

		Sardar Krushinagar-Dantiwada Agricultural University	Sardar Krushinagar
29.	SKDAU	Sardar Krushinagar-Dantiwada Agricultural University	
30.	SKUAST	Sher-e-Kashmir Univ. of Agriculture Sciences & Technology, Jammu	Srinagar
31.	SUASTKSC	Sher-e-Kashmir University of Agricultural Science & Technology of Kashmir, Shalimar Campus	
32.	SVVU	Sri Venkateswara Veterinary University	Tirupati
33.	TNAU	Tamil Nadu Agricultural University	Coimbatore
34.	TVASU	Tamilnadu Veterinary & Animal Sciences University	Chennai
35.	UAS	University of Agricultural Sciences	Bangalore
36.	UAS	Univ. of Agri. Sciences	Dharwad
37.	UPPDDUP	U.P. Pandit Deen Dayal Upadhyaya Pashu Chikitsa Vigyan Viswa Vidyalaya evam Go Anusandhan Sansthan	Mathura
	CVVGAS	Uttar Banga Krishi Viswavidyalaya Pundi bari	Cooch Bihar
38.	UBKVP	West Bengal University of Animal & Fishery Sciences	Kolkata
39.	WBUAFS		

### Appendix 3—Other Universities & Organisations of Agriculture

1. CIMAP Central Institute of Medicinal & Aromatic Plants, Kukrail, Lucknow.
2. CCRI Central Coffee Research Institute, Chikmaglur, Karnataka.
3. CPPTI Central Plant Protection Training Institute, Hyderabad-30.
4. FRI Forest Research Institute, Dehradun.
5. BHU Banaras Hindu University, Varanasi, U.P.
6. NARI Nimbkar Agricultural Research Institute-Phaltan, Satara, Maharashtra.
7. PRII Potash Research Institute of India, Dharuheda Sector 19, Gurgaon, Haryana.
8. SDISS Shiela Dhar Institute of Soil Science, Allahabad.
9. School of Environmental Sciences, Jawaharlal Nehru University (JNU) New Delhi.
10. UPASI Tea Research Station, Cinchona, Coimbatore, Tamilnadu.
11. Tocklai Experimental Station, Jorhat-1, Assam.

### Appendix 4—Indian Council of Agricultural Research (ICAR) Institutes

- |          |   |                  |
|----------|---|------------------|
| 1. CARI  | Central Avian Research Institute              | Izatnagar (U.P.) |
| 2. CARI  | Central Agricultural Research Institute       | Port Blair       |
| 3. CAZRI | Central Arid Zone Research Institute          | Jodhpur          |
| 4. CIAE  | Central Institute of Agricultural Engineering | Bhopal           |

