

Tyre-Trellis System: A Low-Cost Vertical Frame for Dragon Fruit Cultivation in Non-Traditional Areas

Profile of Innovator

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Brief description of Innovation

Shri Nagraj Nakhat has developed low-cost frame structure using brick, cement, sand, and steel rods to hold old motorcycle tyres for supporting dragon fruit stems. Enhances canopy area and sunlight exposure, leading to better yields. Planting distance is 3 ft × 3 ft, 1,200 plants/ acre. The circular tyre on top acts as a stable crown for stem training, facilitating better light interception and ease of harvesting. The structure supports vertical growth, which reduces disease incidence due to less contact with soil and enhances fruit quality.

Innovation's Highlights

Low-cost materials used; Efficient support for dragon fruit. The structure is constructed using locally available materials—bricks, cement, sand, and steel rods—combined with discarded motorcycle tyres, which are mounted at the top to support the upright growth of dragon fruit stems. Each unit is approximately 5.5 to 6 feet in height, providing adequate canopy development and air circulation.



Low cost vertical frame for dragon fruit cultivation



Views of Dragon fruits cultivation

Benefits/Advantages

Promotes horticultural diversification through use of fallow land and intercropping; Increases income. Av. yield ranges between 10-12 kg per plant; sale at prevailing market rate ₹80-₹100 per kg, a farmer can earn an annual income of ₹9.6 fruit and additionally, surplus saplings from mature plants can be propagated and sold at a rate of ₹30-₹40 per cutting, potentially generating an extra income of ₹1-₹2 lakh annually. The estimated cost of one unit is ₹250-₹300, with a life span of over 15 years, making it economically viable and environmentally sustainable.

Scope & Potential of Innovation for Wider Reach/Out Scaling

High potential for replication in similar agro-climatic zones. It can be promoted through schemes and SHGs. This low-cost technology can be promoted to increase area under dragon fruit in similar agro-ecologies.

Scientific Validation required

Needs validation of economic viability, productivity and durability of the structure.

Domain

Horticulture, Climate-Resilient Agriculture, Low-Cost Technology, Waste Utilization.