

Pulses and human health

- Major sources of protein to vegetarians globally
- Complement staple cereals with essential amino acids, vitamins, minerals
- Reduce NCDs-Colon Cancer, Cardio-Vascular diseases, etc.
- Can be cultivated on range of soils, climates and cropping systems
- Capacity for N-fixation and release of soil bound phosphorus
- Contribute significantly to sustainability of farming systems



Challenges and implications

- Reduced per capital consumption of pulses in India
- Limited global supply of pulses
- Population increase leading to enhanced demand
- Increased incidence of chronic non communicable diseases-NCD
- Displacement of pulses to marginal areas
- Increased cost of production, e.g., labor costs



Pulses grown in India

Chickpea (<i>Cicer arietinum</i>)	Black gram (<i>Vigna mungo</i>)
Pigeonpea (<i>Cajanus cajan</i>)	Mung bean (<i>Vigna radiata</i>)
Lentil (<i>Lens culinaris</i>)	Lablab bean (<i>Lablab purpureus</i>)
Cowpea (<i>Vigna unguiculata</i>)	Moth bean (<i>Vigna aconitifolia</i>)
Pea (<i>Pisum sativum</i>)	Grass pea (<i>Lathyrus sativus</i>)
Common beans (<i>Phaseolus vulgaris</i>)	Horse gram (<i>Dolichos uniflorus</i>)
Broad bean (<i>Vicia faba</i>)	Lima beans (<i>Phaseolus lunatus</i>)
Rice bean (<i>Vigna umbellata</i>)	Tepary beans (<i>Phaseolus acutifolius</i>)

Scenario of pulses

- India is the largest producer and also major consumer
- India imported 3.5 million t in 2013-14 (Rs. 10,551 Crores)
- Myanmar, Canada, Australia, Turkey, Mexico and Iran are major suppliers
- Pulses cultivated in both *Kharif* and *Rabi* seasons
- Chickpea (40%), pigeonpea (20%), mung and urd bean (12% each), lentil (8%) are major pulses