## Appendix

5. CIAH	Central Institute for Arid Horticulture	Bikaner
6. CIBA	Central Institute of Brackishwater aquaculture	Chennai
7. CIFRI	Central Inland Fisheries Research Institute	Barrackpore
8. CICR	Central Institute for Cotton Research	Nagpur
9. CIFA	Central Institute of Freshwater Aquaculture	Bhubaneswar
10. CIFE	Central Institute of Fisheries Education	Mumbai
11. CIIT	Central Institute of Fisheries Technology	Ernakulam, Kochi
12. CISH	Central Institute for Subtropical Horticulture	Lucknow
13. CIRB	Central Institute for Research on Buffaloes	Hisar
14. CIRCT	Central Institute of Research for Cotton Technology	Mumbai
15. CIRG	Central Institute for Research of Goats	Mukhdoom, Mathura
16. CIPHET	Central Institute of Post Harvest Engineering & Technology P.A.U.	Ludhiana
17. CMFRI	Central Marine Fisheries Research Institute	Ernakulam, Kochi
18. CPCRI	Central Plantation Crops Research Institute	Kasaragod
19. CPRI	Central Potato Research Institute	Shimla
20. CRIDA	Central Research Institute for Dryland Agriculture	Hyderabad
21. CRIJAF	Central Research Institute for Jute & Allied Fibres	Barrackpore
22. CRRI	Central Rice Research Institute	Cuttack
23. CSSRI	Central Soil Salinity Research Institute	Karnal
24. CSWCRTI	Central Soil and Water Conservation Research and Training Institute	Dehradun
25. CSWRI	Central Sheep and Wool Research Institute	Avikanagar (Raj.)
26. CTCRI	Central Tuber Crops Research Institute	Trirvanthapuram
27. CTRI	Central Tobacco Research Institute	Rajamundry
28. IARI	Indian Agricultural Research Institute	New Delhi
29. IASRI	Indian Agricultural Statistics Research Institute	New Delhi
30. IGFRI	Indian Grassland & Fodder Research Institute	Jhansi
31. IHR	Indian Institute of Horticultural Research	Bangalore
32. IIPR	Indian Institute of Pulse Research	Kanpur
33. IISR	Indian Institute of Sugarcane Research	Lucknow
34. IISR	Indian Institute of Spices Research	Marikunnu
35. IISS	Indian Institute of Soil Science	Bhopal
36. IIVR	Indian Institute of Vegetable Research	Varanasi
37. ILRI	Indian Lac Research Institute	Ranchi
38. IVRI	Indian Veterinary Research Institute	Izatnagar
39. NAARM	National Academy for Agricultural Research and Management	Hyderabad
40. NBAIM	National Bureau of Agriculturally Important Micro-organisms	Maunath Bhanjan
41. NBAGR	National Bureau of Animal Genetic Resources	Karnal
42. NBFGR	National Bureau of Fish Genetic Resources	Lucknow
43. NAPGR	National Bureau of Plant Genetic Resources	New Delhi
44. NBSSLUP	National Bureau of Soil Survey & Land Use Planning	Nagpur
45. NCAP	National Centre for Agricultural Economics & Policy Research	New Delhi
46. NCIPM	National Centre for Integrated Pest Management	New Delhi
47. NDRI	National Dairy Research Institute	Karnal
48. NIAMP	National Institute of Animal Nutrition & Physiology	Bangalore
49. NIRJAFT	National Institute of Research on Jute & Allied Fibre Technology	Kolkata
50. NRCDFP	National Research Centre for DNA Finger Printing, NBPGR	New Delhi

51. NRCPB	National Research Centre for Plant Biotechnology	New Delhi
52. NRCRM	National Research Centre for Rapeseed and Mustard	Sewar, Bharatpur
53. NRCWA	National Research Centre for Women in Agriculture	Bhubaneswar
54. SBI	Sugarcane Breeding Institute	Coimbatore
55. SPUC	Soybean Processing & Utilization Centre	Bhopal
56. VPKAS	Vivekanand Parvatiya Krishi Anusandhanshala	Almora
57. ICAR RCNEHR	ICAR Research Complex for NEH Region	Barapani
58. ICAR RCER	ICAR Research Complex for Eastern Region, Walmi Complex	Patna
59. ICARRCG	ICAR Research Complex for Goa	Goa

