49 are anemic. The most vulnerable groups include Scheduled Castes and tribal communities, with malnutrition severely impacting women and young children. This paper proposes targeted interventions by the Arid Horticulture Unit to combat malnutrition through the promotion of drought-tolerant and indigenous fruit varieties, agroforestry, and rainwater harvesting. Key strategies include capacity building for farmers, developing market linkages, and investing in research and innovation. Results indicate that arid horticulture can significantly improve nutrition, enhance economic empowerment, and foster sustainable agricultural practices. By focusing on these measures, the Arid Horticulture Unit aims to improve food security, health, and livelihoods in Rajasthan's arid regions, particularly for women and children.

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Introduction

Malnutrition is a cause of major concern in rural areas of Thar region. The region is extremely drought prone causing great losses to livelihood. According to National Family Health Survey 5: statistics some of the contributing factors for under nutrition were:

Prevalence of Malnutrition

35.5% of children under age five years are stunted, 19.3% are wasted, 32.1% are underweight, 3% are overweight, Malnutrition among women aged 15-49 years is 18.7%

Prevalence of Anaemia

25.0% in men (15-49 years), 57.0% in women (15-49 years), 31.1% in adolescent boys (15-19 yrs), 59.1% in adolescent girls, 52.2% in pregnant women (15-49 years), 67.1% in children (6-59 months).

Scheduled Castes in Thar Desert and tribal communities in the state are the most vulnerable for under nutrition. Within these groups, women and young children, especially girls, are most affected. The malnourished premature and Low Birth Weight (LBW) infants are particularly exposed to risk of impaired growth or even death.

The State of Food Security and Nutrition in the World, 2023: Around 74% of India's population could not afford a healthy diet, and 39% fell short of a nutrient-adequate one.

According to Global Hunger Index 2023: India's 2023 GHI score is 28.7, considered serious according to the GHI Severity of Hunger Scale.

Methodology

Certainly! When addressing malnutrition in the arid zones of Rajasthan with a focus on fruit crops, the Arid Horticulture Unit can employ several targeted strategies:



Fig 1: Dhudi Devi with her arid horticulture Unit in Gadna village of Baap block in Jodhpur dist.

Promotion of Drought-Tolerant Fruit Varieties:

Introducing and promoting fruit tree varieties that are well-adapted to arid conditions is crucial. Species such as Bhagwa in pomegranates, Yercaud Timla in figs, Thar bold in Lasoda or Gonda and certain varieties of citrus like lemons and oranges can thrive with minimal water inputs, providing a sustainable source of nutrition in water-stressed environments.

Selection of Indigenous Fruit Species: Indigenous fruit species that are naturally adapted to arid conditions should be prioritized. Examples include ber (Indian jujube), amla (Indian gooseberry), and phalsa (Indian sherbet berry), lasoda (*Cordia dichotoma*), karonda (Barbados cherry), kumathiya (*Senegalalia senegal*) which not only require minimal water but also offer high nutritional value, including vitamins, minerals, and antioxidants. Karonda contains 1200 mg/100 g vitamins C, Amla contains 600 mg/100 g vitamin C and it also have good source of dietary fiber, enhance vitality, improve skin and hair health, and support overall well-being.

Agroforestry with Fruit Trees: Integrating fruit trees into agroforestry systems can provide multiple benefits. Trees like neem (*Azadirachta indica*), moringa (*Moringa oleifera*), and babool (*Acacia murraya*) not only produce nutritious fruits but also contribute to soil fertility improvement, erosion control, and microclimate moderation, enhancing overall agricultural productivity in arid zones.



Fig 2: Rainwater harvesting structure (Dyke) at Phalodi dist. In Rajasthan

Utilization of Rainwater Harvesting: Capturing and storing rainwater for irrigation purposes can be crucial for fruit cultivation in arid regions. Techniques such as rooftop rainwater harvesting and construction of farm ponds and dykes help replenish groundwater resources and ensure continuous water availability for fruit trees during dry spells.

Capacity Building for Fruit Cultivation: Providing training and technical support to farmers on modern fruit cultivation

techniques, pest and disease management, and post-harvest handling practices is essential. Empowering farmers with knowledge and skills enhances fruit yield, quality, and marketability, thereby improving livelihoods and nutritional outcomes.

Market Linkages and Value Addition: Facilitating market linkages and supporting value addition activities such as fruit processing, packaging, and marketing can enhance the economic viability of fruit cultivation in arid zones. By adding value to their produce, farmers can generate additional income while also increasing access to nutritious fruit products for local communities.

Research and Innovation: Investing in research and development of new fruit varieties that are resilient to arid conditions and have enhanced nutritional profiles is critical. Collaborating with agricultural research institutions can lead to the development of climate-smart fruit cultivars that address the specific challenges of arid zone agriculture.

By focusing on these specialized strategies tailored to fruit crop cultivation in arid zones, the Arid Horticulture Unit can contribute significantly to addressing malnutrition, enhancing food security, and improving the livelihoods of communities in Rajasthan's arid regions.

Results

Arid horticulture units can significantly enhance the health and well-being of females and children, particularly in regions with limited water resources. These units provide a steady supply of fresh fruits and vegetables, which are essential for a balanced diet and help combat malnutrition and micronutrient deficiencies. This nutritional improvement is crucial for the healthy growth and development of children and the overall well-being of women. Additionally, the economic empowerment gained through cultivating and selling horticultural produce enables women to generate income, increasing their financial independence. This income can be used to access better healthcare, nutrition, and education for their children, fostering a cycle of improved health and prosperity. The enhanced food security offered by these units reduces dependency on external food sources and mitigates the impact of food shortages, further benefiting family health. Moreover, the sustainable practices often associated with arid horticulture, such as efficient water management and soil conservation, improve the local environment, thereby supporting better overall community health. Engaging in horticulture also provides educational opportunities for women and children, imparting valuable knowledge about nutrition, sustainable agriculture, and healthy living. Thus, arid horticulture units play a pivotal role in improving the health and quality of life for females and children in arid regions.

Conclusion

Addressing malnutrition in the Thar region requires targeted strategies to improve food security and livelihoods. Introducing drought-tolerant and indigenous fruit varieties, utilizing rainwater harvesting, and promoting agroforestry can significantly enhance nutrition and agricultural productivity. Training farmers, developing market linkages, and investing in research are crucial steps for sustainable development. By implementing these measures, the Arid Horticulture Unit can help mitigate malnutrition and improve overall well-being in Rajasthan's arid zones.

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