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# **UNDERUTILIZED CROPS: VARIETIES RELEASED IN INDIA**

**(1982 – 2012)**



**All India Coordinated Research Network on Underutilized Crops**

National Bureau of Plant Genetic Resources

Pusa Campus, New Delhi 110 012

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**H.L. Raiger  
D.C. Bhandari**



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**Cover page photograph:** Seed production of grain amaranth variety

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## **PREFACE**

*About 70 species have been identified as important underutilized and neglected crops/plant species in Asia-Pacific region which have potential to be exploited for commercialization. Some of these underutilized food crops such as amaranth and buckwheat are highly nutritious. They possess quality proteins with high amount of limiting amino acids such as lysine and methionine which are low in other major cereals like wheat, rice and maize.*

*Realizing the significance of the underutilized and underexplored plants in diversifying agriculture under different strategic situations, an All India Coordinated Research Project (AICRN) on Underutilized and Underexploited Plants, now rechristened as All India Coordinated Research Network (AICRN) on Underutilized Crops, was initiated in 1982 under ICAR umbrella with the main objective of generating improved technology in selected crops of the minor economic importance for food, fodder and industrial use. During the last thirty years under this project, research work has been carried out on about seventeen plant species in the direction of cultivation. Thirty four improved varieties in different crops for various agro climatic zones have been released and their cultivation practices standardized. It is important to summarize the achievements of the project in terms of the varieties released for the benefits of farmers. Therefore, a need was felt to bring out a publication have complied information on the varieties released for cultivation to these crops. In the era of IPRs, the need to have documented evidence on their pedigree, area of adaptation, diagnostic characteristics, etc. can hardly be over-emphasized. In the present bulletin, an attempt has been made to include the list of notified varieties released under the AICRN on Underutilized Crops. We would like to continue this activity as and when new information is received. We hope this bulletin will be very useful to planners, researchers, students and farmers.*

**H.L. Raiger**  
**D.C. Bhandari**

## Underutilized Crops in Indian Agriculture: Present Scenario

The dependence of mankind on plant resources is inevitable. Living in close contact with nature, man has learnt to use plants for food, fodder, medicine and other purposes. Since long, the need based selection and domestication of wild plants by mankind has helped in evolution of several useful plant species. Out of a global wealth of about 80,000 edible plants, only a small fraction comprising 3,000 plant species have been used for food and only about 150 species have been commercially cultivated. So much so that 90 % of the world' food requirement is met merely from 30 species. This includes cereals, legumes, root and other food crops.

The continued dependence on a fewer plants carries a great risk of biotic virulence that leads to large scale crop failures. This necessitates the broadening of the genetic base of the individual crop and exploring possibilities of newer plant species for diversification of agriculture. The green revolution during 60's gave us a great relief on the food production front but continued mono-cropping systems in agriculture and cereal based diets (wheat –rice) led to negative effects on soil as well as human health. The soils have become sick in terms of micronutrients deficiency. The human beings have become prone to several chronic diseases as some of the minor crops which were integral components of diet in the past have been replaced by wheat and rice. These minor or the Underutilized plants, in general, constitute those plant species that occur as life support species in extreme environmental situations and threatened habitats, having genetic tolerance to survive under harsh conditions and possess qualities of nutritional and/or industrial importance for a variety of purposes for the present as well as future needs of mankind. Their cultivation is restricted to remote areas in different agro-ecological regions, mainly by the poor farming communities who have limited access to modern agro-inputs and well organized marketing structure.

Now, at global level, there has been a concern to diversify the agriculture and explore the possibilities of newer plant resources and promote utilization of Underutilized nutritive food crops. Apart from being the store house of nutrients, these crops are endowed with very important gene pool for resistance to biotic and abiotic stresses which in the present day are of much significance as the genes can be transferred across species and genera through biotechnological tools. One such example is that of '*AmA*' gene extracted from amaranth and suitable for protein quality improvement.

In view of the need for diversification of agriculture and to meet various human needs, it is essentially required that the potential Underutilized crops particularly the grain legumes and pseudocereals be given due attention in terms of their adoption, varietal development, value addition and marketing so that these crops can be profitably grown by the farmers on their marginal lands. As these crops do not require many inputs, and when improved in respect of their yield and marketing facilities will go a long way in improving the status of farming community in marginal areas and health standards in urban areas. On account of low water

requirement in raising amaranth, the area under this crop in Banaskantha district of Gujarat has been increasing over that of potato and wheat during the lean years. About 65000 to 1,00,000 q of grain amaranth from an area of about 4000 ha is being produced and marketed every year in Banaskantha District only. Even in Tamil Nadu the farmers and entrepreneurs are linked on mutually agreed terms to produce and purchase the commodity. Amaranth being highly nutritious, its leaves are used as vegetable and grains as food in hills as well as in plains. The edible use of amaranth oil lowers cholesterol level in the body and is also used as lubricant for computer discs. Buckwheat, another pseudocereal, is important food in higher hills. Rutin content in buckwheat is considered to be a very important agent for strengthening blood vessels. Among legumes, rice bean is an important pulse crop of high hills where green gram and black gram cannot be cultivated, and even in plains it can be successfully grown as it is immune to yellow mosaic virus which is quite serious in green gram and black gram.

Apart from the food crops, the other useful crops attracting attention now days are for medicinal value and source of bio-fuels. A country wide campaign has been launched by the Central and State Governments to popularize *Jatropha* cultivation for extraction of bio-diesel.

### **Historical Background of AICRN on Underutilized Crops**

In view of the importance of Underutilized Crops, initially the work on their collection, introduction, evaluation and utilization was initiated at the Indian Agricultural Research Institute, New Delhi during late 70's and the activity was later extended to some other research centres in the country. India which is a home to 56 species of less known food plants and with a large acreage (158 million ha) of wastelands not useful for cultivation of high input crops, offer immense opportunities for identification and utilization of under-exploited plant species suited to different agro-climatic niches. In order to strengthening and harmonizing the scientific efforts on improvement and utilization of these crops, the ICAR at national level approved an All India Coordinated Research Project on Underutilized and Underexploited Plants, later named as AICRP on Underutilized Crops in 1982 during VI Five Year Plan with its headquarters at the National Bureau of Plant Genetic Resources (NBPGR), New Delhi. During X Five Year Plan, this project was brought into a network mode and renamed as All India Coordinated Research Network on Underutilized Crops. Presently the network is working at 13 SAU Centers, 5 Cooperating Centers of NBPGR Regional Stations and 5 Voluntary Centers covering research activities on 14 plant species. Since the inception of the project, large numbers of germplasm collections/introductions have been made in different crops across the regions and countries and this has helped in identifying a good number of high yielding varieties. At international level also, the programme on conservation and sustainable utilization of agrobiodiversity on Underutilized plants has been envisaged in Global Plan of Action where each country including India, signatory to CBD, is committed to carry out activities related to promotion of these crops.



## Varieties Released under AICRN on Underutilized Crops in India

Thirty four improved varieties have been released/ identified at national/ regional level in different Underutilized crops by Central Variety Release Committee based on their performance at multi-locations in various coordinated trials.

### Varieties released under All India Coordinated Research Network on Underutilized Crops

Crop	Varieties	Year of identification/ release	Economic product	Average yield (q/ha)	Characteristics	Recommended areas	Released by
<b>GRAIN AMARANTH</b>							
1	Annapurna	1984	Grain	22.50	High yield potential, high protein (15%) drought tolerant and wider adaptability	Mid and high Himalayan region of India	Shimla
2	GA-1	1991	Grain	19.50	High seed yield and drought resistant	Gujarat, Maharashtra	S.K. Nagar
3	Suvarna	1992	Grain	16.00	Drought tolerant, high yield	Peninsular region (Karnataka, Orissa) Gujarat	Bangalore
4	PRA-1 (PRA 8801)	1997	Grain	14.50	High grain yield	Uttaranchal hills	Ranichauri
5	PRA-2 (PRA 9101)	2001	Grain	14.50	High grain yield	North- West Himalayan region except J&K	Ranichauri
6	GA-2	2002	Grain	15.50	High grain yield	Gujarat state	S.K. Nagar
7	PRA-3 (PRA 9401)	2003	Grain	16.50	High grain yield	North- West Himalayan region except J&K	Ranichauri
8	IC 35407 (Durga)	2006	Grain	21.00	High grain yield and Early maturing	North west hill zone comprising states of Himachal Pradesh Uttaranchal and J &K	Shimla
9	BGA-2	2006	Grain	13.26	High grain yield and	Karnataka,	Bhubaneswar

Crop	Varieties	Year of identification/ release	Economic product	Average yield (q/ha)	Characteristics	Recommended areas	Released by
	(Kapilasa)				Early maturing	Orissa and Tamil Nadu	

Crop	Varieties	Year of identification/ release	Economic product	Average yield (q/ha)	Characteristics	Recommended areas	Released by
10	VL Chua 44	2005-06	Grain	13.20	Early maturing (110-120 days), escapes from Leaf webber and has non spiny bract for easy threshability	Mid and higher hills of Uttaranchal	Almora
11	SKNA 21 (GA-3)	2008	Grain	12.58	High grain yield	States of Gujarat and Jharkhand	S.K. Nagar
12	RMA- 4	2008 (Id.)	Grain	13.90	High grain yield	States of Rajasthan, Jharkhand and Orissa	Mandor
13	RMA-7	2010 (Id.)	Grain	14.66	High grain yield	Rajasthan, Gujarat, Orissa, Maharashtra, Haryana, Delhi states	Mandor

