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Potential Nutri-Crops from Uttarakhand Hills for Diversifying Food Basket in a Changing Climate

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Combating malnutrition under changing climate is the biggest hurdle in ensuring nutritional security for the burgeoning population. Rigorous efforts are being made globally in recent past to design major food crops for superior nutritional quality but the potential of existing traditional food crops has been seriously overlooked despite of their ability to produce nutritious grains even under harsh climatic conditions besides their nutraceutical properties against modern lifestyle generated ailments. These ignored locally grown nutri-crops can serve as an alternative way to address the food, nutrition uncertainty with additional health benefits but social disdain, changing lifestyle and lack of synergistic research and development policies rendered the existence of these crops localised mainly in traditional subsistence farming systems. Potential of these underutilised nutri-crops is now being recognised and need for their revival and/or infusion in existing cropping systems is also being felt globally for food and nutritional security of the future. Keeping the need of nutritious, climate resilient and low input demanding crops for future in view, multifaceted efforts have been made by ICAR-VPKAS, Almora for mainstreaming nutri-crops of Uttarakhand hills to benefit both farmers and consumers of the region and country.

Traditional nutri-crops, generally grown in traditional subsistence farming system play vital role in meeting the nutritional and health requirements of rural households residing under difficult agro-geographical conditions in Himalayan hills of India. Farmers of the region still continue to grow a number of crops but the conserved huge diversity of crops have not reached in the far flung and inaccessible areas of hills. The importance and knowledge of these traditional crops were known for ages by farming communities and in the present era also indigenous food crops have started gaining an enhanced emphasis in order to have adequate access to nutritionally rich healthy diet for health conscious masses. Crops produced in this region especially in higher hills are of premium quality and known for its unique organoleptic properties and quality probably due to their being organic, pollution free conducive growing conditions. Cultivation of various potential nutri-crops like finger millet, barnyard millet, grain amaranth, buckwheat, barley, horsegram, black soybean (*Bhat*), kidney bean and rice bean (Fig.1) is popular in the hill region besides commercial crops like rice, wheat, maize and legumes. Most of these crops are grown as a mixed/intercrop under the organic condition on hilly terrains. These traditional lesser known crops of Himalayan region are not only nutrient dense but these locally available plant resources possess appreciable adaptation for soil and weather adversities often encountered in traditional hill farming system. However, because of relatively low returns on investments their abandonment in favour of other commercial crops has generated a threat to these nutri-crops. Replacement of these crops is a serious concern which may result in declining dietary diversity in hills necessitating a focus on the promotion of these potential crops as urgent. Therefore, infusion and/or revival of underutilized minor crops in existing cropping systems has the potential to enhance the resilience of agriculture to weather fluctuations besides serving as a nutritional shield by improving dietary diversity and food security.

The scenario of potential nutri-crops in Uttarakhand hills

In general agriculture in Uttarakhand hills is rainfed (80% of cultivated acreage) where 54% of agricultural land is located in hills and mainly small scale crop-livestock based mixed farming is practiced under rainfed organic conditions. Hills of this region are generally characterized by steep slopes, soils with poor fertility, prone to severe water erosion and low water holding capacity. Lack of irrigation facilities and resource base for cultivation rendered poor production levels of food crops. Under the difficult agro-geographical condition, water scarcity and fragile ecosystem of the region, local

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