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MINOR MILLETS: CLIMATE-SMART CROPS FOR DRYLAND FARMING AND NUTRITIONAL SECURITY

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INTRODUCTION

Dryland agriculture depends heavily on monsoon behaviour, and even a small shift in rainfall timing can affect the outcome of an entire season. In many parts of India, farmers still rely on a single spell of early rain to begin sowing. Various older reports show that millets being grown in places where other crops would not survive long.

Although minor millets lost ground to rice and maize over time, their ability to withstand stress kept them in use among farmers who do not have access to stable irrigation. This thing sparks the interest of understanding how exactly these crops manage to perform under tough conditions.

HOW MINOR MILLETS RESPOND IN DRY CONDITIONS

1. **Handling Moisture Stress**
   Millet crops do not stop growing immediately after a dry spell. The plants slow down but continue developing. A shorter crop duration also helps farmers because the risk window is smaller compared to long-duration cereals.
2. **Water Use Efficiency and Rooting Pattern**
   Millet plants stay green even when the upper soil layer dries fast. Millets such as foxtail millet and little millet possess deeper and more fibrous roots system, allowing them to tap moisture that shallow-rooted crops miss.
3. **Survival in Poor Soils**
   Many upland soils in semi-arid zones are gravelly or thin. Minor millets still manage to produce usable grain in this region without much fertiliser.

NUTRITIONAL TRAITS

Nutritional studies over the years show that minor millets generally have higher fibre and useful minerals than polished cereals. These crops are the good source of complex carbohydrates and protein. Various micronutrients like iron, magnesium, calcium and B vitamins are also presents in millets. 'Good' fats are also present in high amount. Minor millets contain various bioactive compounds with antioxidant properties.

Other Good Traits of Minor Millets

- **Performance Under Climate Variability**
  Delayed monsoons, reduced rainfall and longer dry intervals are becoming more common in India. In such years, minor millets show relatively stable yields.
- **Yield in Weak Rainfall Years**
  Most other crops fail with below-normal rainfall, but millets still produce something. Even modest yields play a safety-net role for families depending on agriculture.
- **Intercropping Suitability**
  Millets fit well with pigeonpea, sesame and cowpea. The canopy is light, and the plants do not compete aggressively. Mixed cropping with millets ca reduce overall risk.

MARKET AND CONSUMPTION TRENDS

Although demand for millets has increased in recent years partly due to health awareness market access is still uneven. Small processing units have expanded slightly, but farmers in remote areas continue to face challenges selling their produce at good prices.

CONSTRAINTS LIMITING EXPANSION OF MINOR MILLETS CULTIVATION

1. **Seed Access –** Farmers frequently rely on old seed saved for years, which gradually affects quality of the produce.
2. **Processing Challenges –** Dehulling small grains requires specific machinery, which is unavailable in many rural areas.
3. **Uncertain Markets –** Prices fluctuate widely due to weak procurement systems.
4. **Consumer Attitudes –** Many people still think of millets as coarse or "old-fashioned" food or

they are unaware of their nutritional value.

5. **Limited Technical Support –** Field-level guidance on improved package and practices remains patchy.

POSSIBLE WAYS FORWARD

- Strengthening local seed systems through organised community seed production.
- Establishing small processing units that reduce labour and improve quality.
- Forming or supporting FPOs to build stronger market connections.
- Encouraging value-addition such as flour, flakes, or mixes.
- Increasing awareness of health benefits through simple outreach programmes.
- Providing clearer extension support for cultivation and crop management.

CONCLUSION

Minor millets may not produce very high yields, but their strength lies in performing reasonably well under poor rainfall and limited soil fertility conditions common across India's dryland belt. Farmers appreciate these crops for their reliability rather than productivity. With modest improvements in seed supply, local markets and processing support, minor millets can contribute meaningfully to stable dryland farming systems, especially as climate-related stress continues to rise.

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