### Appendix 5—Some International Abbreviations/Acronyms

AARRO	Afro-Asian Rural Reconstruction Organization.
ACIAR	Australian Centre for International Agriculture Research.
AIT	Asian Institute of Technology P.O. No. 2754 Bangkok, Thailand 10501.
APWSS	Asian Pacific Weed Science Society.
ASA	American Society of Agronomy.
AVRDC	Asian Vegetable Research & Development Centre P.O. Box-42. Shanhua Tainan 74199, Taiwan.
BARC	Bangladesh Agricultural Research Council.
CAB (I)	Commonwealth Agricultural Bureau. (International Science, 1986).
CFTC	Commonwealth Fund for Technical Co-operation,
CGIAR	Consultative Group on International Agricultural Research, Washington (U.S.A.).
CIAT	Centro International de Agricultural Tropical (International Center for Tropical Agriculture) Coli Columbia (South America).
CIMMYT	Centro International de Mejoramiento de Maiz Trigo (International Center for the Improvement of Maize. Wheat & Barley etc.) Mexico.
CIP	Centro International de la Papa. (International Potao Center). Lima, Peru (S. America)
CSIRO	Commonwealth Scientific and Industrial Research Organisation-Near Perth-Australia.
CSSA	Crop Science Society of America.
ESCAP	Economical and Social Commission for Asia and the Pacific.
FAO	Food and Agriculture Organization of the United Nations, Rome (Italy).
IBPGR	International Bureau for Plant Genetic Resources, Rome, Italy.
IBRD	International Bank for Reconstruction and Development (The World Bank).
ICARDA	International Center for Agricultural Research in the Dry Areas, Aleppo, Syria.
ICID	International Commission on Irrigation and Drainage.
ICRAF	International Council for Research in Agroforestry, Nairobi, Kenya.
ICRISAT	International Crops Research Institute for the Semi Arid Tropics, Patancheru-A.P. India.
IDRC	International Development Research Centre, Canada.
IFAD	International Fund for Agriculture Development, Rome.
IFDC	International Fertilizer Development Centre, Muscle Shoals. Alabama (USA).
IFPRI	International Food Policy Research Institute-Washington, D.C. (USA).
IFWA	International Federation for Women in Agriculture.
IITA	International Institute of Tropical Agriculture, Ibadan, S. Nigeria.
ILCA	International Live Stock Centre for Africa.
ILRAD	International Laboratory for Research on Animal Diseases.
INRA	L'Institute National de la Recherche Agronomique.
INSFFER	International Network on Soil Fertility & Fertilizer Evaluation on Rice. (IRRI) Manila-Philippine.
IRDC	International Research & Development Council.
IRDP	International Rural Development Programme.
IRRI	International Rice Research Institute, Manila-Philippines.
ISNAR	International Service for National Agricultural Research, The Hague, Netherlands.
ISSS	International Society of Soil Science.

## Appendix

5

IUFRO	International Union of Forest Research Organisation.
IWIC	International Wheat Improvement Centre, Mexico.
IWSS ✓	International Weed Science Society.
LRDC	Land Resources Development Centre. (U.K.)
LURI	Land Use Research Institute, Aberdeen-Scotland.
PARC	Pakistan Agriculture Research Council.
SAARC ✓	South Asian Association for Regional Co-operation.
SIDA	Swedish International Development Agency.
UNDP ✓	United Nations Development Programme.
UNEP	United Nations Environment Programme.
UNESCO ✓	United Nations Educational, Scientific & Cultural Organization.
UNICEF ✓	United Nations International Childrens Emergency Fund.
UNFPA	United Nations Fund for Population Activities.
USAID	United State Agency for International Development.
USDA	United State Department of Agriculture, U.S.A.
WARDA	West Africa Rice Development Association, Monrovia, Liberia.
WMO ✓	World Meterological Organization.

## Appendix 6—Some General Abbreviations/Acronyms

AICRP	All India Co-ordinated Research Project.
AOAC	Association of Official Analytical Chemists.
APAS	Andhra Pradesh Academy of Science.
APEDA ✓	Agricultural & Processed Food Products Export Development Authority (India).
ARS ✓	Agricultural Research Service.
ASRB ✓	Agricultural Scientist Recruitment Board.
BARC ✓	Bhabha Atomic Research Center-Mumbai.
CCIS	Comprehensive Crop Insurance Scheme.
CSC	Central Seed Committee.
CSIR ✓	Council of Scientific & Industrial Research, New Delhi.
CSMCR	Central Salt & Marine Chemical Research Institute-Bhavnagar-CSIR.
CVRC	Central Variety Release Committee.
DARE ✓	Dept. of Agri. Research and Education.
DBT	Department of Bio-technology.
DST	Department of Science & Technology.
FAO ✓	Food & Agriculture Organization.
FCI ✓	Food Corporation of India.
ICDS ✓	Integrated Child Development Scheme.
ICFRE ✓	Indian Council of Forestry Research & Education—Dehradun.
IGNOU ✓	Indira Gandhi National Open Univ.—New Delhi-68
INSA	Indian National Science Academy—New Delhi.
IPCC	Inter Govermental Panel on Climate Change.
IRDP ✓	Integrated Rural Development Programme.
ISI	Indian Standard Institute.
ISWS ✓	Indian Society of Weed Science.
LEISA ✓	Low External Input & Sustainable Agriculture.
LLP ✓	Lab to Land Programme.
MPEDA	Marine Product Export Development Authority.
MOU	Memorandum of Understanding.
NAAS ✓	National Academy of Agriculture Science.
NABARD	National Bank for Agriculture & Rural Development.
NARP ✓	National Agricultural Research Project.
NARS ✓	National Agricultural Research System.
NBT	National Book Trust, New Delhi.
NCA ✓	National Commission on Agriculture.
NCAER	National Council of Applied Economic Research.
NCDC ✓	National Co-operative Development Corporation, New Delhi.

