OVERCOMING
THE PULSES CRISIS
Key Interventions Recommended

A Report by CII Expert Group on Pulses

Confederation of Indian Industry
Since 1895

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Foreword

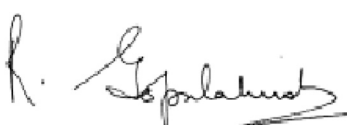
According to a report drafted for ministers of the G-8 nations, the world faces "A permanent food crisis and global instability unless countries act now to feed a surging population by doubling agricultural output". The demand-supply gap for food in India shows that in the short to medium term, supply will meet demand requirements; from 2021 demand will outstrip supply for cereals, pulses, edible oil and sugar.

India is in a precarious situation, specially with regard to the supply of pulses. The problem has been worsening gradually and is becoming a silent emergency. India is the largest producer of pulses in the world, yet it is also the largest importer of pulses. The issue with India is that it is more vegetarian than any other society in the world and pulses are also the most economic source of protein for Indians. Consequently, our dietary dependence on pulses as the main source of protein is enormous.

However, pulses in India are traditionally considered to be a residual crop, only suited for growth under rain-fed conditions when one can't grow wheat or rice. There have been no technology breakthroughs with respect to pulses. Equally, no aggressive plan, commensurate with the crisis, is in place for pulses. Thus, the contours of the crisis become clear.

While the above points affirm that there is an impending crisis, the climate for improvements in agriculture has never been better. During the last five years, there has been an upturn in the fortunes of agriculture and the credit for it is due to the Government for a supportive policy.

The CII Expert Group on Pulses strongly believes that India can achieve a production revolution in pulses. An analysis by the Tata Strategic Management Group has also shown that by adopting best practices and increasing yield to the highest levels, India can increase production by 13 mt a year. This Report of the CII Expert Group on Pulses suggests some key policy interventions which can help to address the pulses crisis, believing that India certainly has the potential to produce 37 mt of pulses a year.



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"The country may have to have a new mission for raising the production of Pulses & Oilseeds. I hope that the situation would improve quickly"

– Prime Minister Manmohan Singh
Congress Working Committee Meeting, August 2009

Background

India is the largest producer as well as consumer of pulses (also referred to as grain legumes, peas & beans) in the world. However, its pulses production has been almost stagnant over the past 20 years at around 14 million tonnes per annum. While population has grown at 2% CAGR during 1971-2008, pulses production has grown at a meagre 0.7% CAGR. At the same time, per capita production of pulses has decreased from 60 g/day in 1970-71 to 36 g/day by 2007-08.

Area under pulses has been around 23 million hectares, giving an average yield of 616 kg per hectares, which is quite low. Amongst the prime reasons for low productivity of pulses are;

- Pulses are mainly being grown on marginal and sub-marginal lands under rainfed conditions with low input usage.
- Less than 15% of area under pulses is irrigated, exposing its production to weather-related yield risks.
- Despite a mission-mode approach to pulses development by the Department of Agriculture & Cooperation, Government of India, a desired level of thrust to pulses production has been conspicuous by its absence. Overall, the production of pulses has grown only 45% (cumulative) between 1951 and 2008, compared to that of wheat and rice, which have grown manifold (at 320% and 230%, respectively) during the same period.

Efforts are being made to bridge the gap between demand and supply through imports of pulses from different countries, depending upon their availability. The country's increasing demand for pulses due to rise in population has resulted in increase in net imports from about 4.6 lakh tonnes in 1998-99 to 35 lakh tonnes in 2009-10 – valued at Rs 9,813 crore in fiscal 2009-10.

Also, due to limited sources for different kinds of pulses, domestic prices fluctuate according to availability and prices in the international market. Apprehensions of shortages, lead to market uncertainty and high inflation.

Thus, the resultant shortage in availability of pulses and the spurt in prices demands special focus.

Global Overview

India, China, Canada, Brazil and Myanmar are the top five countries accounting for 50% of global production. The world acreage for pulses was estimated at 72 Mn Ha in 2007. Global production of pulses in 2007 was 56 mn tonnes. India is the world leader, with 25% share of world production. The global production of pulses has also remained practically stagnant over the last decade - primarily due to the flat growth in India's production. India consumes 30% of global pulses production. China and Brazil are a distant second in consumption, with 6% share each.

