

SUMMARY SHEET



Introduction to Agriculture



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1. Agriculture

1.1 Definition or Meaning

- ✓ The word '**Agriculture**' is derived from the **Latin word 'Ager'** means “**Land or Soil**” and '**Culture**' means “**cultivation**”, which in simple terms means the science and Art of producing crops and livestock for economic purpose and for the use of mankind.
- ✓ The basic aim of agriculture is to raise stronger and more fruitful crops and plants and to help them for their growth by improving the soil and supplying the water.
- ✓ **Agriculture can be termed as a science, an art and business altogether**

1.2 History of Agriculture

- ✓ Agriculture is the **milestone in the history of human civilization**.
- ✓ **Modern farming** began around the **18th century** in what is generally referred to as “**The British Agricultural Revolution**”

1.3 Where does Agriculture stand today?

- ✓ “**Sustainability**” is to **balance several conflicting needs - to protect the environment** and to instigate practices that protects it **while providing for the growing needs of the future population growth**.

1.4 What about Agriculture in India?

- ✓ **A major population of India is dependent on agriculture for their livelihood.**
- ✓ Indian agriculture is not an exception for this, today India is facing two main problem concerned with agriculture.
 - Meeting the increasing demand of food and supplying agro products for ever increasing population
 - Uneven development of agriculture and changing pattern of agriculture land use.
- ✓ The study of land and agriculture from the geographical point of view gained more importance after 1950.
- ✓ **Green Revolution, in mid 1960s, brought a remarkable change in the field of agriculture.**

Important Chronological Events in Agriculture in India

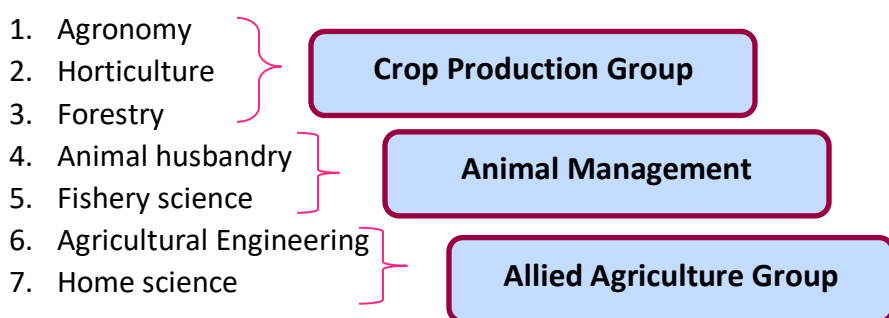
15 Century A.D.	Cultivation of sweet orange, sour orange, wild brinjal, Pomegranate
16 Century A.D.	Introduction of several crops to India by Portuguese. They are potato, Sweet Potato, Arrow Root, Cassava, Tomato, Chillis, Pumpkin, Papaya, Pineapple, Guava, Custardapple, Groundnut, Cashewnut, Tobacco, American cotton, rubber
1550 A.D.	Portuguese introduced grafting technique in horticulture