NCERT ✓	National Council of Educational Research & Training, New Delhi.
NDDB ✓	National Dairy Development Board.
NGO ✓	Non Government Organisation.
NPC	National Productivity Council.
NRL ✓	Nuclear Research Laboratory, IARI, New Delhi.
NSC ✓	National Seeds Corporation.
ORP ✓	Operational Research Project.
RWP ✓	Rural Work Programme.
SAU ✓	State Agricultural Universities.
SCERT	State Council of Educational Research & Training.
SVRC ✓	State Variety Release Committee.
TDC ✓	Tarai Development Corporation.
TMO ✓	Technology Mission on Oil-seeds.
UGC ✓	University Grant Commission.
WAPCOS	Water and Power Consultancy Service India Ltd.
WHO ✓	World Health Organization.
WLMTRI ✓	Water & Land Management Training Research Institute—Hyderabad.

**Appendix 7—Indian Agricultural Institute (ICAR-Directrates)**

DMR ✓	Directorate of Maize Research, New Delhi.
GOR ✓	Directorate of Oilseed Research, Rajendra Nagar, Hyderabad.
DRR ✓	Directorate of Rice Research, Rajendra Nagar, Hyderabad.
DSR ✓	Directorate of Seed Research, Kusmaur, Mau Nath Bhanjan.
DWR ✓	Directorate of Wheat Research, Karnal.
PDRC ✓	Project Directorate of Biological control, Bangalore.
PDCSR ✓	Project Directorate for Cropping Systems Research, Modipuram, Meerut.
PDP ✓	Project Directorate on Poultry, Hyderabad.

**Appendix 8—NRC-National Research Centre**

NRCAF ✓	National Research Centre for Agroforestry	Jhansi
NRCB ✓	National Research Centre for Banana	Thiruchirapalli
NRCC ✓	National Research Centre for Citrus	Nagpur
NRCC ✓	National Research Centre for Cashew	Puttur
NRCG ✓	National Research Centre for Grapes	Pune
NRCE ✓	National Research Centre for Equines	Hisar
NRCG ✓	National Research Centre for Groundnut	Junagadh
NRCL ✓	National Research Centre for Litchi	Muzaffarpur
NRCMAP	National Research Centre for Medicinal & Aromatic Plants	Anand
NRCM ✓	National Research Centre for Mushroom	Solan, H.P.
NRCO ✓	National Research Centre for Orchids	Pakyang (Sikkim)
NRCOG ✓	National Research Centre for Onion and Garlic	Pune
NRCOP ✓	National Research Centre for Oil Palm	Pedavegi, West Godavari
NRCP ✓	National Research Centre for Pomegranate	Solapur
NRCS ✓	National Research Centre for Sorghum	Hyderabad
NRCS ✓	National Research Centre for Soybean	Indore
NRCSS ✓	National Research Centre for Seed Spices	Ajmer
NRCWS ✓	National Research Centre for Weed Science	Jabalpur

**Zonal Co-ordinators**

Zone - I	PAU, Ludhiana	Zone - V	CRIDA, Hyderabad
Zone - II	Salt Lake, Kolkata	Zone - VI	CAZRI, Jodhpur
Zone - III	Barapani	Zone - VII	JNKVV, Jabalpur
Zone - IV	Kanpur	Zone - VIII	Hebbal, Bangalore

**Appendix****Appendix 9—Some Abbreviations/Acronyms of Crop Production**

ATER	Area Time Equivalent Ratio
CD	Critical Difference
CR	Competitive Ratio
CV	Cultivar
CO	Coimbatore
COJ	Coimbatore Jallandhar
COLK	Coimbatore Lucknow
COS	Coimbatore Shahjahanpur
DAS	Days after sowing
DAT	Days after transplanting
FCV	Flue Cured Virginia
HCA	Hydrocyanic Acid
HCN	Harvest Index
HY	High Yielding Variety—(Started in 1966-67)
HYV	Income Equivalent Ratio
IER	Leaf Area Index
LAI	Nuclear Polyhedrosis Virus
NPV	Net Assimilation Rate
NAR	(Indirect) Index
OM	Organic Matter
RVT	Relative Value Total
SCI	Simultaneous Cropping Index

