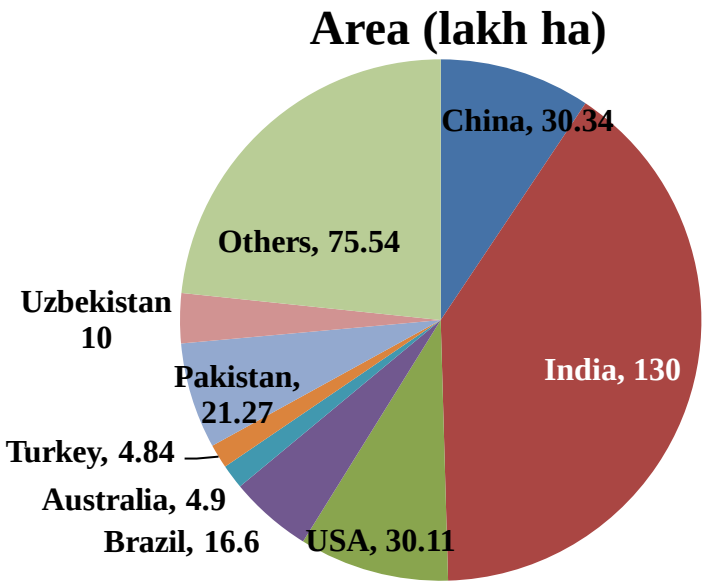
Vasantrao Naik Marathwada Krishi Vidyapeeth, Parbhani (M.S.)

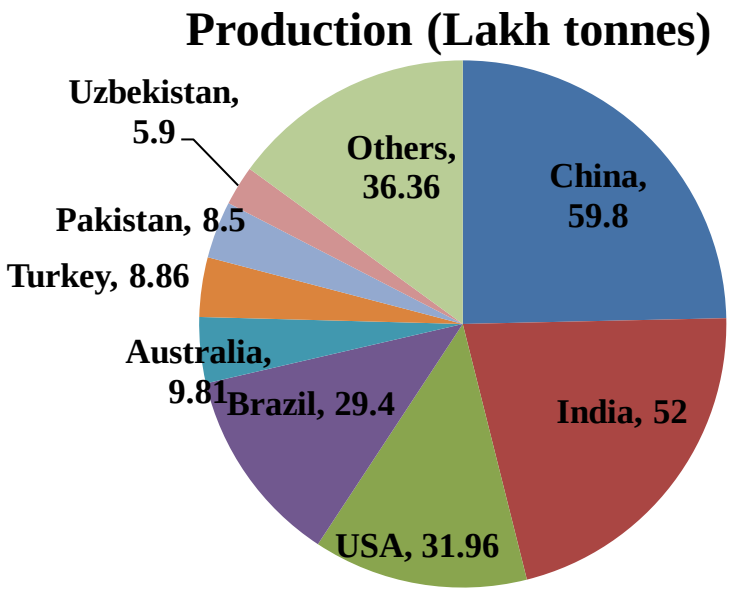
Panel Discussion on

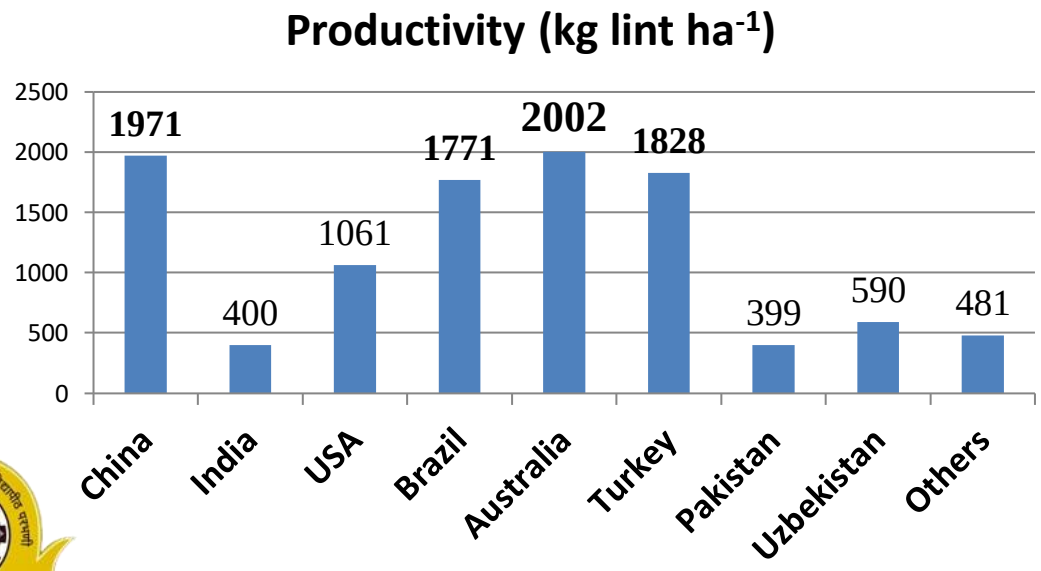
Cotton Production & Productivity

Prof. Indra Mani
Vice-Chancellor
Vasantrao Naik Marathwada Krishi Vidyapeeth, Parbhani (MS)
(maniindra99@gmail.com; vcvnmkv@gmail.com)

Status of cotton in world







- India ranks 1st in area, 2nd in production & 11th in productivity
- India is 3rd highest exporter of raw cotton
- India imported 2.04 lakh tonnes cotton lint (2.36% of global)
- Exported 4.25 lakh tones lint (4.93 % of global) during 2022-23