1875	Indian Meteorological Department established at Pune (Maharashtra)
1880	Famine Commission appointed
1901	Appointed First Irrigation Commission (chaired by Sir Colin Scott-Moncrieff to draw up a comprehensive irrigation plan for India.)
1905	Established the imperial (now known as Indian) Agricultural Research Institute at Pusa, Bihar shifted to new Delhi in 1936.
1926	Appointment of Royal Commission on Agriculture (RCA) headed by Lord Linlithgow. It was responsible for giving recommendation to dug canals, lay roads. Submitted the report in 1928.
1929	Establishment of Imperial (now Indian) Council of Agricultural Research (ICAR), New Delhi
1943	Great Bengal Famine - <i>Cochliobolus miyabeanus</i> (formerly known as <i>Helminthosporium oryzae</i>) is a fungus that causes brown spot disease in rice.
Oct. 1958	NAFED (National Agricultural Cooperative Marketing Federation)
1960	First agricultural university in India, G.B. Pant University of Agriculture and Technology at Pantnagar, on the pattern of land grant system of USA
1966-67	Green Revolution
1970	National Commission on Agriculture
1 st Nov 1973	Establishment of Agricultural Scientists Recruitment Board (ASRB) based on the recommendation of G. Gadkar report
1973-74	Drought Prone Areas Programme (DPAP)
1974	Command Area Development Authority (CADA)
1974	Minimum Needs Programme (MNP)
1974	Krishi Vigyan Kendra (KVK). Mohan Singh Mehta committee recommended (First at Pondicherry, under TNAU, Coimbatore)
1976	National Academy of Agricultural Research and Management (NAARM), Hyderabad
1977-78	Desert Development Programme (DDP)
April 1978	Integrated Rural Development Program (IRDP) launched in financial year 1978 and extended through out India in 1980
1979	Training for Rural Youth for Self-Employment (TRYSEM)
Jan 1979	National Agricultural Research Project (NARP)
1 st June 1979	Lab to Land Programme (LLP), on the ICAR golden jubilee year
1980	National Agricultural Research Project (NARP)
1982	Council for Advancement of Peoples Action and Rural Technology (CAPART)
12 th July 1982	National Bank for Agriculture and Rural Development (NABARD)
1983	National Agricultural Extension Project (NAEP)
1983	Rural Landless Employment Guarantee Programme (RLEGP)
1985	Crop Insurance Scheme (CIS) now National Agricultural Insurance Scheme (NAIS)
1986	Technology Mission on Oilseeds (TMO)

1986	National Watershed Development Programme for Rainfed Areas
1986	National Agricultural Research Project (Phase 2)
1988	Special Food Production Programme (SFPP)
1989	Integrated Watershed Development Programme
1995	Institutional Village Linkage Programme (IVLP)
1996	Establishment of National Gene Bank at New Delhi
1998	National Agricultural Technology Project (NATP)
2004	National Food for Work Programme (NFWP)
2004	Inauguration of National Agricultural Science Complex (NASC) at New Delhi
2004	Marine Fishing Policy
2004	National Commission on Farmers constituted on November 18, 2004 under the chairmanship of Professor M.S. Swaminathan
July 2006	National Agricultural Innovation project (NAIP) Through World Bank
May 2005	National Horticulture Mission (NHM)
2006-07	National Bamboo Mission
2006	ICAR launched National Agricultural Innovation Project (NAIP) with financial support from World Bank
2006	National Rainfed Area Authority (NRAA) on 3.11.2006
August, 2007	National Food Security Mission (NFSM)
2014	NHM merged Mission for Integrated Development of Horticulture (MIDH)

1.5 Branches of Agriculture

✓ Agriculture is mainly **divided into following seven branches**



1.5.1 Agronomy:

✓ It deals with the production of various crops which includes Food crops, Fodder crops, Fibre crops, Sugar, Oilseeds, etc. The aim is to have better food production and how to control diseases.

1.5.2 Horticulture:

- ✓ It deals with the production of fruits, vegetables, flowers, ornamental plants, spices, condiments, and beverages. It is again divided into 8 types based on type of horticulture plants grown or operations conducted.
- 1. **Arboriculture:** Study of, and the selection, planting, care, and removal of, individual trees, shrubs, vines, and other perennial woody plants.
- 2. **Floriculture:** Production and marketing of floral crops. **Examples:** Roses, Jasmines, Lilies etc.,
- 3. **Landscape horticulture:** Production, marketing, and maintenance of landscape plants. **Examples:** *Berberis thunbergii*, *Paeonia lactiflora* etc.,
- 4. **Olericulture:** Includes the production and marketing of vegetables. **Examples:** Brinjal, Tomato etc.,
- 5. **Pomology:** Production and marketing of fruits. **Examples:** Apples, Mangoes etc.,
- 6. **Viticulture:** Production and marketing of grapes.
- 7. **Oenology:** All aspects of wine and winemaking.
- 8. **Postharvest Management:** Maintaining the quality of and preventing the spoilage of horticultural crops.

1.5.3 Forestry (Silviculture):

- ✓ It deals with production of large-scale cultivation of perennial trees for supplying wood, timber, rubber, etc. and also raw materials for industries.

1.5.4 Animal Husbandry:

- ✓ It deals with agricultural practice of breeding and raising livestock to provide food for humans and to provide power (draught) and manure for crops.