#### BUCKWHEAT

14	Himpriya	1991	Grain	12.00	High grain yield, medium maturing <i>F. tataricum</i>	High altitude areas of Himachal Pradesh and Uttrakhand	Shimla
15	VL Ugal 7	1991	Grain	8.00	Early maturing, moderate yield <i>F. esculentum</i>	Mid hills of Uttrakhand	Almora
16	PRB 9001 (PRB 1)	1998	Grain	12.00	High yielding <i>F. esculentum</i> , medium maturity	Hill region of UP, HP and North Eastern states	Ranichauri
17	Himgiri (Shimla B-1)	2006	Grain	11.12	Early maturing (81-95 days)	Dry temperate region of Himachal Pradesh and J & K	Shimla
18	Sangla B-1	2006	Grain	12.65	Medium in maturity(104-108 days)	Mid and high hills of	Sangla

Crop	Varieties	Year of identification/release	Economic product	Average yield (q/ha)	Characteristics	Recommended areas	Released by
					and high yielding	Himachal Pradesh and Uttranchal	
<b>WINGED BEAN</b>							
19	AKWB-1	1991	Green pods	105.00	Dual purpose (seed and vegetable), high pod yield	All winged bean growing areas	Akola


Crop	Varieties	Year of identification/release	Economic product	Average yield (q/ha)	Characteristics	Recommended areas	Released by
<b>FABA BEAN</b>							
20	VH 82-1	1999	Grain	14.55	High seed yield, medium maturity	Northern plains	Hisar
<b>RICE BEAN</b>							
21	RBL-1	1986	Grain	16.00	High yielding, medium maturing, light green seeded, resistant to diseases and stored grain pests	Punjab	Ludhiana
22	PRR-1	1995	Grain	15.00	High yielding	Uttaranchal hills	Ranichauri
23	PRR-2	1997	Grain	12.00	High seed yield, shining light yellow seed	Hill region of UP, HP and North Eastern states, particularly mid and high altitude areas	Ranichauri
24	RBL-6	2000	Grain	13.33	High yielding, medium in maturity, light green seeded, resistant to diseases and pests	Entire plain Zone	Ludhiana
25	RBL 35	2003	Grain	11.65	Early maturing	Plains	Ludhiana
26	RBL 50	2003	Grain	10.90	Dark green seeds	Plains	Ludhiana
27	BRS 1 (Identified)	2003	Grain	14.50	Early maturing and high seed yield	Hills	Bhowali
<b>KALINGADA</b>							


Crop	Varieties	Year of identification/ release	Economic product	Average yield (q/ha)	Characteristics	Recommended areas	Released by
28	Gujarat Karingada-1	2001	Seed and vegetable	10.00	High protein (18%), oil (37.1%) and TSS (3.4%)	Arid/semi arid areas of Gujarat	S.K. Nagar
<b>GUAYULE</b>							
29	Arizona-1	1986	Rubber	13.50	Drought resistant, high rubber content (6%), medium vigour	Arid and semi arid areas	Hisar
30	HG-8	1991	Rubber	15.00	High rubber content (7%), tolerant to root rot, vigorous growth	Arid and semi arid areas	Hisar
<b>TUMBA</b>							
31	RMT 59 (Mansha Marudhara)	2005	Seed/oil	2.38	High fruit and seed yield	Rajasthan and Gujarat	Mandor

Crop	Varieties	Year of identification/ release	Economic product	Average yield (q/ha)	Characteristics	Recommended areas	Released by
<b>JOJOBA</b>							
32	EC-33198	1986	Oil	5.00	High seed yield, drought tolerant	Arid regions and coastal areas	Jodhpur
<b>KANKODA</b>							
33	Indira Kankoda (RMF-37)	2007	Vegetable	15-20	High fruit yield	Chhatisgarh, Uttar Pradesh, Jharkhand, Orissa and Maharashtra	Ambikapur
<b>JATROPHA</b>							
34	Chhatrapati (SDAUJ-1)	2007	Oil	4.00 (3 <sup>rd</sup> year)	High yield and oil percent	Gujarat and Rajasthan under rainfed conditions	S.K. Nagar


## **DESCRIPTION OF VARIETIES RELEASED**

## 1. GRAIN AMARANTH

S. No.	Variety name	Description
<b>I. Annapurna</b>		
1.	Name of Cultivar	NC59937
2.	Species	<i>Amaranthus hypochondriacus</i>
3.	Pedigree/Parentage	
4.	Developing Centre	National Bureau of Plant Genetic Resources Regional Station, Phagli, Shimla – 170 004 (HP)
5.	Contribution of Persons in Evolving this Variety	Dr. B.D. Joshi
6.	Year	1989
7.	Notification 1. Number 2. Date	- -
8.	Description of Variety/ Hybrid 	<ol style="list-style-type: none"> <li>1. It is recommended for cultivation in the mid and high Himalayan region of India</li> <li>2. It can tolerate moisture stress and grown well in marginal soils but at the same time it also respond very well to high input management conditions</li> <li>3. It is high yielding, mid in maturity and medium to tall plant height</li> <li>4. It has green compact inflorescence, dark green foliage which is erect and spineless</li> <li>5. At initial stages it has tender leaves, thus can be used for dual purposes i.e. grain and green</li> <li>6. The seed rate vary from 1.5-2.0 /ha and responsive to direct seeding and transplanting</li> </ol>
9.		Selection was made from the population of NC 59937
10.	Morphological Characters	<ol style="list-style-type: none"> <li>1. Inflorescence is light green, compact and spineless</li> <li>2. Inflorescence tip is upright flat at the end</li> <li>3. Seed colour is pure white and non transparent</li> </ol>
11.	No. of days to Maturity	140-150 days (seed to seed)
12.	Reaction to Major Pests & Diseases	Field tolerant to major diseases and pests
13.	Quality of Produce	Comparable to other test entries of amaranth; seed colour is pure white, due to which ranked first for product making at CSKHPKV, Palampur
14.	Reaction of Stress (Special Characters)	Performed well under rainfed conditions.
15.	Area of Adoption	It is recommended to grow in the Indian Himalayan Region. However, performed well in plains when tested as check in AICRN (UC)
16.	Production Conditions	<ol style="list-style-type: none"> <li>1. Hill region of India but grow well in plains also</li> <li>2. Sandy loam soils with good water holding capacity but should avoid water logging</li> <li>3. Seed rate 1.5-2.0 kg/ ha</li> <li>4. Responsive to fertilizers (N dose upto 100 kg/ha)</li> </ol>
17.	Grain yield (tons/ha) 1. Potential 2. Average	2.70 t/ha 2.25 t/ha
18.	Remarks	The grain is very rich in mineral and amino acids particularly lysine and also in protein (13%) and oil (11%).
<b>S. No. Variety name Description</b>		
<b>II. Durga</b>		

1.	Name of Cultivar	IC035407
2.	Species	<i>Amaranthus hypochondriacus</i>
3.	Pedigree/Parentage	Selection was made from the population of NIC 22535
4.	Developing Centre	National Bureau of Plant Genetic Resources Regional Station, Phagli, Shimla – 170 004 (HP)
5.	Contribution of Persons in Evolving this Variety	Dr. J.C. Rana, Dr. S.K. Yadav, Dr. V.D. Verma, Dr. B.D. Sharma, Dr. Prakash Chand
6.	Year	2006
7.	Notification 1. Number 2. Date	Gazette Proceeding No. 17-8/2005, SD-IV S.No. 22 Annexure II 15-05-2006
8.	Description of Variety/ Hybrid 	<ol style="list-style-type: none"> <li>1. It is recommended for cultivation in North-Western Hill Zone under rainfed, low to medium input conditions.</li> <li>2. It is high yielding, early in maturity and small to medium in plant height</li> <li>3. Farmers grow wheat crop after grain amaranth is harvested and late varieties do not mature if there is an early winter. Thus, early maturing varieties are preferred.</li> <li>4. The inflorescence is lax, erect and compact type and mosaic of yellow and red colour. It is medium in length inflorescence; hence avoid breakage or drooping due to heavy grain weight and high winds.</li> <li>5. It has small plant stature thus avoid lodging particularly in high rainfall areas</li> </ol>
9.		Selection was made from the population of NIC 22535
10.	Morphological Characters	<ol style="list-style-type: none"> <li>1. Inflorescence is lax, erect and compact type and mosaic of yellow and red colour</li> <li>2. Foliage turn yellowish at maturity</li> <li>3. Seed is brownish white and transparent</li> </ol>
11.	No. of days to Maturity	120-125 days (seed to seed)
12.	Reaction to Major Pests & Diseases	Field tolerant to major diseases and pests
13.	Quality of Produce	Comparable to other released variety of amaranth, rich in protein and oil content
14.	Reaction of Stress (Special Characters)	Performed well under rainfed conditions
15.	Area of Adoption	It is recommended to grow in the Indian Himalayan Region
16.	Production Conditions	<ol style="list-style-type: none"> <li>1. Hill region of India</li> <li>2. Sandy loam soils with good water holding capacity but should avoid water logging</li> <li>3. Seed rate 1.5-2.0 kg/ ha</li> <li>4. Responsive to fertilizers (N dose up to 80 kg/ha)</li> </ol>
17.	Grain yield (tons/ha) 1. Potential 2. Average	2.50 t/ha 2.10 t/ha
18.	Remarks	High yield potential coupled with early maturity and less plant height will be a very good option particularly for the farmers going for early wheat sowing.