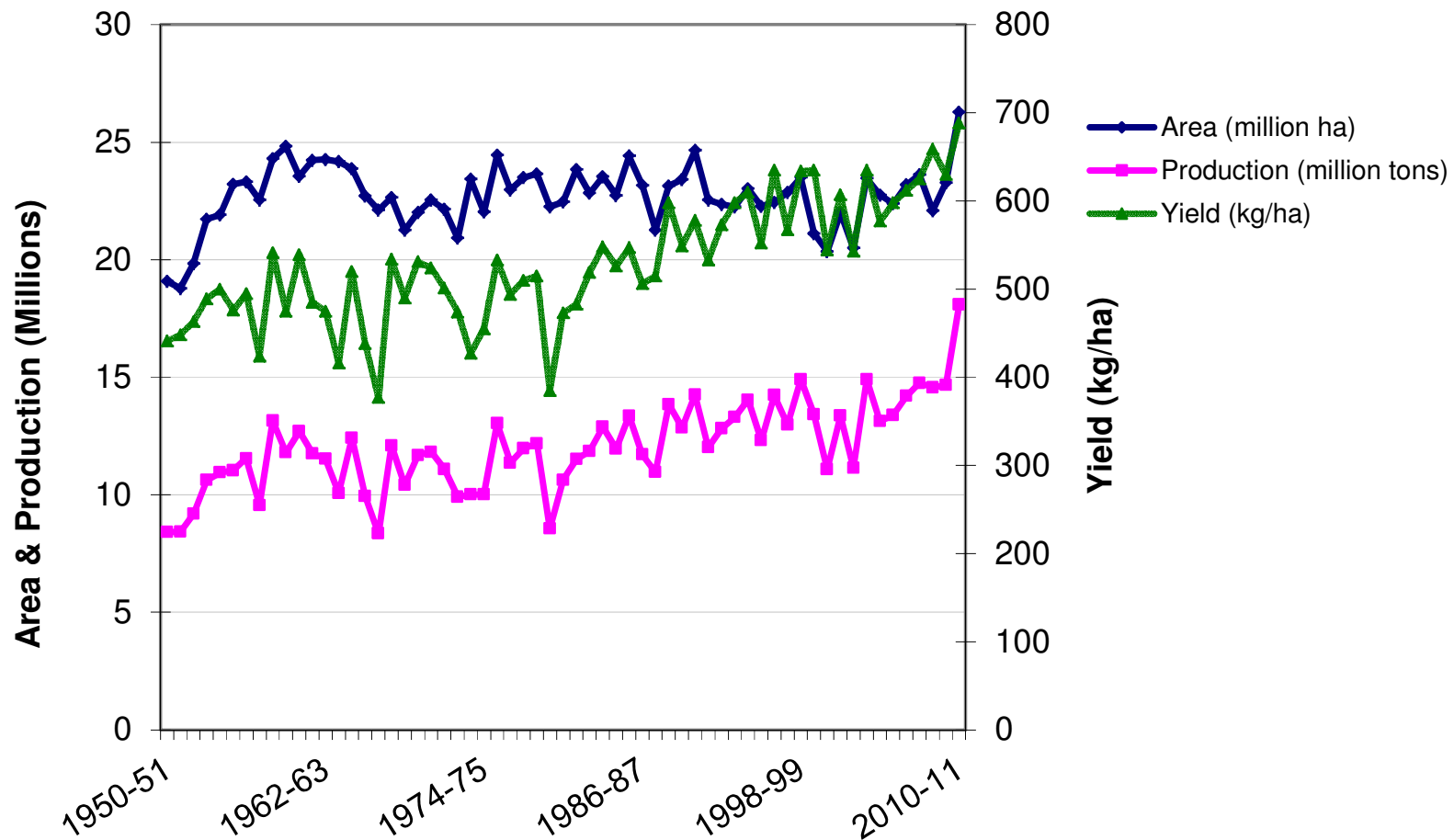


Demand for pulses in India

- Population projected to reach 1.68 billion in 2030
- Projected demand for pulses is 32 million t
- Anticipated growth rate required for pulses 4.2% (current <1%)
- India can produce the needed pulses internally: BUT
- Need efficient strategies and concerted efforts to meet the projected demand

