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Lecture 21

COTTON

(*Gossypium hirsutum*)

Contd...



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21.1 Cotton- Zones of India, Classification of Cottons

Cotton growing regions of India:

Cotton is cultivated in India from Sub-Himalayan region of Punjab in the North to Kerala in south and from dry regions of Kutch to high rainfall areas of Manipur in East. Based on soil, climate and types of cotton grown, the country is divided into six cotton growing tracts.

- 1. Northern hirsutum**
- 2. Central arboreum region**
- 3. Southern hirsutum – arboreum region**
- 4. Central herbaceum – arboreum – hirsutum**
- 5. Western – herbaceum region**
- 6. Eastern region**



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21.2 Classification

The predominant species cultivated

Gossypium hirsutum - >90% of the area

“ arboretum - 5%

Gossypium herbaceum – 2%

Gossypium barbadense – negligible

Gossypium hirsutum (American Cotton)- Species contain haploid number of chromosomes (26) plants are either annual shrubs or large perennial shrubs (1-1.5mt tall), Flowers are creamy white in colour when first open and turn pink or red later. The capsules are 3-5 locular with 5-11 seeds in each locule. Seed contain a thick coat of lint hair besides a thick coat of fuzz hair. Fibre is medium coarse and length varies from $\frac{3}{4}$ “ to $1\frac{1}{4}$ ” (27-30mm)



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21.3 Gossypium barbadense (Sea island / Egyptian Cotton)- Species contain haploid number of chromosomes (26). Plants are either annual or perennial shrubs. Petals are yellow with purple spot at the base. Capsules are 3-5 locular with 5-8 seeds, in each locule. Seeds bear a thick coat of lint and thick coat of fuzz. Fibre is fine and extra long ranging from 0.5-2". Lint is readily detachable from the seed.

Gossypium arboretum: Species contain haploid number of chromosomes (13). Plant may be annual or perennial. Capsules are tapering with prominent oil glands in the pits and are 3 or 4 locular with 6-17 seeds in each locule. Seeds are usually covered with two coats of hair (lint + fuzz). Fibre is coarse and short and length varies from 1/2" to 7/8"



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21.4 Gossypium herbaceum: Haploid number of chromosomes (13). Plants are sub shrubs. Capsules are brown provided with beak, smooth surface or with shallow pits with oil glands. The capsules are 3-4 locular with 8-10 seeds in each locule. Seeds are covered with two coats of hair (lint+fuzz). Fibre is coarse and short with lint length varying from 1/2” to 7/8”.

Manures and Fertilizers: 15 to 20 t Fym/ha should be incorporated into the soil at last ploughing. Recommended dose of fertilizers depends on the variety grow n, whether rainfed or irrigated and the nutrient supplying capacity of the soil recommended dose is not uniform in all the cotton growing regions.



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21.5	N/ha	P₂O₅/ha	K₂O/ha
Desi :	20 – 40 kg	20Kg	20 Kg
American :	90 Kg	45 Kg	45 Kg
Hybrids :	120 Kg	60 Kg	60 Kg

Entire P₂O₅ should be applied as a basal dose at last ploughing and duly incorporated in the soil. Nitrogen and Potassium is applied in three equal splits each at 30, 60 and 90 DAS. While top dressing, fertilizer should be applied in pockets 7 - 10 cm away from the plant and at a depth of 7– 10 cm for a rainfed crop. Fertilizer application should be done only in presence of adequate moisture. For the irrigated crop, provide irrigation soon after application of fertilizers.



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21.6 Water Management

Cotton is a drought tolerant crop due to its deep root system. Water requirement of the crop is 600 to 800 mm. Cotton cannot tolerate excess moisture in the soil and so frequent irrigation is not necessary. Interval between two irrigations depends on the soil type, rainfall and others related climatic factors. The crop must not be allowed to suffer from water stress during flowering and fruiting period, otherwise excessive shedding of flower buds and young bolls may occur resulting in loss of yield. The crop cannot tolerate water logging conditions at any stage of growth. Critical Stages :

- : Square formation stage
- : Flowering stage
- : Boll developing stage