Status of cotton area, production & productivity

Particulars	Area (lakh ha)	Production (Lakh bales)	Productivity (kg lint ha^{-1})
World	323.62	1427.69	750
India	126.14	337.27	439
Maharashtra	42.29	81.85	329
Marathwada	13.71	25.34	314

Expected cotton area, production & productivity of cotton (2023-24)

Particulars	Area (lakh ha)	Production (Lakh bales)	Productivity (kg lint ha^{-1})
India	130.0	339.15	444
Maharashtra	42.00	78.81	319

Trends of cotton production & productivity in India since two decades

- **After introduction of GM cotton in India (2002-03), area of cotton (76.07 lakh ha) was gradually increased up to 121.78 lakh ha in one decade, covered maximum area 134.77 lakh ha during 2019-20 with average area of last decade was 124.24 lakh ha.**
- **Production of cotton was attained peak of 398 lakh bales (during 2013-14) & average production is 341.26 lakh bales (2012-21).**
- **Impact of GM technology was evident from 2002-03 to 2014-15.**
- **Productivity was increased to highest of 566 kg lint ha^{-1} (2013-14) & fall down with average of 467 kg lint ha^{-1}.**
- **The productivity is hovering below 500 kg lint ha^{-1} since last one decade.**

Reasons for low productivity in India

- Major area under rainfed cultivation depending on monsoon
- Cultivation on shallow & light soils (26%)
- Multiplicity of hybrids
- Sub-dued input use
- Increasing pest infestation especially Pink bollworm
- Ever increasing cost of cultivation
- Need of mechanization for sowing, interculture and picking

Steps to increase productivity

1. Promotion of micro irrigation among farmers
2. Development of supplementary irrigation facilities
3. Development of region specific short durational compact varieties / hybrids
4. Development of high ginner varieties / hybrids with superior fibre qualities
5. Technology for pink bollworm and disease management
6. Adoption of high density planting system
7. Adoption of region specific Best Management Practices
8. Follow recommended IPM / IDM practices
9. Increasing area under straight varieties of Bt cotton in place of hybrids especially under High Density Planting System.

Why now new seeds are introduced to increase productivity?

- Increase in yield
- Bigger boll size
- Early duration
- Insect / disease tolerance
- Herbicide resistance
- Superior fibre qualities
- Broadening of gene pool

What is future cotton production ?

- Seed to seed mechanization (especially sowing, harvesting, interculture & spraying)
- High density planting of varieties & hybrids
- Extra Long Staple cotton
- Varieties / hybrids with more ginning outturn & oil content
- Use of drone for pest / disease management
- Herbicide resistant cotton
- Micro irrigation with fertigation
- Group farming
- Recognition of cotton as an oilseed crop

Increasing cotton productivity will increase cottonseed oil production in the country thereby can reduce the cotton seedoil import.

Strategies to increase productivity in India

Researchable issues

- Development of region specific short durational compact varieties / hybrids
- Development of high ginner varieties / hybrids with superior fibre qualities
- Breeding for high oil and low gossypol content in seed
- Technology for pink bollworm and disease management
- Cotton picking machine suitable for Indian farming conditions
- Development of high yielding colour cotton varieties / hybrids with superior fibre properties

Cultivation issues

- Adoption of high density planting system
- Adoption of region specific BMPs
- Follow recommended IPM / IDM practices

Cotton Research in Marathwada

Establishment of Research Stations in Marathwada

Sr. No.	Research station	Mandate	Establishment
1.	**Cotton Research Station, Maheboob baugh farm, Parbhani**	***Desi* cotton** varietal improvement	**1918**
2.	**Cotton Research Station, Nanded**	**American cotton** varietal improvement, Technology for **rainfed** cotton cultivation	**1941**
3.	**Cotton Research Scheme, Parbhani**	Technology for **irrigated** cotton cultivation	**1969**

Varieties / hybrids released by VNMKV, Parbhani : 24

***Desi* cotton varieties** : **12** (PA 32, NA 48, PA 141, PA 183, PA 255, PA 402, PA 08, PA 528, PA 740, PA 812, PA 810, PA 837)

American cotton varieties : **06** (NH 239, PH 348, NH 452, NH 545, NH 615, NH 677)

American cotton hybrids : **06** (NHH 1, NHH 12, NHH 302, NHH 206, NHH 250, NHH 715)

Achievements of VNMKV, Parbhani

- **Developed high ginner**

  ***Desi* cotton variety PA 528 (40%),**

  American cotton variety NH 545 (39%)

- ***Desi* cotton variety PA 08 having low gossypol (0.07%), high oil content (21%), short duration (140-150 days) & glandless seeds**
- ***Desi* cotton variety PA 812 having longest fibre length (30 mm) in the country**
- ***American* cotton variety NH 615 is having GOT 36%, tolerant to drought & sucking pests & suitable for HDPS & organic farming.**

PA 528

PA 08

NH 615

Achievements of VNMKV, Parbhani

Developed public sector *Bt* cotton hybrid - NHH 44 BG II in collaboration with MSSCL, Akola & two newly developed *intra-hirsutum* cotton hybrids *viz.*, NHH 250 BG II & NHH 715 BG II are in launching stage.

VNMKV developed three BG I cotton varieties are submitted for release in Central Zone.

Developed big boll size, compact genotypes of *Bt* cotton (deregulated events) with superior fibres.

NHH 44 (BG II)

- **Technology for *Bt* cotton production is developed for cultivators as per need of farmers.**
- **Technology for pest & disease management in integrated approach is developed.**
- **Pest & disease forewarning models are developed for important insects & diseases.**

Coming together is a beginning;

Keeping together is progress;

Working together is success

Thanks