S. No.	Name of variety	Description
<b>III. VL Chua-44</b>		
1.	Name of Cultivar	VL Chua 44
2.	Species	<i>Amaranthus hypochondriacus</i> L.
3.	Pedigree/Parentage	Pure line selection from IC 5564
4.	Developing Centre	Vivekananda Parvatiya Krishi Anusandhan Sansthan (ICAR), Almora-263601-

		Uttarakhand	
5.	Contribution of Persons in Evolving this Variety	<b><u>Development</u></b> Dr. Arun Gupta, Dr. C.S. Kar, Dr. S.S. Bisht, Mr. G.S. Bisht <b><u>Evaluation</u></b> Mr. Ved Prakash	
6.	Year	Released by SVRC in 2006	
7.	Notification 1. Number 2. Date	599(E) 25.04.2006	
8.	Description of Variety/ Hybrid	1. Growth Habit : Erect 2. Inflorescence colour : Yellowish 3. Stem shape : Ridge 4. Flower bract : Non spiny bract 5. Mean inflorescence length (cm) : 32 6. Mean days to flowering : 70 days 7. Mean days to maturity : 116 days 8. Plant height (cm) : 141 cm	
9.	Description of the parents of the Hybrids	NA	
10.	Identifiable Distinguishing Morphological Characters	Non spiny bract,	
11.	No. of days to Maturity	116	
12.	Reaction to Major Pests & Diseases	This variety was found tolerant to viral disease mosaic molting. This variety is a short duration thereby escape from the leaf webber infestation	
13.	Quality of Produce	Protein: 14.1% Phosphorus: 0.61 Oil :12.1%	
14.	Reaction of Stress (Special Characters)		
15.	Area of Adoption		Uttarakhand hills
16.	Production Conditions		Rainfed kharif
17.	Grain yield (tons/ha) 1. Potential 2. Average		2.73 t/ha 1.32 t/ha
18.	Remarks		

S. No.	Name of variety	Description
<b>IV. Suvarna</b>		
1.	Name of Cultivar	R-104-1-1
2.	Species	<i>Amaranthus hypochondriacus</i>
3.	Pedigree/Parentage	Selection from R-104-1-1 which is Rhodale plus material supplied through NBPGR, New Delhi
4.	Developing Centre	AICRN, Bangalore Centre
5.	Contribution of Persons in	Late Dr. G. Shivashankar



	Evolving this Variety	Dr. K.N. Ganeshiah
6.	Year	1992
7.	Notification 1. Number 2. Date	- -
8.	Description of Variety/ Hybrid	The leaves are broad, green and infrequently exhibit perforation (1-2 cm dia) when mature (they are not due to pest damage). The panicle is open type and florets are green when young produce profuse yellow pollen grains during morning hours. Spikes are pigmentless to green. The plants mature in about 85 – 90 days, grow to a height of 120 – 130 cm and photo-insensitive. The stem is green, strong and non-lodging. Though the developing grains are green, the endosperm and seed coat are white when fresh but turn brown on drying.
9.	Description of the parents of the Hybrids	Not available
10.	Identifiable Distinguishing Morphological Characters	The panicle is open type and florets are green when young
11.	No. of days to Maturity	85 - 90 days
12.	Reaction to Major Pests & Diseases	Resistant to caterpillars
13.	Quality of Produce	Good
14.	Reaction of Stress (Special Characters)	Drought tolerant
15.	Area of Adoption	Peninsular Region (Karnataka, Orissa, Gujarat)
16.	Production Conditions	Fertilizer 40:40:20 kg/ha Spacing: 45x15 cm Seed rate: 1.25 kg/ha
17.	Grain yield (tons/ha) 1. Potential 2. Average	2.00-2.5 t/ha 1.60 t/ha
18.	Remarks	Best variety for plains and has high production potential among the grain amaranth varieties

S. No.	Name of variety	Description
<b>V. BGA-2</b>		
1.	Name of Cultivar	KAPILASA
2.	Species	<i>Amaranthus hypochondriacus</i>
3.	Pedigree/Parentage	Angul Local 2
4.	Developing Centre	OUAT, Bhubaneswar
5.	Contribution of Persons in Evolving this Variety	Dr. P.K. Sahu, Dr. P.K. Mishra, Dr. D. Mohapatra, Dr. S.N. Jena, Dr. R.C. Misra, Dr. C.M. Khanda and Shri G.S. Singh
6.	Year	2006
7.	Notification 1. Number 2. Date	599(E) 25.04.2006
8.	Description of Variety/	Seedling colour : Greenish

	Hybrid	Stem : Mono stem with light green stem and leaf Inflorescence : Erect, compact large (45-60cm.long) and whitish yellow in colour Grain colour : Creamy white Seed Volume wt. ( g/10ml.) : 6.59
9.	Description of the parents of the Hybrids	-
10.	Identifiable Distinguishing Morphological Characters	Plants with thick green stem and single large compact whitish yellow inflorescence
11.	No. of days to Maturity	90-100 days
12.	Reaction to Major Pests & Diseases	Resistant to Stem weevil & Leaf webber Moderately Resistant to Lygaeid bug Resistant to Stem rot.
13.	Quality of Produce	Protein content – 13.2%,
14.	Reaction of Stress (Special Characters)	
15.	Area of Adoption	Karnataka, Orissa and Tamil Nadu
16.	Production Conditions	(a) Rainfed Uplands in kharif season.( Karnataka & Tamil Nadu) (b) Irrigated Upland medium land in Rabi season
17.	Grain yield (tons/ha) 1. Potential 2. Average	1.82 t./ha 1.33 t/ha
18.	Remarks	The proposed variety has superiority over the check in protein quality.

S. No.	Name of variety	Description
<b>VI. RMA-4</b>		
1.	Name of Cultivar	Rajasthan Mandor Amaranth 4
2.	Species	<i>Amaranthus hypochondriacus</i>
3.	Pedigree/Parentage	Selection from IC 35647
4.	Developing Centre	Agricultural Research Station (SK Rajasthan Agricultural University) Mandor, Jodhpur (Raj.) 342304
5.	Contribution of Persons in Evolving this Variety	Dr. B.R. Choudhary, Dr. M.M.C. Bhandari, Dr. Z.S. Solanki and Dr. S.R. Kumhar
6.	Year	2009
7.	Notification 1. Number 2. Date	S.O. 449 (E) 11.02.2009
8.	Description of Variety/Hybrid	High grain yield
9.	Description of the parents of the Hybrids	NA



10.	Identifiable Distinguishing Morphological Characters	RMA 4 has shorter plant stature than GA 1, GA 2 and Suvarna but taller than Annapurna
11.	No. of days to Maturity	122 days
12.	Reaction to Major Pests & Diseases	No insect-pest and diseases observed under field condition during the testing years
13.	Quality of Produce	Protein content (%) 12.6 Lysine content (%) 5.1 Starch Content (%) 61.1
14.	Reaction of Stress (Special Characters)	
15.	Area of Adoption	Plain zone covering Rajasthan, Orissa and Jharkhand
16.	Production Conditions	Rabi season
17.	Grain yield (tons/ha) i. Potential ii Average	2.40 t/ha 1.39 t/ha
18.	Remarks	

S. No.	Name of variety	Description
<b>VII. RMA-7</b>		
1.	Name of Cultivar	Rajasthan Mandor Amaranth 7
2.	Species	<i>Amaranthus hypochondriacus</i>
3.	Pedigree/Parentage	Selection from RU 7-SPS 7
4.	Developing Centre	Agricultural Research Station (SK Rajasthan Agricultural University) Mandor, Jodhpur (Raj.) 342304
5.	Contribution of Persons in Evolving this Variety	Dr. B.R. Choudhary, Dr. M.M.C. Bhandari, Dr. Z.S. Solanki and Dr. S.R. Kumhar
6.	Year	2011
7.	Notification 1. Number 2. Date	Awaited
8.	Description of Variety/Hybrid	
9.	Description of the parents of the Hybrids	NA
10.	Identifiable Distinguishing Morphological Characters	RMA 7 is earlier in flowering as well as compared to checks (BGA 2, GA 1, GA 2)
11.	No. of days to Maturity	126 days
12.	Reaction to Major Pests & Diseases	No insect-pest and diseases observed under field condition during the testing years



13.	Quality of Produce	Protein content (%) 12.1 Lysine content (%) 5.8 Fat (%) 8.1 Fe (mg/ 100 g) 5.9 Ca (mg/ 100 g) 231 K (mg/ 100 g) 454
14.	Reaction of Stress (Special Characters)	
15.	Area of Adoption	Plain zone covering Rajasthan, Gujarat, Orissa, Maharashtra, Haryana and Delhi
16.	Production Conditions	Rabi season
17.	Grain yield (tons/ha) 1. Potential 2. Average	2.02 t/ha 1.43 t/ha
18.	Remarks	

S. No.	Name of variety	Description
<b>VIII. PRA-1</b>		
1.	Name of Cultivar	PRA-1
2.	Species	<i>Amaranthus hypochondriacus</i>
3.	Pedigree/Parentage	Selection from Ranichauri germplasm collection
4.	Developing Centre	GBPUA&T, Hill Campus Ranichauri
5.	Contribution of Persons in Evolving this Variety	Dr. G.C. Saini, Dr. Rajendra Prasad, Dr. M. Dutta and Dr. P.L. Gautam
6.	Year	1996 by SVRC
7.	Notification 1. Number 2. Date	- -
8.	Description of Variety/Hybrid	Tall, dark green plant with very long inflorescence that turns light yellow at maturity, shining cream coloured, medium bold seeds
9.	Description of the parents of the Hybrids	Not applicable
10.	Identifiable Distinguishing Morphological Characters	Medium maturing (120 days), 39% better yielder and one week earlier in maturity than the national check variety Annapurna, tall (1.5m), dark green plants with long (60-70 cm), compact year head, bold seeded, 14.5% protein and 9.2% oil
11.	No. of days to Maturity	115-120 days
12.	Reaction to Major Pests &	Leaf weber




	Diseases	
13.	Quality of Produce	Both for use in green and grain
14.	Reaction of Stress (Special Characters)	Good crop growth even under acidic soil and limited moisture conditions
15.	Area of Adoption	North-Western Himalayan region except Jammu & Kashmir
16.	Production Conditions	Low-input, rainfed condition of mid and high hill regions
17.	Grain yield (tons/ha) 1. Potential 2. Average	3.70 t/ha 1.45 t/ha
18.	Remarks	---

