ENSURING SUSTAINABLE AVAILABILITY OF PULSES

Pulses are one of the important food crops grown globally due to its higher protein content. Of all categories of people, pulses form an integral part of the Indian diet, providing much needed protein to the carbohydrate rich diet. India is the largest producer of pulses in the world. The pulses play an important role in maintaining soil fertility and offer a hidden advantage to the soil by providing free elemental nitrogen through its fixation by activity of Rhizobial bacterial present in their root nodules. Every pulses plant is a mini fertilizer factory. In fact, Indian soils maintain good health because a sizeable area grows leguminous crops including pulses. The cultivation of pulses is advantageous for the succeeding crops. The Chickpea (48%) has a lion share in total pulses production in the country followed by Pigeon pea (16%), Urdbean (9%), Mungbean (7%), Lentil (6 %) and Field pea (4%) to the total production in India.

2. GLOBAL SCENARIO

The major pulses producing countries their area, production and productivity is indicated under Table 1:

TABLE: 1 GLOBAL SCENARIO (2013)

Sr. No.	Country (Year: 2013)	Area (Lakh ha)		Production (Lakh Tonnes)		Yield (Kg/ha)
		Area	% to World	Prod.	% to World	
1.	India	281.70	34.88	183.11	25.08	650
2.	Myanmar	38.87	4.81	54.36	7.45	1399
3.	Canada	242.20	29.99	61.05	8.36	252
4.	China	28.84	3.57	44.73	6.13	1551
5.	Australia	19.18	2.38	27.24	3.73	1420
	World	807.53		730.07		904

(Source - FAO Statistics).

3. NATIONAL SCENARIO: VIII to XI PLAN

In India, though pulses are cultivated traditionally over a very large area, despite the development Plans, there has not been a major shift in their area and productivity till Xth five year Plan . A **Plan-wise analysis (Table 2)** show an increase of 04 percent during the VIII Plan over the previous five year Plan. A major shift has been witnessed during the Eleventh Five Year Plan to which the credit may be given the much focussed Plan interventions under National Food Security Mission (NFSM), Integrated Scheme of Oilseeds, Pulses, Oilpalm and Maize (ISOPOM), Accelerated Pulses Production Programme (A3P), 60000 Pulses Villages under RKVY etc.

TABLE: 2: PLAN PERIOD PERFORMANCE

Plan period	Area (lakh ha)	Production (lakh tones)	Yield (Kg/ha)	% production change compared to previous plan
Eighth (1992-1997)	224.74	133.24	592	(+) 4.18
Ninth (1997-2002)	219.70	131.50	598	(-) 1.32
Tenth (2002-2007)	224.60	133.50	594	(+) 1.50
Eleventh (2007-2012)	239.72	158.64	662	(+) 15.85

4. ELEVENTH PLAN – INFERENCE DRAWN

- XI Plan: Quantum jump in APY
- Visible impacts of Plan interventions: National Food Security Mission, Extended NFSM in the form of A3P; 60000 Pulse villages (RKVY:2010-11 & 2011-12) etc.
- Favourable weather regime (2010-11 & 2011-12).
- Shift in approach to Technology Transfer- Cluster Demonstration, varietal replacement, attractive MSP Rs. 1445/- 2006-07) to Rs. 2800/- (2011-12).
- Focused Approach to Critical Interventions- Quality seed (including gram) : 28 lakh quintals; micronutrients : 39 lakh ha; IPM demonstrations: 23 Lakh ha; technology demonstrations (including chickpea): 18 lakh ha; Skill upgradation:15 lakh farmers.

5. MAJOR PULSES PRODUCING STATES: STATUS (2012-13)

The states of Madhya Pradesh, Uttar Pradesh , Maharashtra, Rajasthan and Andhra Pradesh are of much economic importance with regard to total pulse production and their contribution to the national pulse basket (Table 3). These 05 states alone accounts for 70% of area, 73% of production and 819 kg/ha of yield levels as compared to national productivity of 789 kg/ha during 2012-13. State-wise performance of major states is given in table 3.

TABLE: 3: STATE-WISE PERFORMANCE (2012-13)

Sr. No.	State (Year:	Area (Lakh ha)		Production (Lakh Tonnes)		Yield (Kg/ha)	Area under irrigation (2010-11) (%)
		Area	% to India	Prod.	% to India		
1.	M.P	53.14	22.85	51.66	28.16	972	31.6
2.	U.P.	23.67	10.18	23.32	12.71	985	20.9
3.	Maharashtra	32.74	14.08	23.06	12.57	704	9.4
4.	Rajasthan	32.46	13.96	19.57	10.67	603	12.7
5.	A.P.	19.49	8.38	16.23	8.85	833	2.0
	All India	232.57		183.42		789	14.8

(Source – E&S, Department of Agriculture & Cooperation, GOI)

6. IMPORT AND EXPORT

The present level of production is, however, insufficient to meet the entire domestic demand and dependence on bulk import, therefore, continues (table 4).

