All India Coordinated Research Project on Vegetable Crops

Details about the project:

1.	Name of the Center with full address	:	College of Forestry, Ranichauri, Tehri Garhwal, VCSG Uttarakhand University of Horticulture and Forestry, Uttarakhand-249 199
2.	Area : Site / Location (Map/Sites in the map)	:	Vegetable Research Block, Ranichauri 30^{o} 18' N latitude 78^{o} 24' E longitude 2000 m altitude
3.	Name of Agro- ecosystem	:	Temperate
4.	Year of (AICRP-VC) start	:	2003-04
5.	Interdisciplinary team work (Institution Involved)	:	Plant Pathology Seed Technology Plant Breeding
6.	Name of Principal Investigator with designation & full Address and contact number	:	Dr. Tejpal Singh Bisht Scientist (Horticulture) College of Forestry, Ranichauri Contact no: 8476004176, 9412938995 Email:tejpalbisht23@gmail.com
7.	Name of the associates	:	Dr. Laxmi Rawat, JRO, Plant Pathology Dr. Sambhoo Prasad, Technical Personal, Seed Science and Technology
8.	Name of the scientist (s) / staff involved	:	Dr. Laxmi Rawat, JRO, Plant Pathology Dr. Sambhoo Prasad, Technical Personal, Seed Science and Technology Mr. Roshan Lal Bhatt, Field Assistant
9.	Objective	:	As decide by the AICRP (VC)
10.	Mandate crops		Garden Pea (Early), Garden Pea (Mid), Dolichos Bean (Pole), French Bean (Bush), French Bean (Pole), Amaranth, Capsicum, Broccoli, Radish, Bathua (Chenopodium), Mustard Green/ Laipatta and Radish
11.	Salient research achievements including summary as per work plan / objectives covered	:	• This centre is also evaluating elite lines of important underutilized vegetables including Vegetable Rai (*Brassica juncea*), Local Radish, Pahari Palak (Spinacea oleracea), Pahari Kheera (Cucumber) and Meetha Karela (*Cyclanthera pedata)*. • Developed cultural practices in Vegetable crops for different situations of Uttarakhand hills.
12.	Trainings/ conferences attended	:	21 days training “Advances in Quality seed production of Vegetable Crops” under Centre of Advanced Faculty Training in Horticulture (Vegetables)

			CAFT w.e.f 6th September to 26th September, 2017 at UHF Campus, Nauni (Solan) HP 5th International Conference on Agriculture, Horticulture and Plant Science to be held at *Rishikesh, Uttarakhand, India* from June 24-25, 2017.
13.	Objectives	:	➢ To be started breeding programme in selected vegetable crops and evaluation of segregating materials. ➢ Quality Seed Production of vegetable crops. ➢ Collection of underutilized vegetables crops germplasms and used for developing varieties with nutritional security. ➢ Evaluation of Varietal Trials (Screening of germplasm for growth parameters, agronomical traits, disease and insect pests resistance)
14.	Conservation and maintenance of vegetable crop germplasm at the center in Herbal Garden/ Field Gene Bank/ Medium Term Storage/LTS, National Gene Bank at the centre.	:	Conservation and maintenance of land races *viz*., Radish (Gol Muli), Green Mustard / Vegetable Rai, Chamsoor, Sweet Gourd (Meetha Karela), Spinach (Pahari Palak), Cucumber (Pahari kakri), Squash (Lemenda), Greater Head Garlic (Lahsun).
15.	Impact of the AICRP (VC) work / technology generated / verities released (photographs & characteristics) so far	:	Farmers of Hilly region of Uttarakhand accepted the technology generated and varieties developed under the mandate of AICRP on VC. Integrated vegetable farming will helpful to farmers for doubling their farm income.
16.	Revenue generated	:	Aprox. Rs. 80,000.00 per annum
17.	Constraints	:	Since Ranichauri is a voluntary centre, many times human resources and financial crunch become constraint in accomplishing the targets. Furthermore, the sowing time of most of the vegetable crops is different in hills to that of in plains. So, there should be a coincidence between supply of seeds for varietal trials and sowing time of that particular crop. Besides socioeconomic constraints, there are some agroclimatic problems like occurrence of erratic rainfall (heavy rainfalls and long dry spell) and hail storms during March-April when Sring-summer crops are in full bloom. Apart from these, damage by wild animals like monkeys, bear and wild pigs is also becoming a great threat to experimental blocks as well as farmers' field.