S. No.	Name of variety	Description
<b>IX. PRA-2</b>		
1.	Name of Cultivar	PRA-2 (PRA-9101)
2.	Species	<i>Amaranthus hypochondriacus</i>
3.	Pedigree/Parentage	Selection from Sabli local
4.	Developing Centre	GBPUA&T, Hill Campus Ranichauri
5.	Contribution of Persons in Evolving this Variety	Dr. M. Dutta, Dr. Rajendra Prasad and Dr. B.B. Bandhopadhaya
6.	Year	2000 by CVRC
7.	Notification 1. Number 2. Date	92(E) 02.02.2001
8.	Description of Variety/Hybrid	Tall, dark green plant with very long inflorescence that turns light yellow at maturity, shining cream coloured, medium bold seeds
9.	Description of the parents of the Hybrids	Not applicable
10.	Identifiable Distinguishing Morphological Characters	Stem light yellow with dark green leaves, average plant height 138 cm ear head semi compact & yellow, seed medium bold (9.3g/100seed), protein content 14.10 % and oil content 14.1 %
11.	No. of days to Maturity	132 days
12.	Reaction to Major Pests & Diseases	Tolerant to major pests and diseases and lodging and shattering

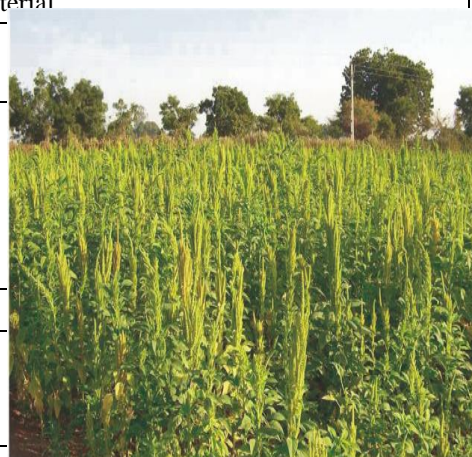


13.	Quality of Produce	Better protein and oil content
14.	Reaction of Stress (Special Characters)	Good crop growth even under acid soil and moderate stress conditions
15.	Area of Adoption	North-Western Himalayan region except Jammu & Kashmir
16.	Production Conditions	Low-input, rainfed condition of mid and high hill regions
17.	Grain yield (tons/ha) 1. Potential 2. Average	2.70 t/ha 1.45 t/ha
18.	Remarks	----

S. No.	Name of variety	Description	
<b>X. PRA-3</b>			
1.	Name of Cultivar		PRA-3
2.	Species		<i>Amaranthus hypochondriacus</i>
3.	Pedigree/Parentage		PRA 8801 X Suvarna
4.	Developing Centre		GBPUA&T, Hill Campus Ranichauri
5.	Contribution of Persons in Evolving this Variety		Dr. M. Dutta, Dr. G. C. Saini, Dr. Rajendra Prasad, Dr. B. B. Bandhopadhaya and Dr. Tej Pratap
6.	Year		2003 by CVRC
7.	Notification 1. Number 2. Date		- -
8.	Description of Variety/Hybrid		Tall, dark green plant with very long inflorescence that turns light yellow at maturity, shining cream coloured, medium bold seeds
9.	Description of the parents of the Hybrids		Not applicable
10.	Identifiable Distinguishing Morphological Characters		Medium tall (140 cm), dark green plant, long inflorescence, semi-compact ear head, 135 days maturity, seed weight 8.33 g/10ml seeds, seeds creamish yellow and protein content 14.08 %, early maturity and high yield
11.	No. of days to Maturity		72-99 days
12.	Reaction to Major Pests & Diseases	Tolerant to major pests and diseases including <i>Rizoctonia</i> , except leaf weber, tolerant to lodging and shattering	

13.	Quality of Produce	Good protein and oil content
14.	Reaction of Stress (Special Characters)	Good crop growth even under acidic soil and limited moisture conditions
15.	Area of Adoption	North-Western Himalayan region except Jammu & Kashmir
16.	Production Conditions	Low-input, rainfed condition
17.	Grain yield (tons/ha) 1. Potential 2. Average	3.9 t/ha 1.65 t/ha
18.	Remarks	-

S. No.	Name of variety	Description
<b>XI. GA-1</b>		
1.	Name of Cultivar	Gujarat Amaranth-1
2.	Species	<i>Amaranthus hypochondriacus L.</i>
3.	Pedigree/Parentage	Selection from local germplasm material
4.	Developing Centre	SDAU, S. K. Nagar, Gujarat
5.	Contribution of Persons in Evolving this Variety	1) Sh. U. G. Fatteh 2) Dr. I. D. Patel 3) Sh. V. I. Patel 4) Dr. D. A. Thakkar 5) Sh. K. D. Patel
6.	Year	1989-90
7.	Notification 1. Number 2. Date	527(E) 16.08.1991
8.	Description of Variety/Hybrid	Tall, branched, dark green foliage and light green to yellow inflorescence
9.	Description of the parents of the Hybrids	Not applicable
10.	Identifiable Distinguishing Morphological Characters	Growth habit: Tall Leaf sheath : Light green Foliage colour: Dark green Av. days to heading : 60 days Av. Days to maturity : 110-115 days Av. Plant height : 200- 210 cm Ear colour : Light green to yellow Ear shape : Semi compact Length of Inflorescence : 120-125 cm 1000-seed weight : 0.8 g
11.	No. days to Maturity	110-115 days
12.	Reaction to Major Pests &	Not found



	Diseases	
13.	Quality of Produce	1) Good grain puffing quality 2) Protein = 13.81 %
14.	Reaction of Stress	Lodging resistant
15.	Area of Adoption	Gujarat
16.	Production Conditions	Irrigated upland/medium land in rabi season
17.	Grain yield (tons/ha) 1. Potential 2. Average	1) 4.0 t/ha 2) 2.80 t/ha
18.	Remarks	

S. No.	Name of variety	Description
<b>XII. GA-2</b>		
1.	Name of Cultivar	Gujarat Amaranth-2
2.	Species	<i>Amaranthus hypochondriacus</i> L.
3.	Pedigree/Parentage	Rasana -2
4.	Developing Centre	SDAU, S. K. Nagar, Gujarat
5.	Contribution of Persons in Evolving this Variety	1) Dr. N. H. Patel 2) Sh. K. D. Patel 3) Dr. I. S. Patel 4) Prf. A. T. Patel 5) Sh. B. M. Patel
6.	Year	1998-99
7.	Notification 1. Number 2. Date	937(E) 04.09.2002
8.	Description of Variety/Hybrid	Medium tall, mono stem, red foliage and
9.	Description of the parents of the Hybrids	Not applicable
10.	Identifiable Distinguishing Morphological Characters	Growth habit: Tall Leaf sheath : Pink red Foliage colour: Light red Av. days to heading : 50 days Av. Days to maturity : 98 - 102 days Av. Plant height : 180-190 cm Ear colour : Red Ear shape : Compact Length of Inflorescence : 85-100 cm 1000 seed weight : 0.8 g
11.	No. days to Maturity	98-102 days
12.	Reaction to Major Pests & Diseases	No incidence of diseases and resistance to <i>Heliothis</i> sp.





13.	Quality of Produce	1) Good grain puffing quality 2) Protein = 11.30%
14.	Reaction of Stress	Lodging resistant
15.	Area of Adoption	Gujarat
16.	Production Conditions	Irrigated upland/medium land in rabi season
17.	Grain yield (tons/ha) 1. Potential 2. Average	1) 3.0 t/ha 2) 1.55 t/ha
18.	Remarks	

S. No.	Name of variety	Description
<b>XIII. SKNA-21(GA-3)</b>		
1.	Name of Cultivar	Gujarat Amaranth-3
2.	Species	<i>Amaranthus hypochondriacus L.</i>
3.	Pedigree/Parentage	Vasada-1-5
4.	Developing Centre	SDAU, S. K. Nagar, Gujarat
5.	Contribution of Persons in Evolving this Variety	1) Dr. Y. Ravindrababu 2) Dr. S.D. Solanki 3) Sh. B.M. Patel 4) Dr. M.M. Patel 5) Dr. A.M. Patel 6) Dr. Varsha C. Joshi
6.	Year	2008-09
7.	Notification 1. Number 2. Date	S.O. 2458(E) 16.10.2008
8.	Description of Variety/Hybrid	Medium tall, mono stem, light red foliage
9.	Description of the parents of the Hybrids	Not applicable
10.	Identifiable Distinguishing Morphological Characters	Growth habit: Erect Leaf sheath : Pink red Foliage colour: Light red Av. days to heading : 50 days Av. Days to maturity : 95 - 100 days Av. Plant height : 130-150 cm Ear colour : Red Ear shape : Compact Length of Inflorescence : 40-55 cm 1000 seed weight : 0.81 g
11.	No. days to Maturity	95-100 days
12.	Reaction to Major Pests & Diseases	Stem rot resistant Stem Weevil, leaf Webber & Lygaeid bug resistant
13.	Quality of Produce	1) Good grain puffing quality



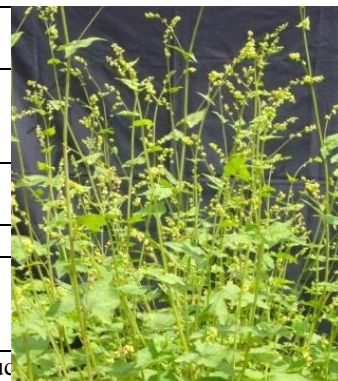
		2) Protein = 13.30 %
14.	Reaction of Stress	Lodging resistant
15.	Area of Adoption	Gujarat and Jharkhand
16.	Production Conditions	Irrigated plant/medium land in rabi season
17.	Grain yield (tons/ha) 1. Potential 2. Average	1) 3.20 t/ha 2) 1.26 t/ha
18.	Remarks	