TABLE: 4: IMPORT AND EXPORT

Year	Import		Export	
	Qty (000 tonnes)	Value (Rs. in Crores)	Qty (000 tonnes)	Value (Rs. in Crores)
2009-10	3509.58	9812.37	99.92	407.35
2010-11	2698.66	7149.62	208.03	865.74
2011-12	3364.80	8931.24	174.21	1065.84
2012-13	3839.30	12738.64	201.71	1279.90
2013-14	3049.30		343.50	1737.00

(Source – Ministry of Commerce, GOI)

7. PROJECTED DEMAND BY 2016-17 (TERMINAL YEAR OF XII PLAN)

The Working Group on Crop Husbandry in the Planning Commission has worked out a demand of 21.68 million metric tonnes by the end of XII Plan.

TABLE: 5: PROJECTED DEMAND

Million Tonnes

Crop	Production					Growth %	% indirect demand of total demand by 2016-17 @
	2011-12		2012-13*	2013-14* (IV Adv.)	2016-17 (Demand)		
	Demand	Achi. *					
Chickpea	7.02	7.70	8.83	9.88	8.22	3.47	72.21
Pigeonpea	4.48	2.65	3.02	3.29	5.10	2.86	20.60
Total Pulses	18.84	17.09	18.34	19.27	21.68	3.09	42.75

Source- Planning Commission, GOI (Demand: behaviouristic approach),
*- Department of Agriculture & Cooperation (DES), GOI
@- Based on 1998-2008 trend analysis

8. CONSTRAINTS TO PULSE PRODUCTION

8.1. Production constraints

Production of major pulses is constrained by both **biotic** and **abiotic** stresses. Under biotic, Gram is affected by pod borers (*Helicoverpa armigera*), *Fusarium* wilt, root rots, ascochyta blight and botrytis gray mold. In pigeonpea the biotic factors such as pod borer, pod fly, *Fusarium* wilt, and sterility mosaic disease, are responsible for low productivity. Similarly, pod borer, aphids, cutworm, powdery mildew, rust and wilt are the major pests and diseases affecting lentil production in India.

8.2. Cultivation of Pulses on marginal and sub-marginal lands with low fertility, problematic soils and unpredictable environmental conditions with more than 85% of the total pulse coverage under rainfed conditions.

8.3. Abiotic constraints are drought and heat stress and climatic change/weather symptoms especially in arid and semi-arid regions and accounts for about > 50% yield loss. Another major problem is salinity and alkalinity of soils which is high both in semi-arid tropics and in the Indo-Gangetic plains.

8.4. With recent changes in the global temperatures the grain yield is likely to be drastically affected by temperature extremities.

8.5. Poor drainage/water logging during the rainy season causes heavy losses to pigeonpea on account of low plant stand and increased incidence of Phytophthora blight disease, particularly in the states of UP, Bihar, West Bengal, Chhattisgarh, MP and Jharkhand.

8.6. Lack of use of soil test based micronutrients, non-availability of gypsum/pyrites, poor Seed Replacement Rate (SRR-26%) and use of non-descript varieties and non certified seeds, lack of region/state and crop-specific technology package, lack of quality cluster or cropping system demonstrations and sub-standard/spurious input etc., are the other major bottlenecks in realising potential productivity observed under FLDs.

8.7. At times distress sale due to lack of effective operationalization of PSS i.e. Procurement of Pulses on MSP, and lack of infrastructure for storage and value addition both at primary and secondary level including the vulnerability of pulses to stored pests and poor facilities/storage technology domestic levels etc is also responsible for discouraging farmers to use high inputs and recommended package of practices.

9. SUSTAINING THE PULSE PRODUCTION: GOVERNMENT INITIATIVES

9.1. For encouraging the farmers to grow pulses in more area, the Government of India implements the Price Support Scheme (PSS) and intervene by way of procurement on Minimum Support Price (MSP) declared every year. The MSP for gram, arhar, moong, urd and lentil crops is indicated below (Table 6).