1.5.5 Fishery science (Pisciculture):

- ✓ It deals with practice of breeding and rearing fishes including marine and inland fishes, shrimps, prawns etc. to provide food, feed, and manure.

1.5.6 Agricultural Engineering:

- ✓ It deals with farm machinery for field preparation, inter-cultivation, harvesting and post harvest processing including soil and water conservation engineering and bioenergy.

1.5.7 Home Science:

It deals with application and utilization of agricultural produces in a better manner to provide nutritional security, including value addition and food preparation.

2. Important Agricultural Research Institutes

The Indian Council for Agriculture Research (Formerly known as Imperial Council of Agricultural Research)

Established: 16 July 1929

Ministry: Department of Agricultural Research and Education (DARE), Ministry of Agriculture, Government of India

Role: Coordinating and driving the national agricultural and horticultural along with veterinary and fisheries institutions forward, creating “National Agricultural Research System (NARS)”.

The National Agricultural Research System comprises the Indian Council of Agricultural Research (ICAR), other central research institutes, and national research centres set up by ICAR.

Note: Kindly understand, it has been observed that atleast one question is asked from this list every year in the exam. Hence please go through it thoroughly.

2.1 National Agricultural Research System

2.1.1 Deemed Universities - 4

Indian Agricultural Research Institute, New Delhi
National Dairy Research Institute, Karnal, Haryana
Indian Veterinary Research Institute, Izatnagar, Uttar Pradesh
Central Institute on Fisheries Education, Mumbai

2.1.2 Institutions – 65

S.No. Name of the Institute and its location

1	ICAR-Central Island Agricultural Research Institute, Port Blair, Andaman and Nicobar
2	ICAR-Central Arid Zone Research Institute, Jodhpur, Rajasthan
3	ICAR-Central Avian Research Institute, Izatnagar, Uttar Pradesh
4	ICAR-Central Inland Fisheries Research Institute, Barrackpore, West Bengal
5	ICAR-Central Institute Brackishwater Aquaculture, Chennai, Tamil Nadu
6	ICAR-Central Institute for Research on Buffaloes, Hissar, Haryana
7	ICAR-Central Institute for Research on Goats, Makhdoom, Mathura, Uttar Pradesh
8	ICAR-Central Institute of Agricultural Engineering, Bhopal, Madhya Pradesh
9	ICAR-Central Institute for Arid Horticulture, Bikaner, Rajasthan
10	ICAR-Central Institute of Cotton Research, Nagpur, Maharashtra
11	ICAR-Central Institute of Fisheries Technology, Cochin, Kerala
12	ICAR-Central Institute of Freshwater Aquaculture, Bhubaneswar, Odisha
13	ICAR-Central Institute of Research on Cotton Technology, Mumbai, Maharashtra
14	ICAR-Central Institute of Sub Tropical Horticulture, Lucknow, Uttar Pradesh
15	ICAR-Central Institute of Temperate Horticulture, Srinagar, Jammu and Kashmir
16	ICAR-Central Institute on Post harvest Engineering and Technology, Ludhiana, Punjab
17	ICAR-Central Marine Fisheries Research Institute, Kochi, Kerala
18	ICAR-Central Plantation Crops Research Institute, Kasargod, Kerala