## 2. BUCKWHEAT

S. No.	Name of variety	Description
<b>I. Himpriya</b>		
1.	Name of Cultivar	--
2.	Species	<i>Fagopyrum tataricum</i>
3.	Pedigree/Parentage	Selection from the population of IC13139
4.	Developing Centre	National Bureau of Plant Genetic Resources Regional Station, Phagli, Shimla – 170 004 (HP)
5.	Contribution of Persons in Evolving this Variety	Dr. B.D. Joshi
6.	Year	1991
7.	Notification 1. Number 2. Date	796(E) 22.11.1991
8.	Description of Variety/Hybrid	The variety is suitable for cultivation in the entire Indian Himalayan region. It is high yielding, mid in maturity and grow very well in marginal soils of high hills. It can also be used for green as it has tender leaves at young stage and can tolerate 1-2 pickings. It is rich in mineral and amino acids and has average protein content of 10.5%.
9.	Description of the parents of the Hybrids	Selection from the population of IC13139
10.	Identifiable Distinguishing Morphological Characters	1. The leaves are broad and dark green 2. Leaf base has scaly covering at node 3. Stem color reddish towards maturity 4. Seed shape is elongated 5. Peduncle is generally small in length
11.	No. of days to Maturity	130 days (average)
12.	Reaction to Major Pests & Diseases	In the eventualities of congenial environment, mild attack of phoma blight and powdery mildew have been recorded.
13.	Quality of Produce	The seed colour is dark brown but grain size is bold. The foliage is dark green preferred for green purpose. Rich in protein, minerals and rutin content.
14.	Reaction of Stress (Special Characters)	It can grown in marginal soils and mild cold of higher Himalaya
15.	Area of Adoption	The entire mid-high Himalayan region of India. Performed better in plains when grown for green purpose
16.	Production Conditions	1. It is best suited to light to medium textured, well-drained sandy loams. It does not grow well in heavy, wet soils or in soils that contain high levels of limestone. It produces better crop in comparatively marginal soils. It tends to lodge badly on soils high in nitrogen and also when there are heavy rains. 2. The crop is sown in April – May and can be grown as single crop only. Owing to long maturity does not fit for second crop 3. It is sown at 30cm between row-to-row and 10-12 cm plant-to-plant spacing with seeding rate of 40-50kg/ha
17.	Grain yield (tons/ha) 1. Potential 2. Average	1.80 t/ha 1.20 t/ha
18.	Remarks	The grains are generally used for making <i>chillare</i> (unleavened bread) and occasionally mixed with wheat flour. The grain and green is rich source of rutin which has very high commercial value in the pharmaceutical industry.
<b>S. No.</b>	<b>Name of variety</b>	<b>Description</b>



<b>II. Hungry</b>		
1.	Name of Cultivar	Shimla B-1
2.	Species	<i>Fagopyrum tataricum</i>
3.	Pedigree/Parentage	Selection was made from the population of EC321798
4.	Developing Centre	National Bureau of Plant Genetic Resources Regional Station, Phagli, Shimla – 170 004 (HP)
5.	Contribution of Persons in Evolving this Variety	Dr. J.C. Rana, Dr. V.D. Verma, Dr. K. Pradheep, Dr. Prakash Chand
6.	Year	2006
7.	Notification 1. Number 2. Date	599(E) 25.04.2006
8.	Description of Variety/Hybrid	The Himgiri is fit for double cropping where buckwheat is sown after pea, kuthi and hops (mid August-mid October). This variety is very early and matures in about three months. Farmers of entire dry temperate zone have switched over to cash crops and cultivation of buckwheat is decreasing very fast. Under the situation, this variety can fit into their cropping systems as it is ultra early maturity and high yield.
9.	Description of the parents of the Hybrids	Selection was made from the population of EC321798
10.	Identifiable Distinguishing Morphological Characters	1. Leaf size is small 2. Stem is green and more stout 3. Peduncle and cyme are longer 4. Seed shape is more round and triangular 5. The colour of grain is brown as compared to black of common types
11.	No. of days to Maturity	86 days (average)
12.	Reaction to Major Pests & Diseases	No major diseases and insects have been reported in buckwheat but occasionally leaf blight and powdery mildew have been noticed whenever there is high rainfall. It has shown moderate resistance to leaf blight at Almora and free from powdery mildew at Sangla
13.	Quality of Produce	Buckwheat grain colour in general is black, hence produce black flour. The grain colour of 'Himgiri' is brown and more suitable for making flour and its products. The protein content is 10.9% than the average content of 10.5%.
14.	Reaction of Stress (Special Characters)	It can tolerate extreme cold environment of cold arid region. Ultra early maturing thus take advantage of the remaining moisture of rainy season
15.	Area of Adoption	Higher and dry temperate region of Western Himalaya
16.	Production Conditions	1. It is best suited to light to medium textured, well-drained sandy loams. It does not grow well in heavy, wet soils or in soils that contain high levels of limestone. It produces better crop in comparatively marginal soils. It tends to lodge badly on soils high in nitrogen and also when there are heavy rains. 2. The crop is sown in April-May when a single crop is to be harvested and in August when grown as second crop 3. It is sown at 30cm between row-to-row and 8-10 cm plant-to-plant spacing with seeding rate of 40-50kg/ha
17.	Grain yield (tons/ha) 1.Potential 2.Average	1.50 t/ha 1.11 t/ha
18.	Remarks	Its grain are brown thus gives comparatively less black flour which is otherwise a major problem in bitter buckwheat. Hence, more suitable for making flour and its products.



S. No.	Name of variety	Description
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<b>III. VL Ugal-7</b>		
1.	Name of Cultivar	VL Ugal 7
2.	Species	<i>Fagopyrum esculentum</i> Moench
3.	Pedigree/Parentage	USDA material (USDA-1) collected from the Kukumseri Research Station of HPKV, Himachal Pradesh
4.	Developing Centre	Vivekananda Parvatiya Krishi Anusandhan Sansthan (ICAR), Almora-263601-Uttarakhand
5.	Contribution of Persons in Evolving this Variety	<b>Development</b> Dr. Devendra Mohan, Dr. K.D. Koranne, Shri H.C. Joshi, Shri G. S. Bisht <b>Evaluation</b> Sri. H.C. Joshi (Quality), Dr. G.C. Upreti (Pathology)
6.	Year	1992
7.	Notification 1. Number 2. Date	814 (E) 4.11.1992
8.	Description of Variety/Hybrid	
	Plant height	105 cm
	Days to flowering	25-30 days
	Flower colour	White
	100 seed weight	2.3
	Seed colour	Black
9.	Description of the parents of the Hybrids	N.A.
10.	Identifiable Distinguishing Morphological Characters	Extra early (Flowering within a month in valley areas) Very bold black winged seeds White flowers
11.	No. of days to Maturity	55-65 days (Extra Early)
12.	Reaction to Major Pests & Diseases	There is no serious threats of any disease in buckwheat. VL Ugal 7 has shown minimum disease incidence of powdery mildew and viral infections. No insect problem has been reported so far in buckwheat.
13.	Quality of Produce	Protein content 13.23 %
14.	Reaction of Stress (Special Characters)	N.A.
15.	Area of Adoption	Uttarakhand hills especially mid hills
16.	Production Conditions	Rainfed kharif (VL Ugal 7 is the only variety found suitable for planting any time between spring to late kharif. In midhills, spring planting of VL 7 exhibits luxuriant growth and durations is enhanced by 15-20 days. In late kharif planting (August), plant height gets restricted and there is better seed setting, without any shattering, which results in higher grain yield than normal kharif (June) planting. Grain yields in March and August plantings has been found better than June planting.
17.	Grain yield (tons/ha) 1. Potential 2. Average	1.52 t/ha 0.82 t/ha
18.	Remarks	Being self incompatible crop, seed production require isolation

S. No.	Name of variety	Description
<b>IV. PRB-9001 (PRB-1)</b>		
1.	Name of Cultivar	PRB-1
2.	Species	<i>Fagopyrum esculentum</i>
3.	Pedigree/Parentage	Selection from Ranichauri collection
4.	Developing Centre	GBPUA&T, Hill Campus Ranichauri
5.	Contribution of Persons in Evolving this Variety	Dr. M. Dutta, Dr. Rajendra Prasad, Dr. G. C. Saini and Dr. P. L. Gautam
6.	Year	1997 by CVRC
7.	Notification 1. Number 2. Date	401(E) 15.05.1998
8.	Description of Variety/Hybrid	Tall (130 cm) highly branched plant, stem purple coloured, leaves dark green, bold grain
9.	Description of the parents of the Hybrids	Not applicable
10.	Identifiable Distinguishing Morphological Characters	Very tall (130 cm) plant, purple coloured stem with long internodes, medium maturing (120 days), about 15 days earlier than the national check, Himpriya, flower pinkish white, bold, angular, light brown seeds with high protein (11.4%) content
11.	No. of days to Maturity	100-110 days
12.	Reaction to Major Pests & Diseases	Tolerant to major pests and disease, no damage to seeds within two years of storage
13.	Quality of Produce	Protein content in the seeds is 11.4% which is higher than those of Himpriya (9.2%) and VL 7 (10.8%)
14.	Reaction of Stress (Special Characters)	Good crop growth under acid soil condition
15.	Area of Adoption	Hill regions of Uttarakhand, Himachal Pradesh and North Eastern States
16.	Production Conditions	Low-input, rainfed condition
17.	Grain yield (tons/ha) 1. Potential 2. Average	2.3 t/ha 1.20 t/ha
18.	Remarks	---