Canada is the largest exporter of pulses in the world with 26% share, valued at USD 1.2 billion in 2007. Nearly 27% of Canada's exports are to India. Other major pulses exporting countries include China, Myanmar, Australia and the US. The Indian Government has banned exports of pulses, except for a particular type of chickpeas, to ensure availability in the domestic market.

Average global yield was 819 kg/ha (average of 2005, 2006, 2007) with Canada and the US having yields of 1900 kg/ha – about three times the Indian average. Subsistence farming in developing countries versus a market driven approach in developed countries, as well as climatic conditions and level of mechanization and infrastructure development, have resulted in wide variation in yields across countries.

There are quite a few factors affecting yield of pulses, viz., Climate / Soil / Timely availability of inputs / Usage of high yielding variety (HYV) seeds and short duration pulses varieties / Investment in mechanisation, irrigation, pest management and other crop specific farm practices / changes in cropping pattern like double cropping or intercropping / Level of development / Infrastructure / Efficient supply chain and Market mechanisms.

Importance of Pulses for India

Pulses in India have long been considered as the poor man's only source of protein. They are the principal source of dietary proteins in a vegetarian country like India. The major pulses crops of the country are red gram or pigeon pea (tur, arhar), chickpea or gram, black gram (urad bean), green gram (moong bean) and lentil (masur). Minor pulses include rajmash and other beans, cowpea, horse gram, moth, khesari-dal, etc.

If we consider some of the major sources of proteins, pulses turn out to be one of the most economical sources of protein for human consumption. Pulses contain 18-25% of protein. Increasing their production and keeping their prices within the reach of the poor therefore assumes paramount importance.

Pulses: The richest and the most economical source of protein

Source	Protein content (per kg)	Average price (Rs. per kg)	Avg cost of protein consumption
Milk	3.2%	24	75
Poultry Meat	18-20%	100	53
Eggs	14%	60	42
Pulses	18-25%	85	38

However currently, only 11% of India's protein needs are met by pulses. The balance is either met through other sources or not met at all. As per the World Bank estimates, India ranks 2nd after Bangladesh in child malnutrition. It is a fact that Indians today are consuming far less protein than they used to do so in the past.

While per capita availability of pulses, including imports is close to 43 g/day, WHO recommends per capita consumption at 80 g/day for India, clearly pointing to a wide gap in pulses availability. By some estimates, the per capita consumption has lately reduced to as low as 30 g/day due to high prices which affects the buying ability of the consumer, thus indicating a serious concern.

Pulses crops also help increase soil fertility. Benefits from adopting pulses as a rotational crop increases the supply of soil nitrogen through nitrogen fixation by approximately 40 kg/ha N. It also provides agronomic benefits to the succeeding crop in terms of better soil microenvironment, quality and yield.

Key Government Initiatives

- To fulfill objectives of production and productivity, a Directorate of Pulses Development has been functioning, (now located at Bhopal), with a vision of attaining self reliance in pulses for household nutritional security and sustainability of the production system.
- Pulses were brought under the ambit of the Technology Mission of the Ministry's Department of Agriculture & Co-operation in August 1990
- The National Food Security Mission, launched in 2008, aims at increasing the production of pulses by 2 million tonnes by 2011
- The Government has roped in International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) along with various Agriculture Universities to work with farmers in order to use rice fallows for pulses cultivation
- National Commission on Farmers was formed under Mr MS Swaminathan, but its core recommendations are yet to be implemented
- Integrated scheme of Oilseeds, Pulses, Oil Palm and Maize (ISOPOM) was launched in 14 major pulses growing states
- Rashtriya Krishi Vikas Yojna was launched under which states can undertake Pulses Development Programmes

