Latest developments in new soybean varieties and production prospects for next 10 years

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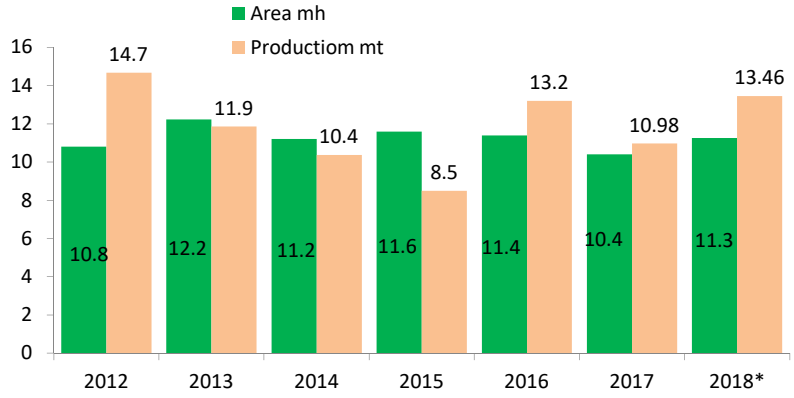
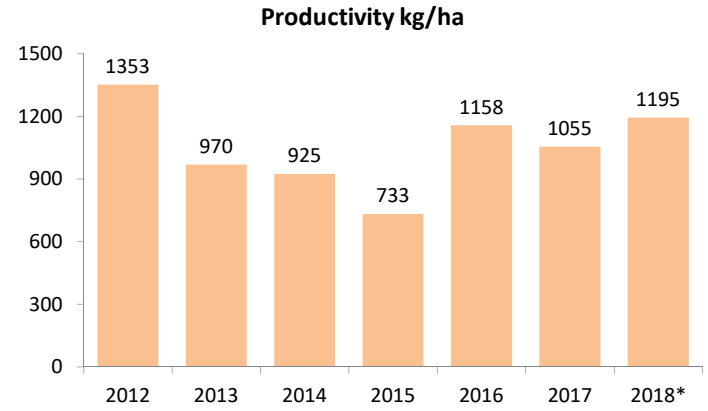
Soybean: Area and Production



Source: DAC, GOVT. OF India * Estimates: as per 1st estimates of DAC

Soybean: Productivity



Source: DAC, GOVT. OF India * Estimates: as per 1st estimates of DAC

Yield Potential and Yield Gap in Soybean

Yield potential (as per Simulation study):

- Average water non-limiting potential: 3.0 t/ha
- Average water limiting potential: 2.2 t/ha
- Many farmers are taking 2.5 t/ha

Front line demonstration

- FLD average yield with full package: 1.8 t/ha

Av. 2013-14 to 2015-16
Global=2.6 t/ha
USA= 3.1 t/ha
Brazil=2.9 t/ha
Argentina= 2.9 t/ha
China=1.8 t/ha

Yield Gap:

- National average: 1.1 t/ha
- Average yield gap: 0.7 t/ha

India=1.1 t/ha
Short duration of the crop 90-95 days
Small holding 1.5 ha
At least two crops/year
Per day productivity/system productivity

Variety released in recent years

Varietal diversification: more than 115 varieties released

Characters	Prominent varieties
High yield potential	JS 20-29, NRC 86, JS 20-69, JS 20-98, JS 20-116, RVS 2001-4 KDS 344, MACS 1188, JS 97-52, NRC 37, JS 93-05
Early Maturity and drought escaping	JS 20-34, JS 95-60
Multiple disease resistance	JS 97-52, NRC 86, MACS 1188, PS 1368, PS 1225, VLS 63, Pusa 9814, PS 1347
Resistance to YMV	JS 20-29, JS 20-69, JS 20-98, JS 97-52, PS 1368, SL 744, SL 688, Pusa 9814, SL 525, PS 1347 NRCSL 1 and NRCSL 2 (introgressed in JS 335)
Rust resitant	DSb 23, DSb 21, Dsb 1

Varieties/genotypes for food uses

Characters	Prominent varieties
Null KTI	NRC 127, (NRC 101, NRC 102)
Null lipoxygenase 2	NRC 109, NRC 132
Vegetable type	NRC 105
Null KTI + Null lipoxygenase 2	NRC 142, NRC 143
High oleic acid	IC 210 (40%) and NRC 140, NRC 141 (60%)
High oil content	NRC 134, (>22.0%)
High Protein content	

Agronomic and crop protection technologies

Agronomic management:

- **Land preparation**
- **Crop Rotation**
- **Varietal diversification**
- **Seed treatment**
- **Seed rate**
- **Plant population**
- **Weed control**
- **Fertilizer application**
- **Irrigation of crop at pod fill stage**
- **Insects and disease management**
- **Harvesting, threshing and storage of seed**

Disseminations of technologies through:

- Weekly advisory
- Mobile-App
- Talks in TV and Radio
- FLDs
- Training to farmers
- Kisan Mela

BBF and Ridge-Furrow System

- **Efficient *In-situ* rainwater management strategies for high yields under rainfed conditions have been standardized:**
  - ***Planting of soybean on Broad-bed furrows (BBF) and Ridge-Furrow system results in 20% yield enhancement as compared to traditional flat bed planting***
  - ***BBF seed drill which can simultaneously create broad beds and plant the soybean has been developed***
  - ***Provides effective drainage under high rainfall***

Soybean planted on ridge-furrow system

Soybean planted on BBF system

Sowing of soybean with BBF Seed Drill

Targets for soybean production

	Targets			
	Improving productivity t/ha		Production (mt)	Production (mt)
	2020	2025	2020	2025
Productivity enhancement	1.40	1.60	15.40	17.6

Possible area by 2025 could be 12.5 m ha

Submitted to ICAR/Niti Ayog

Crop expansion in newer niches

- **Intercropping :**

Sugarcane, black gram, green gram, pigeonpea and hybrid cotton	**Maharashtra, Telangana, Karnataka, Gujarat**

- **Rice fellow:**
  - **Jharkhand, Orissa, Chhattisgarh, Karnataka, NE,**
  - **Non traditional areas:**
- **Punjab, Gujarat, Telangana, Jharkhand, NEH**

Thanks !

Targets for soybean production

Approach	Targets			
	Improving productivity t/ha		Production (mt)	Production (mt)
	2020	2025	2020	2025
Productivity enhancement	1.40	1.60	15.40	17.6
Increasing area of cultivation (Above 11.0 million ha)	0.65 m ha	1.1 m ha	0.90	1.7
Total soybean production			16.25	19.3

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