S. No.	Name of variety	Description
<b>V. Sangla B-1</b>		
1.	Name of Cultivar	Sangla B 1
2.	Species	<i>Fagopyron tataricum L.</i>
3.	Pedigree/Parentage	Local germplasm
4.	Developing Centre	MAREC, Sangla, CSK Himachal Pradesh Krishi Vishvavidyalaya
5.	Contribution of Persons in Evolving this Variety	Dr. K.C. Dhiman, Dr. R.K. Chahota, Dr. S.S. Rana, Dr. S.R. Thakur, Dr. K.S. Thakur
6.	Year	2006
7.	Notification 1. Number 2. Date	1178(E) 20.07.2007
8.	Description of Variety/Hybrid	1. Area of adaptation: Mid and high hills of Himachal Pradesh and Uttaranchal 2. Production conditions: Suitable for growing in first fortnight of June 3. Growth habit: Determinate & bushy 4. Plant height(cm):Medium(118cm) 5. Days to flowering :Medium(57days) 6. Flower color: Small greenish flowers 7. Leaf color : Dark green 8. Stem color : Pinkish green 9. Plant color at maturity: Pinkish red 10 .Days to maturity: Medium(106) 11. Seed shape: Conical 12. Seed color: Brownish grey 13. Test weight(100-seed weight):Medium size(2.10g)
9.	Description of the parents of the Hybrids	Local germplasm
10.	Identifiable Distinguishing Morphological Characters	Determinate bushy growth habit Pinkish green stem
11.	No. of days to Maturity	106 days
12.	Reaction to Major Pests & Diseases	Resistant to powdery mildew under field conditions free from insect pest attack under field conditions
13.	Quality of Produce	Good & liked by farmers due to its uniform & bold size
14.	Reaction of Stress (Special Characters)	Not evaluated
15.	Area of Adoption	Mid and high hills of Himachal Pradesh and Uttaranchal
16.	Production Conditions	The variety is of medium height, medium maturity group, uniform in maturity and very responsive to fertilizers & timely sown
17.	Grain yield (tons/ha) 1. Potential 2. Average	1.27 t/ha
18.	Remarks	

### 3. FABA BEAN

S. No.	Name of variety	Description								
<b>I. VH-82-1 (Vikrant)</b>										
1.	Name of Cultivar	Fababean								
2.	Species	Fababean or Bakla or Broadbean ( <i>Vicia faba</i> )								
3.	Pedigree/Parentage	Pure line selection from material collected from the Meerut (U.P.) areas.								
4.	Developing Centre	CCS HAU, Hisar.								
5.	Contribution of Persons in Evolving this Variety	<table style="border: none;"> <tr> <td style="border: none;">V.P. Singh</td> <td rowspan="5" style="border: none; vertical-align: middle;">} Investigators</td> </tr> <tr> <td style="border: none;">Y.S. Tomer</td> </tr> <tr> <td style="border: none;">S.N. Gupta</td> </tr> <tr> <td style="border: none;">G.D. Sharma</td> </tr> <tr> <td style="border: none;">P.K. Verma</td> </tr> <tr> <td style="border: none;">M.K. Deen</td> <td style="border: none;">} Collaborator.</td> </tr> </table>	V.P. Singh	} Investigators	Y.S. Tomer	S.N. Gupta	G.D. Sharma	P.K. Verma	M.K. Deen	} Collaborator.
V.P. Singh	} Investigators									
Y.S. Tomer										
S.N. Gupta										
G.D. Sharma										
P.K. Verma										
M.K. Deen	} Collaborator.									
6.	Year	1999								
7.	Notification 1. Number 2. Date	425(E) 08.06.1999								
8.	Description of Variety/Hybrid	Pure line selection from materials collected from Meerut (U.P.) areas.								
9.	Description of the parents of the Hybrids									
10.	Identifiable Distinguishing Morphological Characters	Vikrant (VH-82-1) is medium in growth habit, erect plant type, green in colour, bearing white flower with a black dot on the keel. Seed shape is roundish, smooth having slightly depressed surface with a black hilum and creamy in colour.								
11.	No. of days to Maturity	145 days.								
12.	Reaction to Major Pests & Diseases	There are no diseases and pest problems observed so far in this variety from any part of the country. Moreover, there is very little area under the crop being new one.								
13.	Quality of Produce	Protein content in the seed of this variety is 24.85% and its seed can be used both by human beings and as a cattle feed.								
14.	Reaction of Stress (Special Characters)	Its has more tolerance to Cl <sup>-</sup> an SO <sup>4</sup> <sup>2-</sup>								
15.	Area of Adoption	It is suitable for both semi-irrigated and irrigated areas. Particularly in areas where chickpea is likely growing out of cultivation.								
16.	Production Conditions	Optimum sowing time is October (Preferably second fortnight). Sowing may be done by Pora or Kera method in rows spaced 20 cm. apart with the seed rate of 100-125 Kg/ha. Apply N and P in the ratio of 40:60 Kg/ha. One pre sowing and two to three post sowing irrigations are sufficient. Harvest at 75-80 % pods maturity to avoid shattering. It can be grown in paddy areas.								
17.	Grain yield (tons/ha) 1. Potential 2. Average	3.5-4.0 t/ha 1.46 t/ha								
18.	Remarks	It is the first variety of Bakla released at National level. It is suitable for both semi-irrigated and irrigated areas. Particularly in areas where chickpea is likely growing out of cultivation. Being high in yield potential, its introduction is likely to increase overall pulses production of the country.								



## 4. RICEBEAN

S. No	Name of variety	Description
<b>I. RBL-1</b>		
1.	Name of Cultivar	RBL 1
2.	Species	<i>Vigna umbellata</i> (Thumb.) Ohwi & Ohashi
3.	Pedigree/ Parentage	Selection from Germplasm collected from District Nagaur, Rajasthan
4.	Developing Centre	PAU, Ludhiana
5.	Contribution of Persons in Evolving this Variety	Development : Bhupinder Singh Testing : H.S. Sekhon, Guriqbal Singh, Gurdip Singh, A.K. Saxena, B.S. Kooner, Poonam Sharma
6.	Year	1986
7.	Notification 1. Number 2. Date	165(E) 06.03.1987
8.	Description of Variety/Hybrid	RBL 1 flowers in 59 days and matures in 125 days. Plant type is semi erect producing twining branches. Pods are 10-12 cm long and light green in colour. It bears on an average 105.3 pods/plant and each pod contains 9.2 seeds. Seed size is 6.5 g/100 seed. Seeds are light green with smooth seed coat.
9.	Description of the parents of the hybrids	NA
10.	Identifiable Distinguishing Morphological Characters	Light green stem with short fine white hair and light green seeds with smooth seed coat.
11.	No. of days to Maturity	125
12.	Reaction to Major Pests & Diseases	Resistant to Mungbean Yellow Mosaic Virus (MYMV), Cercospora Leaf Spot (CLS) and Bacterial Leaf Spot (BLS) diseases. Moderately susceptible to root knot nematodes. Highly resistant to storage insect pests.
13.	Quality of Produce	Grains contain 20% protein and good culinary properties. Amino acid profile shows highest amount of methionine, lysine and histidine.
14.	Reaction of Stress (Special Characters)	Sandy water logged and saline alkaline soils not suitable for its cultivation.
15.	Area of Adoption	Tribal regions of North Eastern Hills, Western and Eastern ghats in Peninsular India, often in hilly tracts
16.	Production Conditions	It requires hot and humid climate. It does well in the temp. range of 18° to 37°C. It should be grown on relatively well drained fertile, loamy to sandy loam soils.
17.	Grain yield (tons/ha) 1. Potential 2. Average	- 1.6 t/ha
18.	Remarks	-



S. No	Name of variety	Description
<b>II. RBL-6</b>		
1.	Name of Cultivar	RBL 6
2.	Species	<i>Vigna umbellata</i> (Thumb.) Ohwi & Ohashi
3.	Pedigree/ Parentage	Selection from Germplasm collected from District Nagaur, Rajasthan
4.	Developing Centre	PAU, Ludhiana
5.	Contribution of Persons in Evolving this Variety	Development: Bhupinder Singh Testing: H.S. Sekhon, Guriqbal Singh, Gurdip Singh, Inderjit Singh, A.K. Saxena, B.S. Kooner, Poonam Sharma
6.	Year	2001
7.	Notification 1. Number 2. Date	92(E) 02.02.2001
8.	Description of Variety/Hybrid	RBL 6 flowers in 55 and matures in 116 days. Average plant height is 92 cm. Pods are 6.5-7.5 cm long, glabrous and slightly curved. It bears on an average 105 pods/plant and each pod contains 6.2 seeds. Seed size is 6.2 g/100 seeds. Seeds are light green in colour and oblong in shape.
9.	Description of the parents of the hybrids	NA
10.	Identifiable Distinguishing Morphological Characters	Photosensitive, tall spreading and intertwining branches with profuse pod bearing. Seed colour is light green
11.	No. of days to Maturity	116
12.	Reaction to Major Pests & Diseases	It is resistant to MYMV and most of the other foliar diseases of mungbean and urdbean under field conditions. Sometimes minor sporadic incidence of <i>Macrophomina</i> , root rot/blight, CLS and root knot nematodes is observed. Root rot/blight and root knot nematodes incidence is more in sandy and loamy sand soils. Highly resistant to storage insect pests.
13.	Quality of Produce	Grain protein content is 20.52% and this variety has good culinary properties.
14.	Reaction of Stress (Special Characters)	Sandy water logged and saline alkaline soils not suitable for its cultivation.
15.	Area of Adoption	Tribal regions of North Eastern Hills, Western and Eastern ghats in Peninsular India, often in hilly tracts
16.	Production Conditions	It requires hot and humid climate. It does well in the temp. range of 18° to 37°C. It should be grown on relatively well drained fertile, loamy to sandy loam soils
17.	Grain yield (tons/ha) 1. Potential 2. Average	2.2 t/ha 1.33 t/ha
18.	Remarks	-