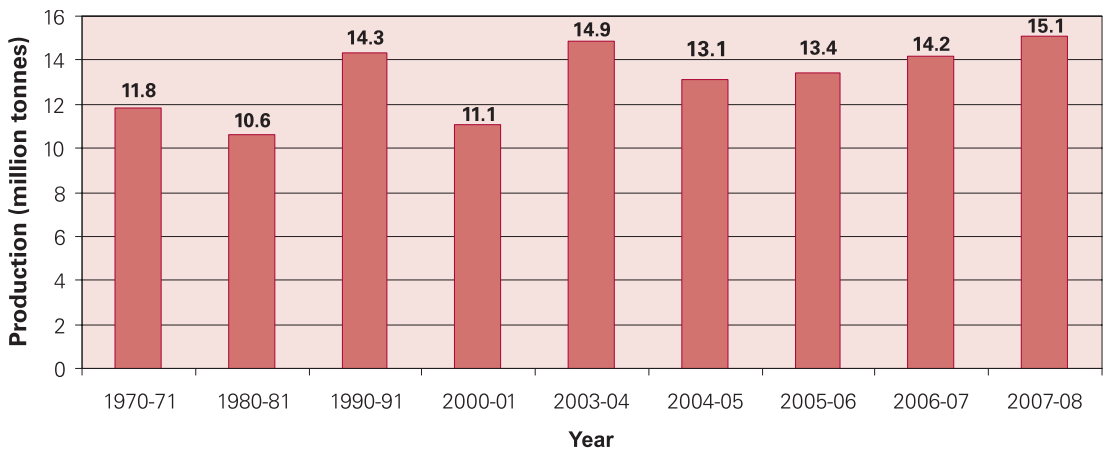
- Also, there are programmes like Accelerated Pulses Production Programme and Pulses and Oilseeds villages.

Despite, the launch of number of special mission/ programmes / schemes, production and productivity in pulses has not been optimized, as a result of which, India has remained a net importer of pulses and this failure has been a serious cause of concern.

Reasons for Low Production in India

India Pulses Production: While population has grown at 2% CAGR, pulses production has grown at a meagre 0.7% CAGR from FY 1971-2008.

India's Pulses Production



- Pulses in India are considered a residual crop and grown under rain-fed conditions in marginal/ less fertile lands, with very little focus on pest and nutrient management.
- Pulses were not the beneficiary of the Green Revolution and the post-Green revolution era has also witnessed most of Government thrust on wheat and rice.
- There has been no technology breakthrough in any of the pulses crops.

- Farmers perceive pulses as having a lower cost benefit ratio vis-à-vis other crops like wheat and rice.
- Penetration and adoption of high yielding varieties (HYV) seeds are also low.
- Only 15% of the pulses crop receives any irrigation - as against an average 46% for all foodgrains combined (90% for wheat and 56% for rice).
- Heavy weed infestation, blue bull and pod borers cause substantial damage to standing crops. Over 30% of standing crops are destroyed by pests before harvest. In addition, there are post-harvest losses during storage, due to excessive moisture and attack by stored grain pests especially the pulse beetle.
- Seed replacement rate in India is very low, estimated at 2-7% compared to the recommended 25-30%. Timely availability of genuine certified quality seeds is another critical issue. Deviation from timely agronomic practices / application of inputs results in sub-optimal yields.
- Absence of assured off-take has also been an issue for pulses cultivation.

Individually and collectively, these factors have resulted in pulses being considered as risky crops, with yield levels amongst the lowest in the world. CII, therefore, undertook to examine the challenge of high pulses prices by looking at the relevant issues more closely for an affirmative action to ensure that pulses are available to all at affordable prices and the farmers get remunerative returns on their investments.

Recommendations of CII Expert Group on Pulses

The CII Expert Group on Pulses firmly believes that the issue of pulses availability is so serious that it requires mission mode to execute critical recommendations mentioned below in the report. Thus, creating a National mission on pulses will not only create an impetus for faster execution but will also serve as a powerful communication platform to infuse a sense of urgency.

Key elements of such a National Mission will be the following:

(a) Capacity and Capability Building through PPP: The agriculture value chain involves multiple players demanding collaborative strength from various public and private players. A more formal strategic alliance is proposed between the State Governments and private players (with or without equity participation) so that research expertise and reach of various public institutes can meet the private rigour in extension services, marketing and management. The objective is to create a significant advantage, combining the resources and expertise of both the sides in order to augment pulses production in India.