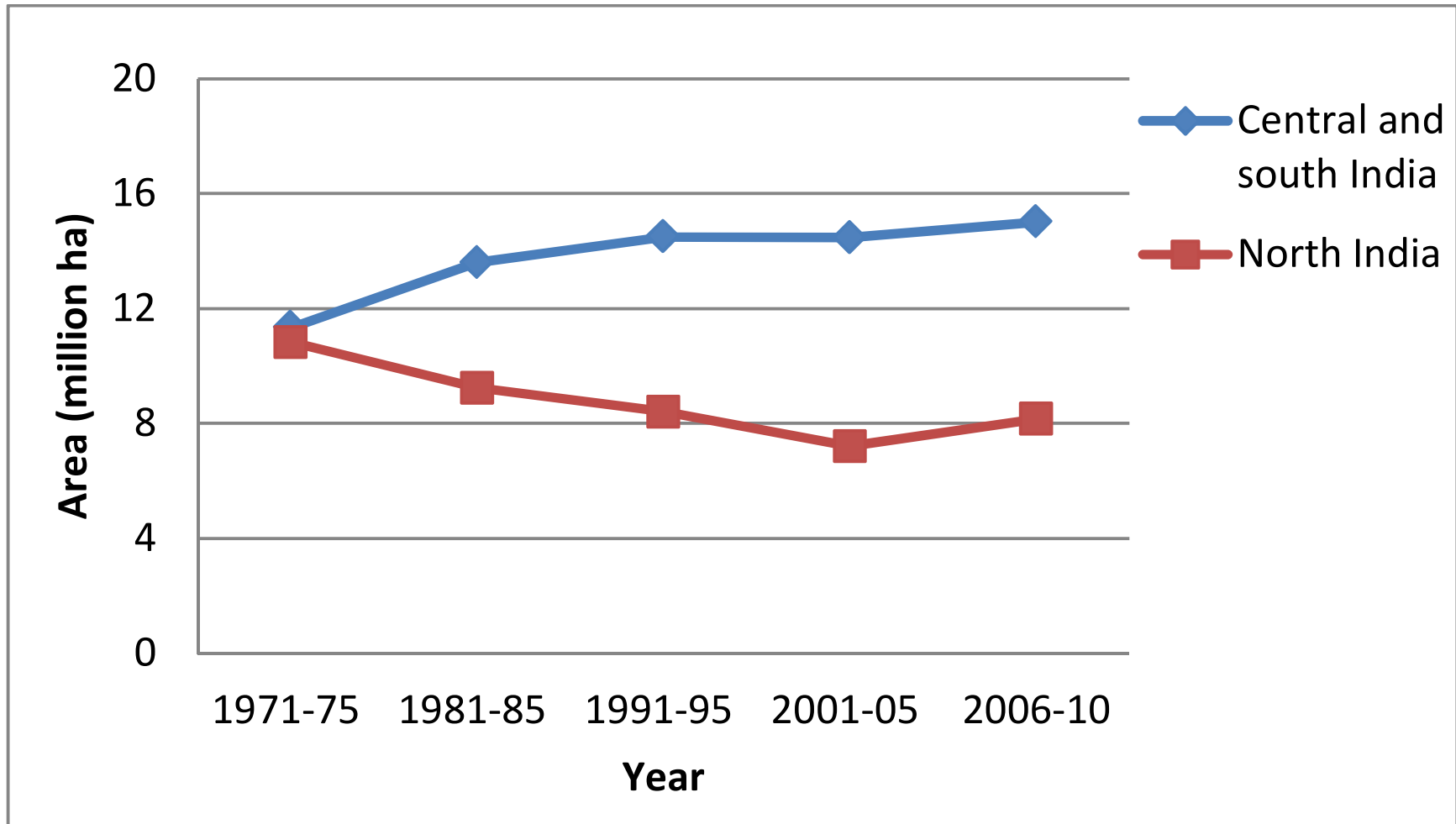


Area production and productivity of pulses in India over a 60-year period

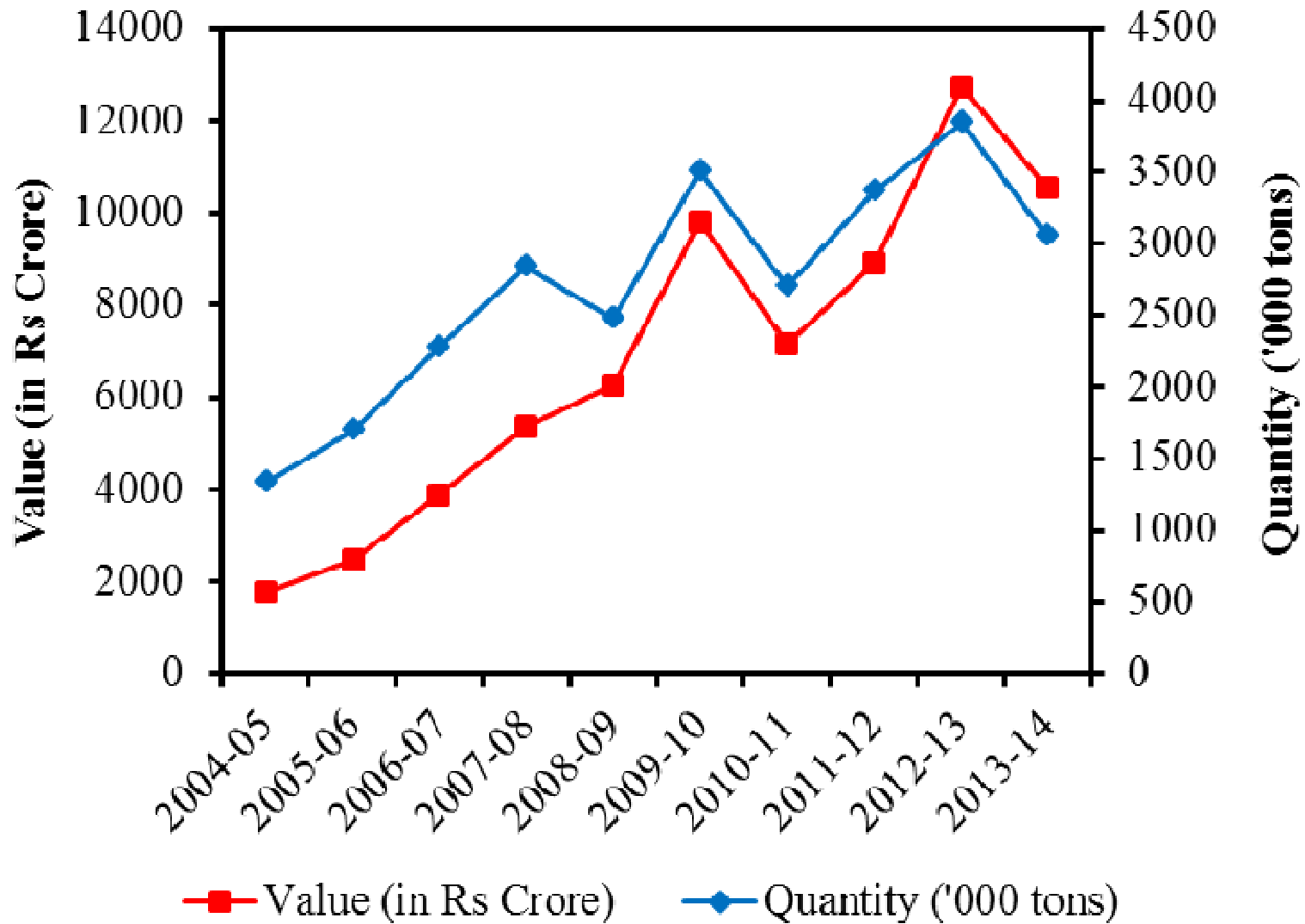


Source: Directorate of Economics