S. No	Name of variety	Description
<b>III. RBL-35</b>		
1.	Name of Cultivar	RBL 35
2.	Species	<i>Vigna umbellata</i> (Thumb.) Ohwi & Ohashi
3.	Pedigree/ Parentage	Selection from Germplasm collected from District Nagaur, Rajasthan
4.	Developing Centre	PAU, Ludhiana
5.	Contribution of Persons in Evolving this Variety	Development : Bhupinder Singh Testing: H.S. Sekhon, Guriqbal Singh, Gurdip Singh, Inderjit Singh, A.K. Saxena, B.S. Kooner, B.S. Malhi, Poonam Sharma
6.	Year	2003
7.	Notification 1. Number 2. Date	- -
8.	Description of Variety/Hybrid	RBL 35 flowers in 55 days and matures in 92 days. Average plant height is 82 cm. Pods are 6.5-7.0 cm long, glabrous and slightly curved. It bears on an average 95 pods/plant and each pod contains 6 to 8 seeds. Seed size is 6.2 g/100 seeds. Seeds are light greenish brown in colour and oblong in shape.
9.	Description of the parents of the hybrids	NA
10.	Identifiable Distinguishing Morphological Characters	It is photosensitive for flower initiation, semi-spreading with intertwining branches, narrow light green leaves and seed colour is light greenish brown.
11.	No. of days to Maturity	92
12.	Reaction to Major Pests & Diseases	It is resistant to MYMV and most of the other foliar diseases of mungbean and urdbean under field conditions. Highly resistant to storage insect pests.
13.	Quality of Produce	Grains contain 19.7% protein and good culinary properties
14.	Reaction of Stress (Special Characters)	Sandy water logged and saline alkaline soils not suitable for its cultivation.
15.	Area of Adoption	Tribal regions of North Eastern Hills, Western and Eastern ghats in Peninsular India, often in hilly tracts
16.	Production Conditions	It requires hot and humid climate. It does well in the temp. range of 18° to 37°C. It should be grown on relatively well drained fertile, loamy to sandy loam soils
17.	Grain yield (tons/ha) 1. Potential 2. Average	2.0 t/ha 1.2 t/ha
18.	Remarks	-



S. No	Name of variety	Description
<b>IV. RBL-50</b>		
1.	Name of Cultivar	RBL 50
2.	Species	<i>Vigna umbellata</i> (Thumb.) Ohwi & Ohashi
3.	Pedigree/ Parentage	Selection from Germplasm collected from District Nagaur, Rajasthan
4.	Developing Centre	PAU, Ludhiana
5.	Contribution of Persons in Evolving this Variety	Development: Bhupinder Singh Testing : H.S. Sekhon, Guriqbal Singh, Gurdip Singh, Inderjit Singh, A.K. Saxena, B.S. Kooner, B.S. Malhi, Poonam Sharma
6.	Year	2003
7.	Notification 1. Number 2. Date	- -
8.	Description of Variety/Hybrid	RBL 50 flowers in 55 days and height is 95 cm. Pods are 6.7 to 7.0 cm long glabrous and slightly curved. It bears on an average 110 pods/plant and each pod contains 6 to 9 seeds/pod. Seed size is 6.0 g/100 seeds. Seeds are fine green in colour and oblong in shape
9.	Description of the parents of the hybrids	NA
10.	Identifiable Distinguishing Morphological Characters	Photosensitive for flower initiation, tall spreading with inter twining branches, leaves are competitively dark green in colour and seeds colour is fine green
11.	No. of days to Maturity	101
12.	Reaction to Major Pests & Diseases	It is resistant to MYMV and most of the other foliar diseases of mungbean and urdbean under field conditions. Highly resistant to storage insect pests.
13.	Quality of Produce	Grains contain 20.0% protein and good culinary properties
14.	Reaction of Stress (Special Characters)	Sandy water logged and saline alkaline soils not suitable for its cultivation.
15.	Area of Adoption	Tribal regions of North Eastern Hills, Western and Eastern ghats in Peninsular India, often in hilly tracts
16.	Production Conditions	It requires hot and humid climate. It does well in the temp. range of 18° to 37°C. It should be grown on relatively well drained fertile, loamy to sandy loam soils
17.	Grain yield (tons/ha) 1. Potential 2. Average	2.0 t/ha 1.1 t/ha
18.	Remarks	-




S. No.	Name of variety	Description
<b>V. PRR-1</b>		
1.	Name of Cultivar	PRR-1
2.	Species	<i>Vigna umbellata</i>
3.	Pedigree/Parentage	Selection from Jagdhar collection
4.	Developing Centre	GBPUA&T, Hill Campus RaniChauri
5.	Contribution of Persons in Evolving this Variety	Dr. M. Dutta, Dr. Rajendra Prasad, Dr. G.C. Saini and Dr. P.L. Gautam
6.	Year	1997 by SVRC
7.	Notification 1. Number 2. Date	- -
8.	Description of Variety/Hybrid	Medium tall, indeterminate, less branched, stem light purple coloured, dark green leaves
9.	Description of the parents of the Hybrids	Not applicable
10.	Identifiable Distinguishing Morphological Characters	Tall (90 cm), intermediate, dark green medium maturing (140 days), medium bold bluish black lustrous seeds 19.4% protein, resistant to yellow mosaic virus, good nodulation even under acidic soil, 20.0% protein
11.	No. of days to Maturity	140 days
12.	Reaction to Major Pests & Diseases	Tolerant to Ascochyta disease and resistant to yellow mosaic disease and major pests
13.	Quality of Produce	Protein content in the grains (19.4%) is slightly higher that of the local (19.2%)
14.	Reaction of Stress (Special Characters)	Good crop growth under acid soil conditions
15.	Area of Adoption	Mid and high hills (1200-2200 m asl) of Uttarakhand
16.	Production Conditions	Timely sown, low-input, rainfed condition
17.	Grain yield (tons/ha) 1. Potential 2. Average	2.5 t/ha 1.5 t/ha
18.	Remarks	---



S. No.	Name of variety	Description
<b>VI. PRR-2</b>		
1.	Name of Cultivar	PRR-2
2.	Species	<i>Vigna umbellata</i>
3.	Pedigree/Parentage	Pure line selection from Dargi collection
4.	Developing Centre	GBPUA&T, Hill Campus RaniChauri
5.	Contribution of Persons in Evolving this Variety	Dr. M. Dutta, Dr. Rajendra Prasad, Dr. G.C. Saini and Dr. P.L. Gautam
6.	Year	1997 by CVRC
7.	Notification 1. Number 2. Date	401(E) 15.05.1998
8.	Description of Variety/Hybrid	Medium tall, indeterminate, less branched, stem light purple coloured with dark green leaves
9.	Description of the parents of the Hybrids	Not applicable
10.	Identifiable Distinguishing Morphological Characters	Tall (85 cm), intermediate plant having dark green leaves medium maturing (140 days), average pod length (12.5 cm), pod colour green, seeds bold (10g/100 seeds weight), shining, light yellow, 20.0% protein, very good nodulation even under acidic condition
11.	No. of days to Maturity	150 days
12.	Reaction to Major Pests & Diseases	Tolerant to Ascochyta leaf blight and resistant to yellow mosaic disease and major pests
13.	Quality of Produce	Protein content in the grains (20.0%) is slightly higher that of the local (19.2%) and PRR 1 (19.4%)
14.	Reaction of Stress (Special Characters)	Good crop growth under acid soil conditions
15.	Area of Adoption	Mid and high hills (1200-2200 m asl) of Uttarakhand
16.	Production Conditions	Low-input, rainfed codition
17.	Grain yield (tons/ha) 1. Potential 2. Average	2.3 t/ha 1.2 t/ha
18.	Remarks	----



## 5. WINGED BEAN

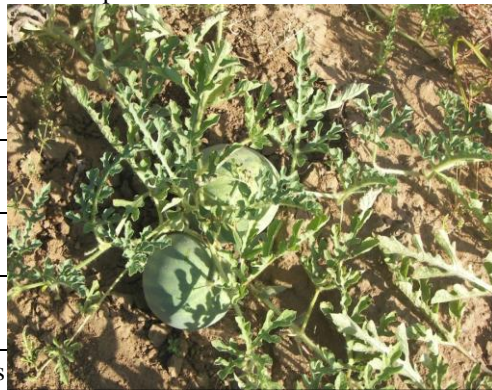
S. No.	Name of variety	Description
<b>I. AKWB-1</b>		
1.	Name of Cultivar	
2.	Species	<i>Psophocarpus tetragonolobus</i>
3.	Pedigree/Parentage	Landrace 'Chimbu' EC 114273
4.	Developing Centre	National Bureau of Plant Genetic Resources Regional Station, Dr. PDKV Campus, Akola.
5.	Contribution of Persons in Evolving this Variety	1. Dr. D. P. Patel, Scientist (S.G.), NBPGR RS, Akola. 2. Shri. T. A. Thomas, Principal Scientist & Ex. PC (UU&UEP), NBPGR, New Delhi. 3. Dr. Bhagmal, Project Coordinator (UU&UEP), New Delhi.
6.	Year	1991
7.	Notification 1. Number 2. Date	527(E) 16.08.1991
8.	Description of Variety/Hybrid	EC 114273 B i.e., Selection for germplasm accession EC 114273 ex Indonesia (Java).
9.	Description of the parents of the Hybrids	-
10.	Identifiable Distinguishing Morphological Characters	<p>Growth habit: Indeterminate (Pole type)            Plant height: &gt;2.5 m            Days to flower: 69            Days to first picking: 89            Foliage colour: Green            Stem colour: Green            Petiole colour: Green            Calyx colour: Green            Corolla colour: Blue            Terminal leaf shape: Ovate            Pod colour: Green            Pod length: 10.5 cm            Pod width: 1.2 cm            Peduncle length: 9.5 cm            Av. wt. of 10 green pods: 65 g            Seed colour: Purplish brown            Test weight: 27 g</p> 
11.	No. of days to Maturity	170 days
12.	Reaction to Major Pests & Diseases	
13.	Quality of Produce	
14.	Reaction of Stress (Special Characters)	
15.	Area of Adoption	All the Winged bean growing areas of the country.
16.	Production Conditions	Rainfed condition. It is advised to have one or two protective irrigations to ensure good yield.
17.	Grain yield (tons/ha) 1. Potential 2. Average	10.91 t/ha 7.00 t/ha (seed), 10.5 t/ha (pod)
18.	Remarks	