The alliance will choose the working area keeping in mind the twin objectives of 'Increase in pulses acreages' and 'Increase in yield'. The partnership can be across the entire value chain, i.e.,

- In introduction of High Yielding Varieties of seeds with a back-stop resource level of quality seed production.
- In extension of package of practices with appropriate training in inputs.
- In arranging assured linkages for buy back of produce.
- Contract farming of pulses, etc.
- In making funds available to farmers for strengthening their resource and infrastructural base, which will make the change sustainable.

(b) Crop & Region Specific Approach: To intensify / increase area and production of pulses crops, we need crop-specific and region-specific approaches, which should be adopted in the overall framework of systems approach. The Indian Council of Agriculture Research has notified 74 varieties of pulses during the last three years. Why has the cultivation of these varieties not picked up, needs to be looked into. The need is to develop high yielding varieties of pulses suitable to meet geographical and climatic requirements of major pulses growing areas of the country for intensive cultivation.

b.1. Crop-situation thrust: Since the pulses canvas is rather wide, there is need to disaggregate the thrust areas and develop programmes / action plans with focus on specific crops / groups of crops, inter-crops and catch crops, having an entirely different agronomic scenario as compared to pure crops. Likewise, rabi crops have the advantage of adequate soil moisture in assured rainfall areas or availability of life-saving irrigation elsewhere. Each of the following five areas need defined objectives and unique programmes.

PULSES	
Kharif Crops (moong, urad, tur)	Rabi crops (gram, lentils, peas)
*Pure crop, *Inter-crop, *Catch (double) crop	*Pure crops, * New Niches

b.2 Increasing total acreage under pulses: Suitable areas in North-East, close to Myanmar, suitable for pulses need to be brought under the intensive cultivation of pulses for higher production and productivity. Other suggestions are;

- Using the rice fallow lands for cultivation of pulses.
- Exploring bringing barren lands in hilly areas of North India under pulses.
- Promoting intercropping to increase area under pulses
- Inclusion of short duration varieties of pulses as catch crop.
- Rainfed Area Authority (RAA) should primarily focus on the production of pulses in deficit rain areas with specific strategies to maximize the use of water available.

(c) R&D for Improving Yields for Pulses: Yield improvements can be done by developing and introducing new varieties of seeds, having traits like high yield / hybrid / treated / resistant to drought and disease-pest complexes. Water use efficiency / management, integrated / efficient crop nutrition, etc., are also a must to ensure better yields of pulses. Also, developing high nitrogen fixing varieties with nutrient use efficiency will be beneficial, as they will play a crucial role in sustainable agriculture. This can be achieved through gene pyramiding for which a critical mass of manpower in science and technology is necessary.

(d) Educate, Enthuse and Empower the Farmer: There is an urgent need to address the current barriers to pulses cultivation by facilitating creation of engagement platforms to demonstrate the benefits of pulses cultivation to farmers. Pulses have long been perceived by farmers as less remunerative crops and this mindset needs to be changed by sensitising farmers towards the following benefits offered by pulses cultivation;

- Pulses can be a profitable venture, with use of modern technology
- Pulses increase soil fertility by nitrogen fixation and provide agronomic benefits to succeeding crops by improving crop quality and improving yields
- Needs very less water as compared to other water intensive crops

This can be done by demonstrating higher farm productivity on a reasonable large chunk of farm clusters in contiguous fields and through training, field visits, on-ground work, etc., to help them perceive the benefits of modern pulses cultivation practices.

(e) Selling on Spot Exchanges: Innovative marketing strategies need to be put in place to ensure that farmers are able to get remunerative prices for their produce. Since the consumption, wholesale price index, consumer price index, price inflation, etc., are linked to spot prices, one of the solutions can be the sale of pulses on spot exchanges. Transparency and quick transaction will save time and cost, and will also ensure reduction in cost of intermediation containing price inflation to some extent. This will also provide definite market data on prices and indexes. Besides, this will also ensure additional profit margin to

the farmers for sale of their produce. Linking MSP to market prices can also help to bridge the gap between demand and supply.