19	ICAR-Central Potato Research Institute, Shimla, Himachal Pradesh
20	ICAR-Central Research Institute for Jute and Allied Fibres, Barrackpore, West Bengal
21	ICAR-Central Research Institute of Dryland Agriculture, Hyderabad, Telangana
22	ICAR-National Rice Research Institute, Cuttack, Odisha
23	ICAR-Central Sheep and Wool Research Institute, Avikanagar, Rajasthan
24	ICAR- Indian Institute of Soil and Water Conservation, Dehradun, Uttarakhand
25	ICAR-Central Soil Salinity Research Institute, Karnal, Haryana
26	ICAR-Central Tobacco Research Institute, Rajahmundry, Andhra Pradesh
27	ICAR-Central Tuber Crops Research Institute, Trivandrum, Kerala
28	ICAR-ICAR Research Complex for Eastern Region, Patna, Bihar
29	ICAR-ICAR Research Complex for NEH Region, Barapani, Meghalaya
30	ICAR-Central Coastal Agricultural Research Institute, Ela, Old Goa, Goa
31	ICAR-Indian Agricultural Statistics Research Institute, New Delhi
32	ICAR-Indian Grassland and Fodder Research Institute, Jhansi, Uttar Pradesh
33	ICAR-Indian Institute of Agricultural Biotechnology, Ranchi, Jharkhand
34	ICAR-Indian Institute of Horticultural Research, Bengaluru, Karnataka
35	ICAR-Indian Institute of Natural Resins and Gums, Ranchi, Jharkhand
36	ICAR-Indian Institute of Pulses Research, Kanpur, Uttar Pradesh
37	ICAR-Indian Institute of Soil Sciences, Bhopal, Madhya Pradesh
38	ICAR-Indian Institute of Spices Research, Calicut, Kerala
39	ICAR-Indian Institute of Sugarcane Research, Lucknow, Uttar Pradesh
40	ICAR-Indian Institute of Vegetable Research, Varanasi, Uttar Pradesh
41	ICAR-National Academy of Agricultural Research & Management, Hyderabad, Telangana
42	ICAR-National Institute of Biotic Stresses Management, Raipur, Chhattisgarh
43	ICAR-National Institute of Abiotic Stress Management, Malegaon, Maharashtra
44	ICAR-National Institute of Animal Nutrition and Physiology, Bengaluru, Karnataka
45	ICAR-National Institute of Natural Fibre Engineering and Technology, Kolkata,
46	ICAR-National Institute of Veterinary Epidemiology and Disease Informatics, Hebbal, Bengaluru
47	ICAR-Sugarcane Breeding Institute, Coimbatore, Tamil Nadu
48	ICAR-Vivekananda Parvatiya Krishi Anusandhan Sansthan, Almora, Uttarakhand
49	ICAR-Central Institute for Research on Cattle, Meerut, Uttar Pradesh
50	ICAR-National Institute of High Security Animal Diseases, Bhopal, Madhya Pradesh
51	ICAR-Indian Institute of Maize Research, Ludhiana, Panjab
52	ICAR- Central Agroforestry Research Institute, Jhansi, Uttar Pradesh
53	ICAR-National Institute of Agricultural Economics and Policy Research, New Delhi
54	ICAR- Indian Institute of Wheat and Barley Research, Karnal, Haryana
55	ICAR- Indian Institute of Farming Systems Research, Modipuram, Uttar Pradesh
56	ICAR- Indian Institute of Millets Research, Hyderabad, Telangana
57	ICAR- Indian Institute of Oilseeds Research, Hyderabad, Telangana
58	ICAR- Indian Institute of Oil Palm Research, Pedavegi, West Godavari, Andhra Pradesh
59	ICAR- Indian Institute of Water Management, Bhubaneshwar, Odisha
60	ICAR-Indian Institute of Rice Research, Hyderabad, Telangana
61	ICAR- Central Institute for Women in Agriculture, Bhubaneshwar, Odisha

62	ICAR-Central Citrus Research Institute, Nagpur, Maharashtra
63	ICAR-Indian Institute of Seed Research, Mau, Uttar Pradesh
64	ICAR-Indian Agricultural Research Institute, Hazaribag , Jharkhand
65	ICAR-National Institute for Plant Biotechnology, New Delhi

2.1.3 National Research Centres – 14

S No	Name of the Research Centre and its location
1	ICAR-National Research Centre for Banana, Tiruchirappalli, Tamil Nadu
2	ICAR-National Research Centre for Grapes, Pune, Maharashtra
3	ICAR-National Research Centre for Litchi, Muzaffarpur, Bihar
4	ICAR-National Research Centre for Pomegranate, Solapur, Maharashtra
5	ICAR-National Research Centre on Camel, Bikaner, Rajasthan
6	ICAR-National Research Centre on Equines, Hisar, Haryana
7	ICAR-National Research Centre on Meat, Hyderabad, Telangana
8	ICAR-National Research Centre on Mithun, Medziphema, Nagaland
9	ICAR-National Research Centre on Orchids, Pakyong, Sikkim
10	ICAR-National Research Centre on Pig, Guwahati, Assam
11	ICAR-National Research Centre on Seed Spices, Ajmer, Rajasthan
12	ICAR-National Research Centre on Yak, West Kameng, Arunachal Pradesh
13	ICAR-National Centre for Integrated Pest Management, New Delhi
14	Mahatma Gandhi Integrated Farming Research Institute , Motihari, Bihar