## 6. KALINGADA

S. No.	Name of variety	Description
<b>I. Gujarat Kanligada-1</b>		
1.	Name of Cultivar	Gujarat Kanligada-1 (GK-1)
2.	Species	<i>Citrullus lanatus</i> (Thumb.) Mansh
3.	Pedigree/Parentage	Selection from local material
4.	Developing Centre	SDAU, S. K. Nagar, Gujarat
5.	Contribution of Persons in Evolving this Variety	1) Prof. K.D. Patel 2) Dr. N.H. Patel 3) Dr. Y. Ravindrababu 4) Dr. I.S. Patel 5) Sh. B.M. Patel
6.	Year	2002
7.	Notification 1. Number 2. Date	Gazette Proceeding No. IQ/Seed-1/24-2000-1/5305-19. Date - 09/04/2002
8.	Description of Variety/Hybrid	Growth habit – surface creeper
9.	Description of the parents of the Hybrids	Not applicable
10.	Identifiable Distinguishing Morphological Characters	Length of main vine : 510-525 cm Appearance of first male flower : 44 DAS Appearance of first female flower : 49 DAS Node no. at which first male flower appears: 10 Node no. at which first female flower appears: 21 No of fruits per plant : 8 –12 Fruit girth : 41 cm No of seeds / fruit : 600 - 650 Test Weight : 6.213 g Seed shape : Oval shape with compressed at one end smooth T.S.S (%) : 3.4 Oil (%) : 37.1 Protein (%) : 18.0
11.	No. of days to Maturity	90-100 days
12.	Reaction to Major Pests & Diseases	Resistant to major
13.	Quality of Produce	Oil (%) : 37.1 Protein (%) : 18.0
14.	Reaction of Stress (Special Characters)	Drought resistant
15.	Area of Adoption	Karingada growing areas
16.	Production Conditions	Kharif season, 3mts x 1mts distance
17.	Grain yield (tons/ha) 1. Potential 2. Average	2.00 t/ha 1.02 t/ha
18.	Remarks	

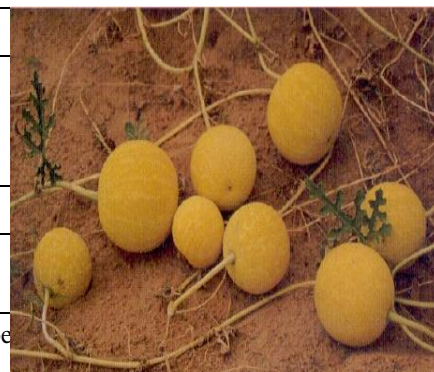


## 7. GUAYLE

S. No.	Name of variety	Description
<b>I. HG-8</b>		
1.	Name of Cultivar	Rubber
2.	Species	<i>Parthenium argentatum</i> Gray
3.	Pedigree/Parentage	Selection from introduction
4.	Developing Centre	CCS HAU, Hisar – 125004 (Haryana)
5.	Contribution of Persons in Evolving this Variety	Dr. R.S. Paroda, Dr. G.D. Sharma Sh. P.K. Verma Dr. M.S. Punia
6.	Year	1991
7.	Notification 1. Number 2. Date	Gazette Proceeding No. 17-47/91-SD (V) Item No. 1, S.No. 17 15.04.1991
8.	Description of Variety/Hybrid	
9.	Description of the parents of the Hybrids	
10.	Identifiable Distinguishing Morphological Characters	High vigour, profuse branching, tall and thick stemmed with excellent canopy
11.	No. of days to Maturity	730 to 910 days (2-2½ yrs.)
12.	Reaction to Major Pests & Diseases	It has more tolerance to root rot disease than other varieties. It is free from attack of insect-pests.
13.	Quality of Produce	It has rubber content 6 to 7% (in stem) and rubber yield about 1.5 t/ha.
14.	Reaction of Stress (Special Characters)	
15.	Area of Adoption	Arid and semi-arid zones of the country
16.	Production Conditions	
17.	Grain yield (tons/ha) 1. Potential 2. Average	1.5 t/ha
18.	Remarks	

## 8. TUMBA

S. No.	Name of variety	Description
<b>I. RMT 59</b>		
1.	Name of Cultivar	Mansha Marudhara
2.	Species	<i>Citrullus colocynthis</i>
3.	Pedigree/Parentage	Selection of local collection GP 59
4.	Developing Centre	Agricultural Research Station (SK Rajasthan Agricultural University) Mandor, Jodhpur (Raj.) 342304
5.	Contribution of Persons in Evolving this Variety	Dr. M.M.C. Bhandari, Dr. Z.S. Solanki, Dr. A.K. Bhansali, Dr. B.R. Beniwal and Dr. S.R. Kumhar
6.	Year	2005
7.	Notification 1. Number 2. Date	664 (E) 11.05.2005
8.	Description of Variety/Hybrid	
9.	Description of the parents of the Hybrids	NA
10.	Identifiable Distinguishing Morphological Characters	<p>Leaves green above and ashy below, densely hirsute.</p> <p>Fruits globular, variegated, green, mottled with yellowish blotches, arranged in undulating bands, yellow with pale white yellow rays emanating from base to apex with some greenish patches when fruits are young and yellow on maturity.</p> <p>Seeds are obovate, smooth, not margined with two oblique grooves on each surface near the slightly narrowed base.</p>
11.	No. of days to Maturity	104-135 days (Depending on rainfall)
12.	Reaction to Major Pests & Diseases	Field tolerance
13.	Quality of Produce	Oil content 20.6%
14.	Reaction of Stress (Special Characters)	Tolerance
15.	Area of Adoption	Tumba growing area of Rajasthan and Gujarat.
16.	Production Conditions	Arid and semi arid areas
17.	Grain yield (tons/ha) 1. Potential 2. Average	0.231 (seed yield), .5.1 (Fruit yield)
18.	Remarks	



## 9. KANKODA

S. No.	Name of variety	Description
<b>I. Indira Kankoda (RMF-37)</b>		
1.	Name of Cultivar	IC546546
2.	Species	<i>Momordica dioica</i>
3.	Pedigree/Parentage	The varieties was mass selected plants from local collection
4.	Developing Centre	Indira Gandhi Agricultural University, RMD College of Agriculture & Research Station, Krishi Nagar, Ambikapur – 497 001 (Chhatisgarh)
5.	Contribution of Persons in Evolving this Variety	Dr. M.K. Singh
6.	Year	2007
7.	Notification 1. Number 2. Date	Gazette Proceeding No.17-13/2006-SD.IV S. No. 2 Annexure II 11.07.2007
8.	Description of Variety/Hybrid	
9.	Description of the parents of the Hybrids	
10.	Identifiable Distinguishing Morphological Characters	
11.	No. of days to Maturity	It is a perennial crop
12.	Reaction to Major Pests & Diseases	It is resistant to all major diseases as observed during its evaluation & storage
13.	Quality of Produce	The consumption of green fruits and tubers, stimulate the activities of 'pancreas' and control the level of sugar. Its green fruits contain 12-14% protein and always sales at the higher price approximate of Rs. 20-60 per kg in the market.
14.	Reaction of Stress (Special Characters)	The variety has been evaluated under rainfed conditions under agro-climatic zones of Chhatisgarh, Uttar Pradesh, Jharkhand, Orissa and Maharashtra. It showed resistance to water stress and resistant to drought conditions.
15.	Area of Adoption	Chhatisgarh, Uttar Pradesh, Jharkhand, Orissa and Maharashtra
16.	Production Conditions	Rainfed conditions
17.	Grain yield (tons/ha) 1. Potential 2. Average	1.5-2.0 t/ha (green fruit yield)
18.	Remarks	



## 10. JATROPHA

S. No.	Name of variety	Description
<b>I. Chhatrapati (SDAUJ-1)</b>		
1.	Name of Cultivar	SDAUJ-1 (Chhatrapati)
2.	Species	<i>Jatropha curcus</i>
3.	Pedigree/Parentage	Mass selection from material collected indigenously from Maharashtra.
4.	Developing Centre	SDAU, S. K. Nagar, Gujarat
5.	Contribution of Persons in Evolving this Variety	1) Dr. Y. Ravindrababu 2) Sh. B. M. Patel 3) Dr. N. H. Patel 4) Dr D. A. Thakkar
6.	Year	2007
7.	Notification 1. Number 2. Date	122(E) 06.02.2007
8.	Description of Variety/Hybrid	Plat height = 187.25 cm after one year Foliage colour = light green Terminal leaves shows brownish red colour
9.	Description of the parents of the Hybrids	Not applicable
10.	Identifiable Distinguishing Morphological Characters	Growth has : Light green Leaf length : 9.8 cm Peduncle length : 12.95 cm Av. Days to heading : Comes to flowering in second year onwards Av. Days to maturity: Perennial species First flush comes in Nov.-Dec. harvest Second flush comes in March Av. Plant height : 187.25 cm but increases with age advancement Number of main branches per plant: 4.27 Number of bunches per plant: 42.53 Pod bearing :In clusters (av. 7-9 pods/cluster) Oil content: 32.10 % 100-seed weight: 44.76 gm Seed colour: Light black Seed length, breadth, thickness: 16.93 mm, 11.33 mm, 8.20 mm, resp.
11.	No. of days to Maturity	Perennial species, 187.25 cm after one year but increase with age advancement attains as height up to 8 feet.
12.	Reaction to Major Pests & Diseases	No pest and disease observed
13.	Quality of Produce	Oil content = 32.10%
14.	Reaction of Stress (Special Characters)	Drought tolerant
15.	Area of Adoption	Gujarat and Rajasthan
16.	Production Conditions	Suitable for normal planting under rainfed condition for kharif.
17.	Grain yield (tons/ha) 1. Potential 2. Average	1) 1.0 t/ha 2) 0.36 t/ha under rainfall condition after three years
18.	Remarks	