(f) Harmonizing Trade Policies: A long-term strategy for production or for timely out-sourcing and distribution of pulses needs to be worked out to meet the deficit in the demand and supply of pulses in the country. In case of pulses, the Government organisations, like the State Trading Corporation (STC), Minerals and Metals Trading Corporation (MMTC) and PEC Ltd., are allowed to import pulses and distribute it in the open market, with subsidy up to 15%. The prices are kept low, which actually disincentivises the farmers in undertaking pulses production. The industry is dependent on release of stocks, which is available to only few players, resulting in disparity and high volatility in availability and prices.

- The stock limits imposed by different states at different times create distortions in supply, resulting in volatility in prices and encourages unscrupulous practices in unorganised trade. Hence, it is suggested that the stock limits need not be imposed.

(g) Reviving the Dal Milling Industry: Most of the dal mills have out dated technology, which result in excessive losses of pulses in the form of broken and powdered grains. This industry is also besieged with other problems such as low domestic availability of pulses, high working capital requirement and presence of large number of intermediaries in pulses procurement and marketing of finished products. There is a case for consideration of the Government for incentivising these dal mills for optimising output in a cost effective and rewarding environment. Besides, the present losses, being encountered by the milling industry, can be minimized to a great extent by the use of improved dal mills. There is also a case for providing value addition at the farm gate through small dal mills and allied accessories.

(h) Campaign to Create Awareness of the Pulses Shortage and its Implications: Raising the issue of pulses shortage in important forums by reaching out to corporate and public spheres. The idea is to infuse a sense of urgency and to create a right regulatory environment by getting all the stakeholders to

understand the urgency of the issue. Theme-based conferences / workshops / debates, etc., will also help encourage dialogue in this area.

(i) Exploring Opportunities in Other Countries: Some Indian companies have already acquired land in foreign countries for agriculture. According to statistics provided by Governments of various countries in East Africa, more than 80 Indian companies have invested about £1.5 billion (about Rs 11,300 crore) in buying huge plantations in countries, such as Ethiopia, Kenya, Madagascar, Senegal and Mozambique that will be used to grow foodgrain for the domestic market. The focus can be on cultivation of pulses on those lands to meet domestic consumption in the country. Options like contract farming in other countries can also be explored for this purpose.

(j) Business Development of Pulses: Pulses are an important part of the Indian diet and an innovative approach can be cultivation of new taste in the consumers by blending, etc. This will make the product attractive to the consumers as well as help in meeting the nutritional security needs of the Indian population.

We, at CII, firmly believe that if these recommendations are given the right focus, the public sector and the private sector can together play an important role in setting the pulses crisis right, thereby helping the country grow more pulses.

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Confederation of Indian Industry
Since 1895

The Confederation of Indian Industry (CII) works to create and sustain an environment conducive to the growth of industry in India, partnering industry and government alike through advisory and consultative processes.

CII is a non-government, not-for-profit, industry led and industry managed organisation, playing a proactive role in India's development process. Founded over 115 years ago, it is India's premier business association, with a direct membership of over 8100 organisations from the private as well as public sectors, including SMEs and MNCs, and an indirect membership of over 90,000 companies from around 400 national and regional sectoral associations.

CII catalyses change by working closely with government on policy issues, enhancing efficiency, competitiveness and expanding business opportunities for industry through a range of specialised services and global linkages. It also provides a platform for sectoral consensus building and networking. Major emphasis is laid on projecting a positive image of business, assisting industry to identify and execute corporate citizenship programmes. Partnerships with over 120 NGOs across the country carry forward our initiatives in integrated and inclusive development, which include health, education, livelihood, diversity management, skill development and water, to name a few.

CII has taken up the agenda of "Business for Livelihood" for the year 2010-11. Businesses are part of civil society and creating livelihoods is the best act of corporate social responsibility. Looking ahead, the focus for 2010-11 would be on the four key Enablers for Sustainable Enterprises: Education, Employability, Innovation and Entrepreneurship. While Education and Employability help create a qualified and skilled workforce, Innovation and Entrepreneurship would drive growth and employment generation.

With 64 offices and 7 Centres of Excellence in India, and 7 overseas offices in Australia, China, France, Singapore, South Africa, UK, and USA, as well as institutional partnerships with 223 counterpart organisations in 90 countries, CII serves as a reference point for Indian industry and the international business community.

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