**Appendix 10—Insecticide, Some other Abbreviations/Acronyms useful in Herbicides**

a.e.	acid equivalent
a.i.	active ingredient
cm.	centimeter
cu.	cubic
c.f.s.	cubic foot/second
gpm	gallon/minute
ha	hectare
ppmv	part per million by volume (V/v)
ppmw	part per million by weight (W/w)
psi.	pound/sq. inch
Sp. gr.	specific gravity
V/v	portion by volume
W/v	portion by weight/unit volume
W/w	portion by weight
ULV	ultra low volume concentrates
WP	wettable powder
WDP	water dispersible powder
EC	emulsifiable concentrates;
SP	soluble powder,
	D—Dust
	G—Granules

**Appendix 11—Some State Laboratories of Soil Testing**

State	Address of Soil Laboratory
Bihar	
1. Arrah	Soil Testing Laboratory, IADP, Arrah
2. Barauni	The Fertilizer Corporation of India, Barauni
3. Barauni*	The Fertilizer Corporation of India, Barauni
4. Dholi	Soil Testing Laboratory, Agril. Research Institute-Dholi
5. Hazaribagh	Soil Testing Laboratory, Agril. D.V.C., Hazaribagh

## Appendix

8. Naugong
9. Naugong\*
10. Powarkheda
11. Raipur
12. Rewa
13. Ujjain

### Rajasthan

1. Jaipur
2. Jaipur\*
3. Jodhpur
4. Kota
5. Kota
6. Sri Ganganagar

### Uttar Pradesh

1. Aligarh
2. Allahabad
3. Gorakhpur
4. Gorakhpur
5. Gorakhpur
6. Jhansi
7. Masauli
8. Meerut
9. Panki
10. Rai Bareilly
11. Varanasi

### Uttarakhand

1. Nainital
2. Rudrapur
3. Srinagar

### Delhi

1. Delhi
  2. New Delhi
- Krishi Pareekshani Vigyan Mandir, Najafgarh  
Chemistry Division I.A.R.I., New Delhi-12

## Appendix 12 Conversion ratio between raw material and processed products

Rice	Rice (cleaned) production	2/3 of paddy production
Cotton	Cotton lint production	1/3 of kapas production
Cotton Seed	Cotton seed production	2/3 of kapas production
	Oil to seeds crushed	14 to 18 per cent
Jute	Cake to seeds crushed	82 to 86 per cent
	100 yard of hessian	54 lbs of raw jute
	4148 yards of hessian	1011 ton of raw jute
	ton of hessian sacking	5.9 bales of raw jute (of 180 kg. each)
Groundnut	Kernel to nuts in shell	70 per cent
	Oils to nuts in shell	28 per cent
	Oil to kernels (crushed)	40 per cent
Sesame	Cake to kernels	60 per cent
	Oil to seeds crushed	40 per cent
	Cake to seeds crushed	60 per cent
Rape and Mustard	Oil to seed crushed	33 per cent

~~VM~~  
Linseed

Sugarcane

Soybean seed

Cake to seeds crushed	67 per cent
Oil to seeds crushed	37 per cent
Cake to seed crushed	63 per cent
Gur from cane crushed	10 per cent
Crystal sugar from gur refined (gur refineries)	62.4 per cent
Crystal sugar from cane crushed (cane factories)	9.97 per cent
Khanda sugar from gur refined	37.5 per cent
Molasses from cane crushed	3.5 per cent
Cane trash from cane harvested	10.0 per cent
Oil from soybean crushed	18 per cent
Meal " seed "	73 per cent
Hull " " "	8 per cent
Wastage	1 per cent

### Appendix 13—Conversion table

#### Area

1 hectare	= 2.47109 acre	1 square mile	= 2.5899 km²
1 acre	= 0.4047 hectare	1 square mile	= 640 acre
1 acre	= 43560 square feet		= 2.59 square km
1 acre	= 4840 square feet	1 square yard	= 0.836 square m
1 square m	= 1.959 square yard	1 square inch	= 6.45 square cm
1 square feet	= 144 square inch	1 square cm	= 0.155 square inch