and Statistics, Department of Agriculture and Cooperation, (2010)

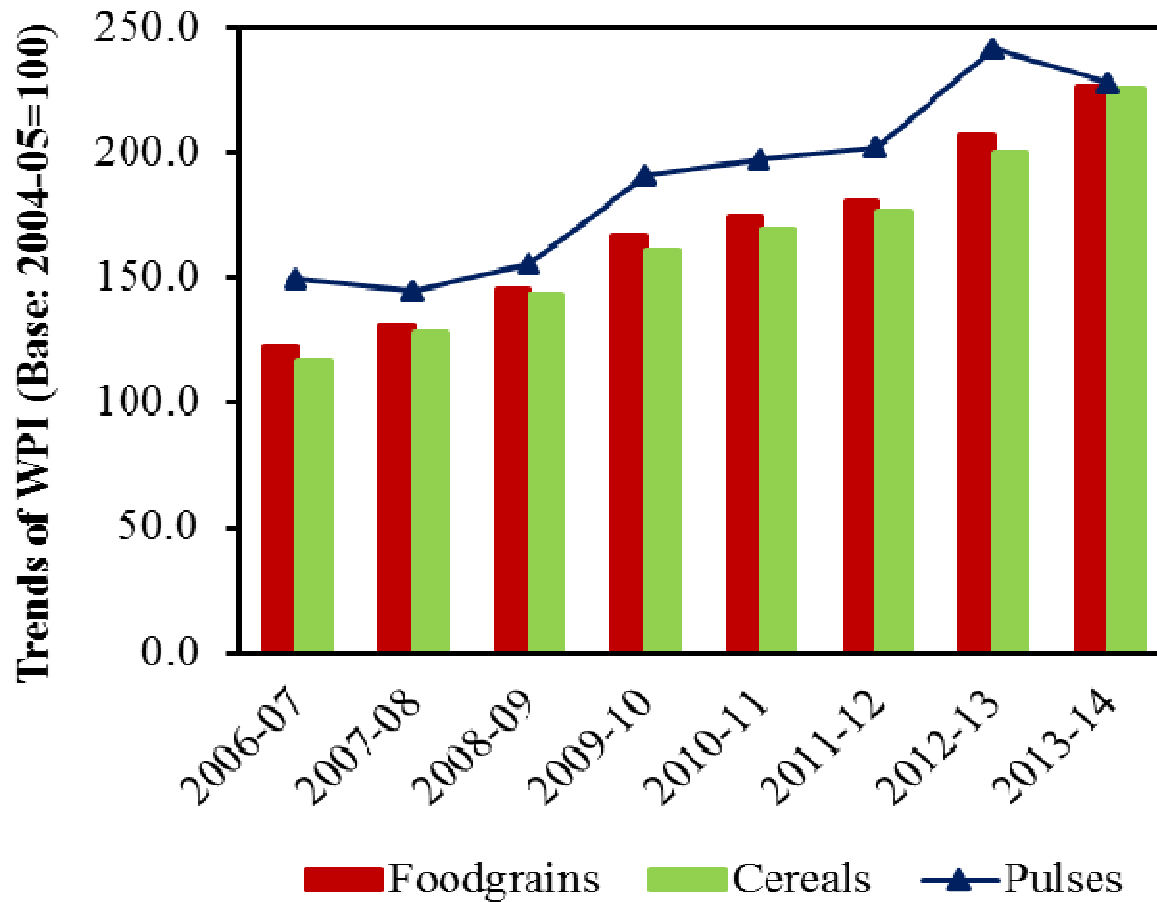
Shift in area of pulses from Northern India to Central and Southern India