2.1.4 National Bureaus - 6

S No	Name of the Bureau and its location
1	National Bureau of Plant Genetics Resources, New Delhi
2	National Bureau of Agriculturally Important Micro-organisms, Mau, Uttar Pradesh
3	National Bureau of Agriculturally Important Insects, Bangalore, Karnataka
4	National Bureau of Soil Survey and Land Use Planning, Nagpur, Maharashtra
5	National Bureau of Animal Genetic Resources, Karnal, Haryana
6	National Bureau of Fish Genetic Resources, Lucknow, Uttar Pradesh

2.1.5 Directorates/Project Directorates – 13

S No	Name of the Directorate and its location
1	ICAR-Directorate of Groundnut Research, Junagarh, Gujarat
2	ICAR-Directorate of Soybean Research, Indore, Madhya Pradesh
3	ICAR-Directorate of Rapeseed & Mustard Research, Bharatpur, Rajasthan
4	ICAR-Directorate of Mushroom Research, Solan, Himachal Pradesh
5	ICAR-Directorate on Onion and Garlic Research, Pune, Maharashtra
6	ICAR-Directorate of Cashew Research, Puttur, Karnataka
7	ICAR-Directorate of Medicinal and Aromatic Plants Research, Anand, Gujarat

8	ICAR-Directorate of Floricultural Research, Pune, Maharashtra
9	ICAR-Directorate of Weed Research, Jabalpur, Madhya Pradesh
10	ICAR-Project Directorate on Foot & Mouth Disease, Mukteshwar, Uttarakhand
11	ICAR-Directorate of Poultry Research, Hyderabad, Telangana
12	ICAR-Directorate of Knowledge Management in Agriculture (DKMA), New Delhi
13	ICAR-Directorate of Cold Water Fisheries Research, Bhimtal, Nainital, Uttarakhand

***The ICAR institutes (all three categories (institute, National Research Centres and Directorates) have a defined organizational structure.**

2.1.6 All India Coordinated Research Projects – 59

In addition to its institute-based research, **ICAR promotes research schemes / projects in agriculture and allied areas to resolve location- specific problems. Examples: All India Coordinated Research Projects (AICRPs), Network projects and other projects.**

S No	Location of AICRPs in India
1	AICRP on Nematodes, New Delhi
2	AICRP on Maize, New Delhi
3	AICRP Rice, Hyderabad, Telangana
4	AICRP on Chickpea, Kanpur, Uttar Pradesh
5	AICRP on MULLARP, Kanpur, Uttar Pradesh
6	AICRP on Pigeon Pea, Kanpur, Uttar Pradesh
7	AICRP on Arid Legumes, Kanpur, Uttar Pradesh
8	AICRP on Wheat & Barley Improvement Project, Karnal, Haryana
9	AICRP Sorghum, Hyderabad, Telangana
10	AICRP on Pearl Millets, Jodhpur, Rajasthan
11	AICRP on Small Millets, Bangalore, Karnataka
12	AICRP on Sugarcane, Lucknow, Uttar Pradesh
13	AICRP on Cotton, Coimbatore, Tamil Nadu
14	AICRP on Groundnut, Junagarh, Gujarat
15	AICRP on Soybean, Indore, Madhya Pradesh
16	AICRP on Rapeseed & Mustard, Bharatpur, Rajasthan
17	AICRP on Sunflower, Safflower, Castor, Hyderabad, Telangana
18	AICRP on Linseed, Kanpur, Uttar Pradesh
19	AICRP on Sesame and Niger, Jabalpur, Madhya Pradesh
20	AICRP on IPM and Biocontrol, Bangalore, Karnataka
21	AICRP on Honey Bee Research & Training, Hisar, Haryana
22	AICRP on Seed , Mau, Uttar Pradesh
23	AICRP on Forage Crops, Jhansi, Uttar Pradesh
24	AICRP on Fruits, Bangaluru, Karnataka
25	AICRP Arid Zone Fruits, Bikaner, Rajasthan
26	AICRP Mushroom, Solan, Himachal Pradesh
27	AICRP Vegetables including NSP vegetable, Varanasi, Uttar Pradesh