#### Distance

1 inch	= 2.54 cm	1 cm	= 0.3937 inch
1 feet	= 0.3048 m	1 m	= 1.0936 yard
1 yard	= 0.9144 m	1 km	= 0.62137 mile
1 mile	= 1.6093 km		= 3280 feet
		1 m	= 3.28 feet
			= 39.07 inch

#### Weight

1 tola	= 11.6638 g	1 Long Ton = 20 hundred wt. (British Ton)	
1 ounce	= 28.3495 g		= 2240 lb
1 pound	= 0.453 kg		= 1.01605 Metric Tones
1 maund	= 0.373242 quintal		
1 kg	= 2.20462 lb	1 Short Ton	= 2000 lb
	= 1.07169 seets.	1 Metric Tones	= 1000 kg
1 quince	= 0.0625 lb		= 0.9842 long ton
1 seer	= 2.0568 lb		= 55.7923 Mds
1 lb	= 453.6 g	1 lbs/acre	= 1.209 kg/ha
1 md/acre	= 0.6220 q./ha		
1 masha	= 1 gm		
1 tola	= 12 gm		
1 ounce	= 60 gm		
1 kg	= 80 tola		

#### Volume

1 Gallon	= 4.5496 liter	1 Pint = 0.56824 liter
1 Liter	= 1000 ml.	1 Liter = 1.75980 pint
— — —	= 0.29979 (Gallon imperial)	

**Appendix**

1 cubic inch	= 16.38 cubic cm
1 cubic feet	= 1782 cubic inch = 0.028 cubic meter
1 acre feet of soil	= 4 million lb
1 cubic meter	= 35.32 cu ft = 219.97 gallon = Nearly one ton
1 ton of water	= 224 gallon = 2240 lb = 35.9 cu ft
1 acre inch	= 3630 cu ft of water = 22660.275 gallon = 101.64 ton
1 mm/hectare	= metric ton = 1000 kg of water
1 cusec of water	= cubic foot/second = 6.25 gallon/second
1 cusec per day	= 1 acre inch/hour = 23500 gallon/hour = 0.09 million cubic ft = 1.98 acre feet = 2446.57 cubic meter = 0.54 million gallon

**Temperature**

$$\text{Temp. } {}^{\circ}\text{C} = (\text{Temp. } {}^{\circ}\text{F} - 32) \times 5/9$$

$$\text{Temp. } {}^{\circ}\text{F.} = (\text{Temp. } {}^{\circ}\text{C} \times 9/5) + 32$$

**M Appendix 14—Banned Pesticides in India (Pesticide) from 30-9-1992**

Dibromochloropropane-DBCP
Endrin
Pentachloronitrobenzene-PCNB
Pentachlorophenol-PCP
Toxaphene
Ethyl Parathion
Chlordane
Heptachlor
Aldrin (w.e.f. 1.1.1994)
Paraquat-di-methyl sulphate
Nitrofen
Tetradifon

**W Appendix 15—List of pesticides restricted for use in India as on 30.9.1992**

S.No.	Name of Pesticide	Type of Restriction imposed
1.	Aluminium phosphide	To be sold only to Govt. organizations.
2.	BHC	Use on vegetables, fruits, oilseeds crops and preservation of food grains is banned.
3.	Chlorbenzilate	Banned in agriculture.
4.	Captafol	Banned as foliar spray. To be used as seed dresser.
5.	DDT	Banned in agriculture.
6.	Dieldrin	Restricted to locust control in desert areas by Govt. of India.
7.	Ethylene dibromide (EDB)	Restricted as a fumigant for foodgrains through Govt. only.
8.	Methyl bromide	To be used as fumigant.
9.	Sodium Cyanide	Restricted for fumigation of cotton bales by Govt. of India
10.	PMA	Use prohibited in India w.e.f. 1.1.1993. produced only for export.
11.	Lindane	Lindane formulation generating smoke for indoor use is prohibited in India. It may be continued to be produced for control of insect-pests of field crops.
12.	Methyl parathion	Permitted for those crops only where honeybees are not acting as a pollinators.
13.	Nicotine sulphate	Prohibited in India, produced for export only.