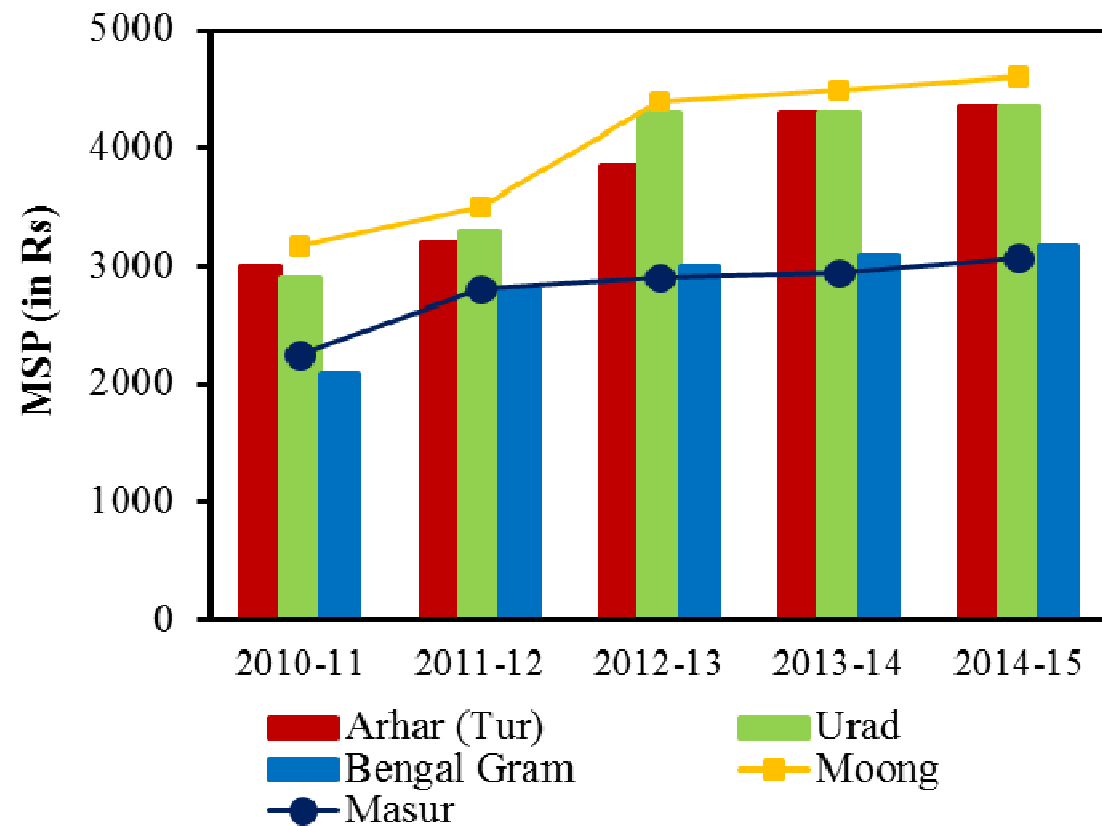
Import of Pulses by India



Trend in WPI of Pulses



Minimum Support Price (MSP) of Pulses



Constraints to Pulses Production

- **Pulses considered as Secondary crops**
 - Grown in poor and marginal lands
 - Less attention given for cultivation/ management
- **Paucity of appropriate policy support**
- **Lack of access to input/ output markets**
- **Limited access to quality seed of HY varieties**
- **Productivity constraints: drought, extreme temperatures, pests and diseases**

Introduction of pigeonpea in rice-wheat cropping in IGP areas

- **Rice-wheat system fatigued; total factor productivity going down**
- **Needs a legume to restore soil health**
- **Break in pest & disease cycle of Rice-Wheat mono-cropping**
- **Extra-short duration pigeonpea (<120days) can replace rice, with ~ 2t/ha yield**
- **Economic benefits higher with pigeonpea-wheat, compared to rice-wheat**

Rabi pulses in Rice-fallow areas

- **About 14.3 m ha of rice fallow in IGP zone**
- **At Least 10 m ha has sufficient soil moisture for growing a rabi crop**
- **On-farm trials in central and eastern India confirm potential for chickpea, lentil and grasspea (Lathyrus)**
- **Average yields range 1 to 2.5 t/ha**
- **Supplemental irrigation can increase yields**

Cultivation of pigeonpea in high-altitude regions

- **Traditional pigeonpea varieties cannot mature due to low temperatures in hilly areas**
- **Pilot studies conducted in Uttarakhand**
- **Extra-short duration pigeonpea (ESDP) can produce up to 2 t/ha grain yield**
- **Cultivation limited to low and mid-altitudes**
- **ESDP can be expanded to other high altitude regions**