28	AICRP Potato, Shimla, Himachal Pradesh
29	AICRP Tuber Crops, Thiruvananthapuram, Kerala
30	AICRP Palms, Kasaragod, Kerala
31	AICRP Cashew, Puttur, Karnataka
32	AICRP Spices, Calicut, Kerala
33	AICRP on Medicinal and Aromatic Plants including Betelvine, Anand, Gujarat
34	AICRP on Floriculture, New Delhi
35	AICRP in Micro Secondary & Pollutant Elements in Soils and Plants, Bhopal, Madhya
36	AICRP on Soil Test with Crop Response, Bhopal, Madhya Pradesh
37	AICRP on Long Term Fertilizer Experiments, Bhopal, Madhya Pradesh
38	AICRP on Salt Affected Soils & Use of Saline Water in Agriculture, Karnal, Haryana
39	AICRP on Water Management Research, Bhubaneshwar, Odisha
40	AICRP on Ground Water Utilisation, Bhubaneshwar, Odisha
41	AICRP Dryland Agriculture, Hyderabad, Telangana
42	AICRP on Agrometeorology, Hyderabad including Network on Impact adaptation & Vulnerability of Indian Agri. to Climate Change, Telangana
43	AICRP Integrated Farming System Research, Modipuram including Network Organic Farming, Uttar Pradesh
44	AICRP Weed Control, Jabalpur, Madhya Pradesh
45	AICRP on Agroforestry, Jhansi, Uttar Pradesh
46	AICRP on Farm Implements & Machinery, Bhopal, Madhya Pradesh
47	All India Coordinated Research Project on Ergonomics and Safety in Agriculture, Bhubaneshwar, Odisha
48	AICRP on Energy in Agriculture and Agro Based Indus, Bhopal
49	AICRP on Utilization of Animal Energy (UAE), Bhopal, Madhya Pradesh
50	AICRP on Plasticulture Engineering and Technologies, Ludhiana, Punjab
51	AICRP on PHT, Ludhiana, Punjab
52	AICRP on Goat Improvement, Mathura, Uttar Pradesh
53	AICRP- Improvement of Feed Sources & Nutrient Utilization for raising animal production, Bangalore, Karnataka
54	AICRP on Cattle Research, Meerut, Uttar Pradesh
55	AICRP on Poultry, Hyderabad, Telangana
56	AICRP-Pig, Izzatnagar, Uttar Pradesh
57	AICRP Foot and Mouth Disease, Mukteshwar, Uttarakhand
58	AICRP ADMAS, Bangalore, Karnataka
59	AICRP on Home Science, Bhubaneshwar, Odisha

2.1.7 Network Projects - 20

S No.	Name of the project and its location
1	All India Network Project on Pesticides Residues, New Delhi
2	All India Network Project on Soil Arthropod Pests, Durgapura, Jaipur, Rajasthan

3	Network on Economic Ornithology, Hyderabad, Telangana
4	Network on Agricultural Acarology, Bangalore, Karnataka
5	All India Network Project on Rodent Control, Jodhpur, Rajasthan
6	All India Network Project on Underutilised Crops, New Delhi
7	All India Network Project on Jute and Allied Fibres, Barrackpore, West Bengal
8	Network Bio-fertilizers, Bhopal, Madhya Pradesh
9	All India Network Project on Tobacco, Rajahmundry, Andhra Pradesh
10	Network Project on Harvest & Post Harvest and Value Addition to Natural Resins & Gums, Ranchi, Jharkhand
11	Network project on Improvement of Onion & Garlic, Pune, Maharashtra
12	Network project on Animal Genetic Resources, Karnal, Haryana
13	Network Project on R&D Support for Process Upgradation of Indigenous Milk products for industrial application, Karnal, Haryana
14	Network Project on Buffaloes Improvement, Hisar, Haryana
15	Network Programme on Sheep Improvement, Avikanagar, Jaipur, Rajasthan
16	Network on Gastro Intestinal Parasitism, Izatnagar, Uttar Pradesh
17	Network Project on Conservation of Lac Insect Genetic Resources, Ranchi, Jharkhand
18	Network on Haemorrhagic Septicaemia, Izatnagar, Uttar Pradesh
19	Network Programme Blue Tongue Disease, Izatnagar, Uttar Pradesh
20	Network Project on Agricultural Bioinformatics and Computational Biology, New Delhi

2.1.8 Some Important Horticulture Research Institutes in India

Note: Kindly note, there might be a repetition of Horticulture Research Institutions in the list of ICAR research institutes or other organizations under ICAR.