18.	**Achievements**		One entry of **Vegetable Rai/ Mustard Green (*Brasssica juncia* L.)** namely ***UHF VR 12-1 (IC 0598459*)** of our institution has been identified for Zone-III (Humid Eastern Himalaya and Bay Island: Sikkim, Meghalaya, Manipur, Nagaland, Mizorum, Tripura, Arunachal Pradesh and Andman & Nicobar Island) during **XXXVI** Annual Group Meeting of All India Coordinated Research Project onVegetable Crops held on dated 18-21 May, 2018 at RARI, Durgapur, Jaipur and is all set to release. Presently this entry is being used as a national check under AICRP on Vegetable Crops. **Salient features of UHF VR 12-1 (IC 0598459):** As **UHF VR12-1** is *Brassica juncea* **L.**, a digenomic species has evolved from *B. compestris x B. nigra* having **ab type** of genome and n=18. Plants are erect and foliaceous bearing closely arranged broad, flattened, crisp and tender 10-11 harvestable leaves with uniformly distributed purple-green pigments. The plants have uniformity in leaf colour (purple-green), leaf size (leaf area 450-560 cm^2) and bolting time (95-100 days after sowing). Leaves have Good cooking quality and are free from bitterness and peculiar pungency of mustard. The crop of UHF VR12-1 can be raised by direct sowing of seeds or transplanting the seedlings of 20-25 days at 30x20 cm spacing. First leaf picking can be done at 35-40 days after sowing or 20 days after transplanting. Almost 6-8 pickings are taken at weekly intervals and later on the crop is left for bolting and seed production. In mid

			hill conditions of Uttarakhand, an average of **712.2 q/ha** fresh leaf yield was found in UHF VR12-1 across the locations (at 1600m, 1800m and 2000m altitudes) over five years (2012-13 to 2016-17). Fresh leaf yield in UHF VR12-1 was found almost consistent over the years and 41.5% to 55.2% higher yield have been recorded over Local Check "*Badshahi'*. At national level, **334.2 q/ha** fresh leaf yield has been recorded across the locations (14 centres of 11 states) and years (three) which was 28.06% higher over the check Pusa Sag-1. Consistently higher yield has been recorded in UHF VR12-1 at north-eastern and some of the Western Himalyan centres.
19.	**Other achievements**		**1)** Evaluated 300 elite lines of important underutilized vegetables including Vegetable Rai *(Brassica juncea*), Local Radish, Pahari Palak (*Spinacea oleracea*), Pahari Kheera (Cucumber) and Meetha Karela *(Cyclanthera pedata)***.** **2)** Developed package of practices in various vegetable crops for different farming situations of Uttarakhand hills. **3)** Collected and maintained 85 underutilized vegetables crops germplasm and those are being used for developing varieties with nutritional security. **4)** The details of genetic stock developed at centre for vegetables is mentioned below:

Name of the Genotype/ Entry	**Crop**
UHF VR12-1	Vegetable Rai/ Mustard Green
UHF VR12-2	Vegetable Rai/ Mustard Green
UHF P90-2	Pea (Early)
UHF P100-1	Pea (Early)
UHF R12-1	Radish (Gole Mooli)
UHF Bathua-1	Bathua
UHF G12-2	Garlic
UHF Chaulai 12-1	Amaranth
UHF DB-1	Dolichos Bean