Technologies to improved pulse production

- Adoption of short-duration, high-yielding varieties
- Cultivation of drought tolerant varieties
- Establish Improved seed delivery systems
- Improved input supply (macro- and micro-nutrients and pesticides)
- Support for supplemental irrigation
- Mechanization of major operations
- Ware-housing and loans

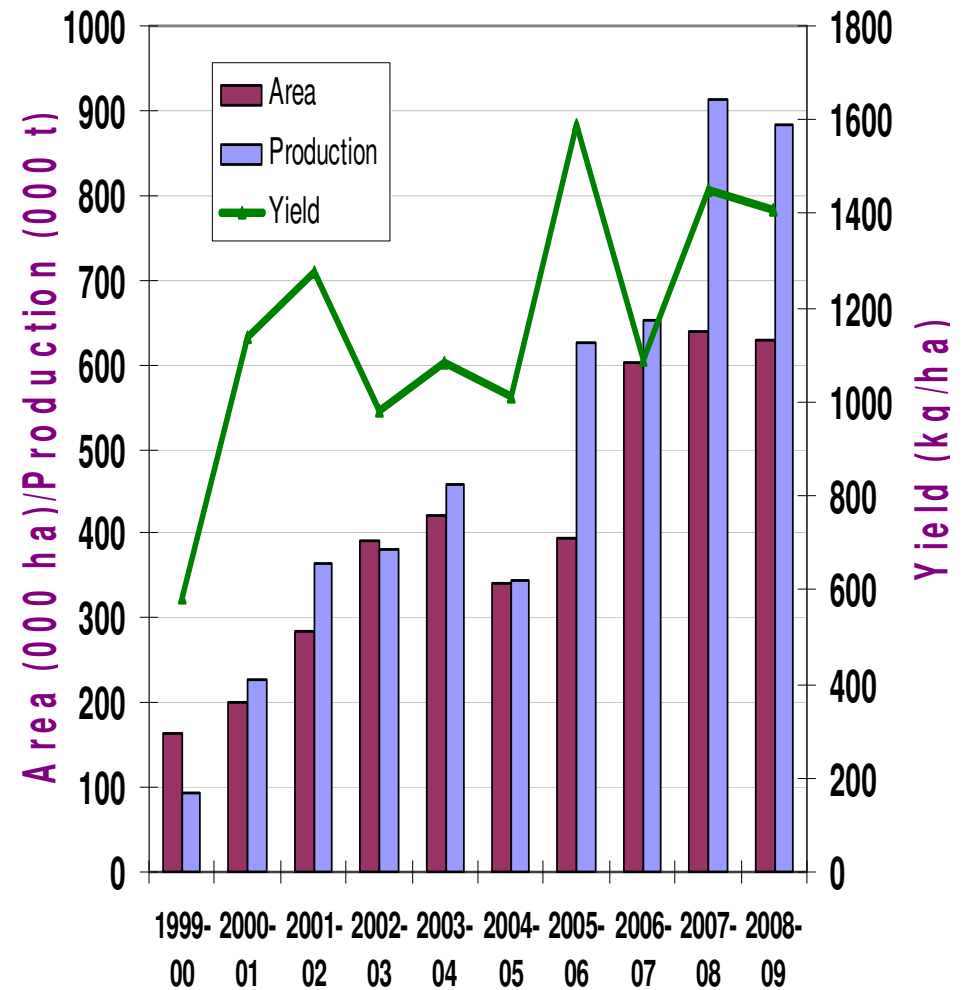


Lessons learnt from chickpea success story

Chickpea revolution in Andhra Pradesh

During the past 15 years

- 4-fold increase in area
- 2.4-fold increase in yield
- 9-fold increase in production
- Over 80% area under improved cultivars



Trends in chickpea area and production

Towards self-sufficiency in pulses

- **Establish National Pulses Development Mission headed by a senior official with authority & accountability for:**
 - **Coordinating across ministries/departments**
 - **Enhance synergies with state departments of agriculture and other agencies**
 - **Facilitate timely supply of inputs (quality seeds, fertilizers, pesticides, machines, etc.),**
 - **Create a chain of pulses ware-houses/ cold-stores with links to Banks for advancing loans**
 - **Monitor grain procurement and ensure remunerative prices to farmers (not to traders)**

Thank you