Name of the Institute	Location
Central tuber crops research institute (CTCRI)	Thiruvananthapuram,
Central Potato Research Institute (CPRI)	Shimla, HP
Indian Institute of Vegetable Research (IIVR)	Varanasi, UP
Indian Institute of Horticultural Research (IIHR)	Bengaluru, Karnataka
Indian Institute of Spices Research (IISR)	Calicut, Kerala
Central Plantation Crops Research Institute (CPCRI)	Kasargod, Kerala
Central Institute for Sub-Tropical Horticulture (CISTH)	Lucknow, UP
Central Institute for Arid Horticulture (National Research Center for Arid Horticulture)	Bikaner, Rajasthan
Central Arid Zone Research Institute	Jodhpur, Rajasthan
Central Institute of Medicinal and Aromatic Plants (CIMAP)	Lucknow, UP
Central Coffee Research Institute (CCRI)	Chickmagalur, Karnataka
National Research Centre for Medicinal & Aromatic Plants	Anand, Gujarat
National research Centre for Orchids	Pakyong, Sikkim

National Research Centre For Citrus	Nagpur, Maharashtra
National Research Centre for Oil Palm	Pedavegi, Andhra Pradesh
National Research Centre for Mushroom	Solan, Himachal Pradesh
National Research Centre for Cashew	Puttur, Karnataka
National Research Centre For Banana (NRCB)	Tiruchirapalli, Tamil Nadu
National Research Centre for Seed Spices	Ajmer, Rajasthan
National Research Centre For Onion and Garlic	Pune, Maharashtra
National Research Centre for Grapes	Pune, Maharashtra
National Research Centre for Litchi	Muzafarpur, Bihar
National Research Centre on Pomegranate	Solapur, Maharashtra
National Research Centre for Makhana	Patna, Bihar
Coffee Board	Bangalore, Karnataka
Coconut board	Kochi, Kerala
Coir board	Kochi, Kerala
Tea Board	Kolkata, West Bengal
Spices Board	Cochin, Kerala
National Medicinal Plants Board	New Delhi
National Horticulture Board (NHB)	Gurgaon, Haryana
National Bureau of Plant & Genetic Resources (NBPGR)	New Delhi
United Planters Association of South India (UPASI)	Coimbatore, Tamil Nadu
Tocklai Tea Research Centre (TRA)	Jorhat, Assam
Darjeeling Tea Research and Development Centre(DTRDC)	Kurseong, Darjeeling, West
Institute of Himalayan Bioresource Technology (IHBT)	Palampur, HP
Central Sericultural Research & Training Institute (CSRTI)	Mysore
Central Silk Board	Bangalore, Karnataka
Central Muga Eri Research & Training Institute	Jorhat, Assam

2.2 Important International Institutions on Agricultural Research

CIP	Centro Internacional da la Papa (International potato research institute (Lima, Peru, South America)
CIMMYT	Centro Internacional de Mejoramiento de Maiz y Trigo (International Centre for maize and Wheat development (Londress, Mexico)
IITA	International Institute for Tropical Agriculture, Ibadon in Nigeria, Africa
ICARDA	International Center for Agricultural Research in the Dry Areas (Aleppo, Syria)
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics (Pattancheru in Hyderabad, India)
IIMI	International Irrigation Management Institute, Colombo, SRILANKA
ISNAR	International Service in National Agricultural Research, The Hague, Netherlands
WARDA	West African Rice Development Association Ivory coast, Africa
IBPGR	International Board for Plant Genetic Resources, Rome, Italy
CGIAR	Consultative Group on International Agricultural Research, Montpellier, France
FAO	Food and Agricultural Organization, Rome