TABLE: 6: MINIMUM SUPPORT PRICE (MSP)

(Rs./qtls)

Commodity	2011-12	2012-13	2013-14
Arhar (Tur)	3200¶	3850	4300
Moong	3500¶	4400	4500
Urd	3300¶	4300	4300
Gram	2800	3000	3100
Lentil	2800	2900	2950

¶ Additional incentive at the rate of Rs. 500 per quintal of tur, urd and moong sold to procurement agencies was payable during the harvest/arrival period of two months.

9.2. The Department of Agriculture and Cooperation, Govt. of India has been implementing various development programmes. A brief of Centrally Sponsored Schemes from VIII Plan onwards, to address the sector, is given below (table 7).

TABLE 7: PLAN EFFORTS ON DEVELOPMENT

SR. NO.	PLAN PERIOD (EIGHTH TO TWELFTH PLAN)	STATES COVERED
	VIII -IX-X Plan	
1.	National Pulses Development Project (NPDP) (1990-91 to 2003-04)	28 + 02 UT
2.	Integrated Scheme of Oilseeds, Pulses, Oilpalm and Maize (ISOPOM)- Pulses (2004-05 - 2006-07)	14
	XI Plan	
1.	Integrated Scheme of Oilseeds, Pulses, Oilpalm and Maize (ISOPOM)- Pulses (2007-08 - 2009-10)	14
2.	National Food Security Mission-Pulses (Rabi, 2007-08 to 2011-12)-*Pulses component of ISOPOM merged with NFSM w.e.f.1.4.2010*	16
3.	Accelerated Pulses Production Programme (A3P) (2010-11 to 2011-12)	16
4.	Special initiatives for pulses and oilseed in dry land areas under RKVY (2010-11)	07
5.	Integrated Development of 60000 Pulses villages in Rainfed Areas under RKVY (2011-12)	11
6.	Macro Management of Agriculture (MMA) (2004-05 onwards)	Other than NFSM states
	XII Plan (2012-13 to 2016-17)	
	2012-13 to 2013-14	
1.	National Food Security Mission (NFSM)–Pulses	16
2.	Accelerated Pulses Production Programme (A3P)	16
3.	Special Plan to achieve 19+ million tonnes of Pulses production during Kharif 2012-13	08
	2014-15	
1.	National Food Security Mission (NFSM)–Pulses	24

National Food Security Mission (NFSM–2014-15) is under implementation in 568 districts of 24 states viz. Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Gujarat, Haryana, Jharkhand, Karnataka, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Odisha, Punjab, Rajasthan, Sikkim, Tamil Nadu, Telangana, Tripura, Uttar Pradesh and West Bengal. An allocation of about Rs.1073.55 Crores has been made to 24 states.

In addition to above, additional allocation of Rs.300.00 Crores for "**Additional Area Coverage programme"** during Rabi/summer to 17 NFSM-Pulses states has been provided. The interventions of the scheme are indicated below (table 8).

TABLE 8: NFSM-PULSES INTERVENTIONS

Sr. No.	Head	Interventions

1.	Technology Demonstrations	i. Cluster demonstrations ii. Cropping system based demonstrations iii. Front Line Demonstrations by ICAR/SAUs
2.	Seed	i. Distribution of HYVs seed
3.	Integrated Nutrient Management (INM)	i. Micro-nutrients ii. Lime/Gypsum/80% WG Sulphur iii.Lime iv. Bio-fertilizers
4.	Integrated Pest Management (IPM)	i. Distribution of Plant Protection chemicals ii. Weedicides
5.	Resource Conservation Technologies/Tools	i. Power Knap Sack Sprayers ii. Manual Sprayer iii.Zero Till Seed Drills iv. Multi Crop Planter v. Seed Drills vi. Zero Till Multi Crop Planters vii. Ridge Furrow Planters viii. Rotavators ix. Chiseller x. Laser Land Levelers xi. Tractor mounted sprayer xii. Multi-crop Thresher
6.	Efficient Water Application Tools	i. Sprinkler Sets ii. Pump Sets iii. Pipe for carrying water from source to the field. iv. Mobile Rain guns
7.	Cropping System based trainings	4 Sessions in a crop season (One before Kharif and Rabi Season & one each during Kharif and Rabi Crops).
8.	Miscellaneous Expenses (Project Management Support & Monitoring)	i. Project Management Team & other miscellaneous expenses at District and state level ii. Miscellaneous expenses to State for other districts (Districts of ISOPOM)
9.	Local Initiatives	On project basis, up to 5% of total allocation to state
10.	Other	i. Specialized projects for high productivity areas ii. Support to institute/organizations including NGOs in remote areas. iii. Value chain integration of small producers iv. Assistance to Custom Hiring Centres v. Marketing support for pulses