

NABARD GRADE A (AGRICULTURE)

CHAPTER 5 - CONTRIBUTION OF AGRICULTURE EXPERTS

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✚ Contribution of Agriculture Experts

1. Dr. M. S. Swaminathan:

- Wheat breeder
- Father of **Green Revolution** in India,
- Ex. Member of Planning Commission
- **World Food Prize** (1987) given by **FAO**
- Was honored as a '**Millennium prize**' by former Prime Minister A. B. Vajpai in 80 National Science Congress held on 3-7 Jan, 2001 at IARI, New Delhi.
- Ex. President of **National Commission on Farmers of India.**
- The book entitled "**Wheat Revolution**" Written by him.

2. Dr. N. E. Borlaug:

- Father of '**Green Revolution**' in World
- He was American wheat scientist (Plant Pathologist) Awarded Noble Peace Prize in 1970.

3. Verges Kurien:

- Father of **White Revolution** in India
- Ex. Chairman of **NDDB**, Anand (Gujarat)
- Brain behind the scheme '**Operation Flood**' (1970-1996) Magsaysay Award, in 1963.
- Got '**World Food Prize**' in 1989.

4. S. K. Vashal:

- **Maize breeder** working at **CIMMYT.**
- Awarded "**World Food Prize**" in the year 2000 for research on QPM (maize rich in amino acids **tryptophan** and **lysine** along with Dr. E. Villegas.

5. Dr. K. L. Chadda:

- Pomologist
- Father of '**Golden Revolution**' in India.

6. Dr. R. S. Paroda:

- Forage Breeder

- Ex. D.G. of ICAR
7. **Amrita Patel:**
- Chairperson of NDDB, Anand
8. **Sanjay Raja Ram:**
- International wheat breeder.
 - Awarded "China's Friendship Medal "in 2001.
9. **Dr. G. S. Khush:**
- Rice breeder.
 - He was awarded 'Wolf Prize' for agriculture, 2000 for his extra ordinary contribution to plant breeding and genetics especially in rice.

🚩 **Crop Improve Achievements:**

a) **Genetically Modified Crops:**

- The crops in which one or many of its **traits** are **altered** or **enhanced** through a process of **genetic engineering** known as **GM crops** i.e. **Bt. Cotton** developed against cotton **boll worms**.
- **Bacillus thuringensis** is a soil bacterium that produces **proteins lethal** to insect larvae affecting the **digestive system** of boll worms.
- The gene responsible for this effect is **Cry-IAc**.
- **GM cotton** is only crop permitted by Genetic Engineering Approval Committee (GEAC) under **Ministry of Environment and Forests**. first permitted on **March, 2002**.
- Bt. Cotton varieties developed by Mahyco: **MECH-12, MECH162, MECH-184** for Southern States and **RCH-134, RCH-138** suitable for Northern India.
- Mahyco collaborated with Monsanto to develop Bt. Variety **Bollgourd-I**, using **Cry-I Ac** gene.
- Recently Bt. Variety developed as **Bollgourd-II**, having both genes of **Cry I Ac** and **Cry 2 Ab** gene.
- First transgenic crop was: **Bt. Tobacco(1987)**

- Country having first position for transgenic plants is: USA
- Rank of India for transgenic crops in the world (2016) is: Fifth (USA > Brazil > Argentina > Canada > India)
- The position of transgenic plants in world (in area): **Soyabean (>60 %) > Maize > Cotton > Canola.**
- Mostly GM traits are used as **herbicides resistant** traits followed by **quality improvements and insecticides resistant traits**

b) Genetically modified mustard:

- These are glyphosate resistant mustard developed by **Pro-Agro Seed Company Ltd.** (an ancillary company Of Bayer agro Crop Science, Germany).
- Project on Indian mustard oil with higher B-carotene is initiated by **TERI (Tata Energy Research Institute).**
- Varieties developed of *Brassica juncea* at TERI are: **TERI - unnat** and **TERI-uttam.**

c) Golden Rice:

- It is genetically modified rice.
- Haug **β -carotene** (precursor of **Vit-A**) rich rice.

d) Super Rice:

- Developed by **Dr. Gurdev Singh Khush** at **IRRI**, which would bring an improvement of 25% of over present day varieties.

e) Hybrid Rice:

- 1st time in World **China** developed hybrid rice in 1974 by **Prof. Long Ping Yuan**, hence known as '**Father of Hybrid Rice**'.

- India is second to develop hybrid rice after China, first varieties i.e. **MGR-I** (earlier named as **CoRH-1**) developed first by **TNAU**, Coimbatore and **PRH-I & PRH-6** developed by **IARI**.

f) Hybrid Mustard:

- Developed by **DRMR** (Directorate of Rapeseed and Mustard Research), Bharatpur (Rajasthan)
- Varieties developed by **DRMR** are: **NRC-HB-506** (first hybrid mustard in India).
- other is: **NRC-HB-IOI**

g) Super Wheat:

- The research on super wheat is in progress at **DWR, Karnal**
- It was expected to come by 2005, yield increase **15-20** per cent

h) Green Revolution:

- The term green revolution was coined by **William S. Gaud** in **1968** of **USAID**; to describe the productivity based improvement in food production particularly in **wheat and rice**.
- Main components in green revolution are High yielding varieties, **use of chemical fertilizers** and **plant protection chemicals**

i) Ever Green Revolution:

- This term was coined by **Dr. M S. Swaminathan** to denote the green revolution based on sustainable methods of **crop intensification** and **diversification**.

j) Vertical Revolution in Agriculture:

- **Maximizing production per unit land area** per unit of time using **intensive cropping** system, high production inputs and improved management practices.

k) Other Revolutions in Agriculture:

Revolution:	Related to
1. White Revolution	Milk Production
2. Blue Revolution:	Fish Production
3. Brown Revolution:	Food Processing
4. Grey Revolution	Fertilizer Production
5. Yellow revolution:	Oil Seeds Production (mustard)
6. Red Revolution	Tomato/Meat Production
7. Pink Revolution:	Prawn /Onion Production
8. Golden Revolution:	Fruit Production
9. Round Production:	Potato Production
10. Silver Revolution:	Egg/ poultry production
11. Black revolution:	Biofuel/Jatropha Production
12. Rainbow revolution:	All sector of agriculture
13. Prabhani revolution:	Okra production

 India shares in World

- Total geographical area 2.4%
- Population 17.74%
- Livestock 18%
- Forest 24% (approx.)

 India's position in World Agriculture

I. First position in:

- Mango Production
- Banana Production
- Coconut Production
- Total pulses Production
- Tea and spices Production
- Livestock Production
- Cashew Production
- Papaya Production
- Total irrigated area
- Milk Production
- Jute and Allied Production
- Sapota Production

II. Second Position

- Wheat Production
- Oilseeds Production
- Vegetables Production
- Sugarcane Production
- Rice Production
- Fruits Production
- Silk Production

III. Third Position

- Tobacco Production
- Cotton Production

IV. Fourth Position

- Natural Rubber (8.92%) of the total world NR production
- Despite this India has emerged as the second largest consumer of NR after China, overtaking the United States.
- In coffee production, India has seventh position
- Out of total production of coffee 65-70% is exported.

🚩 Position of Agriculture in India

- a. Agriculture export commodity

- Rice > Cashew > Wheat > Tea > Tobacco
- b.** Agriculture Import Commodity
 - Vegetable Oil > Cashew > Pulses > Fruits

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