WMO	World Meteorological Organization, Geneva, Switzerland
IFPRI	The International Food Policy Research Institute, Washington DC
IMPACT	International Model for Policy Analysis of Agricultural Commodities and Trade
IFAD	The International Fund for Agricultural Development (Rome, Italy)
IRRI	International Rice Research Institute at Los Banos (Philippines)
ICRISAT	International Crop Research Institute for Semi-Arid Tropics, Hyderabad (India)
ILRAD	International Laboratory for Research on Animal Diseases, Nairobi, Kenya, 1973
ICGEB	International Center for Genetic Engineering & Biotechnology, Trieste, Italy & New Delhi,
IBPGR	International Board of Plant Genetic Resources, Rome, Italy (1974)
CIAT	International Center for Tropical Agriculture, Columbia, 1967
AVRDC	Asian Vegetable Research and Development Centre, Taiwan

2.3 Fathers of Important Agriculture Disciplines

Father of	Name of the person
Agronomy	Peter Decrescenzi
Agro meteorology	D. N. Walia
Cooperative movement in India	F. Nicholson
Extension education	A. Seaman/Leagnes
Field plot experiment	J. B. Boussingault
Fruit and vegetable preservation	M. Nicholas Apart
Genetics	Gregor Johann Mendel
Green revolution	Dr. N. E. Borlaug
Green revolution in India	M.S.Swaminathan
Golden revolution in India	NirpakhTutej
Father of Modern Horticulture in	Dr. K.C. Chadha
Golden rice	Dr. Ingo Potrykus
Mutation Theory	Hugo de vries
Modern Genetics	T.H. Morgan
Hybrid rice	Yuan Long Ping
Microbiology	Louis Pasteur
Hybrid cotton	C.T. Patel

3. Agriculture revolutions in India

- Agricultural revolution refers to the significant changes in agriculture when there are inventions, discoveries or new technologies implemented. These revolutions changed the ways of production and increase the production rate in India.
- Following are the major agricultural revolutions that took place in India.

Agricultural Revolutions in India		
Objective of the revolution	Revolution	Father of the Revolution

Food Grains	Green Revolution	M.S. Swaminathan
Meat Production / Tomato Production	Red Revolution	Vishal Tewari
Potato	Round Revolution	–
Food Grains	Green Revolution	M.S. Swaminathan
Milk Production	White Revolution/ Operation flood	Verghese Kurien
Integration of ecological principles in technology development	Evergreen Revolution	M S Swaminathan
Higher Production (Technology-driven 2nd Green revolution)	Protein Revolution	Coined by Narendra Modi and Arun Jaitley
Oilseed Production (Especially Mustard and Sunflower)	Yellow Revolution	Sam Pitroda
Petroleum products	Black Revolution	–
Fish Production	Blue Revolution	Dr Arun Krishnan Hiralal Chaudhuri
Leather / Cocoa / Non-Conventional Products	Brown Revolution	–
Jute Production	Golden Fiber Revolution	–
Fruits / Honey Production / Horticulture Development	Golden Revolution	NirpakhTutej
Fertilizers	Grey Revolution	–
Onion Production / Pharmaceuticals / Prawn Production	Pink Revolution	Durgesh Patel
Egg Production / Poultry Production	Silver Revolution	Indira Gandhi (Mother of the Revolution)

Cotton	Silver Fiber Revolution	–
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4. List of Important and Special Days in Agriculture

S. No	Date	Day
1	February 10	World Pulses Day
2	March 21	International Day of Forests
3	March 22	World Water Day
4	April 22	World Earth Day
5	April 26	International Seeds Day
6	June 1	World Milk Day
7	June 5	World Environment Day
8	July 1	International Fruit Day
9	September 2	World Coconut Day
10	October 15	International Day of Rural Women
11	October 16	World Food Day
12	November 26	National Milk Day
13	December 3	National Agricultural Education Day (To commemorate the birth anniversary of our first Agriculture Minister: Mr Rajendra Prasad)
14	December 5	World Soil Day
15	December 23	National Farmers' Day/ Kisan Diwas (to mark the birth anniversary of Chaudhary Charan Singh)