

## Tuber crops based integrated farming system for doubling farmers income

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### Abstract:

Tuber crops are rich source of energy and carbohydrates although each of them also provides other important nutrients as well. Tropical tuber crops supply 28.5 kg food annually and 75 kcal energy/head/day. This amounts to 3.9% of total energy consumed by a person in a day. Tropical tuber crops include cassava (*Manihot esculenta*), sweet potato (*Ipomeas batatas*), greater yam (*Dioscorea alata*), white yam (*D. rotundata*), lesser yam (*D. esculenta*), taro (*Colocasia esculenta*), tannia (*Xanthosoma sagittifolium*), elephant foot yam (*Amorphophallus paeniifolius*), yam bean (*Pachyrrhizus erosus*), coleus (*Solenostemon rotundifolius*) etc.

Tropical tuber crops are having varied growth habit, drought and flood resistance and crop duration. Though tropical tuber crops are perennial in nature but domesticated as seasonal/ annual. This provides an opportunity for staggered harvesting as per household and market needs. Tropical tuber crops are also having great flexibility in planting and can fit into any cropping/ farming system. This is possible because the propagating material is asexual stem or vine or tuber cuttings. As the economic part is swollen roots or modified stem, photoperiod has no significant effect on yield forming factors. Thus, tropical tuber crops are both thermo and photo insensitive. However, extreme high and low temperature affects the growth and yield. Tropical tuber crops grow well in marginal soil with fewer inputs where other crops usually fail to grow. They are tolerant to drought and some of them grow fast and provide a wide soil cover to prevent erosion. It also produces high amount of dry matter per unit area per unit time compared to cereals. They are most efficient in converting solar energy, for example cassava producing 250x10<sup>3</sup> kcal/ ha and sweet potato 240x10<sup>3</sup> kcal/ha as compared to on 76x10<sup>3</sup> kcal/ha for rice, 110x10<sup>3</sup> kcal/ha by wheat and 200x10<sup>3</sup> kcal/ha for maize. Thus, tropical tuber crops are suitable candidature to include in crop diversification programme. These crops have great flexibility in mixed cropping systems to generate additional employment and income. Crops like yam and elephant foot yam grow as intercrops in horticultural and plantation crops. Tuber crops are capable to utilize available resources more efficiently especially in partial sunlight and residual moisture. Tropical tuber crops are rich in minerals and vitamins.