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Production Pattern of Pulses in Bihar

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Abstract
Bihar is the predominantly depend on agriculture and allied sector. Agriculture is life line for livelihood in Bihar. Bihar is a one of the most pulse producer and consumer in India. Pulses are nutrient supplement of protein and mungbean is one of the important crop of pulse.
Production of pulses is profitable for various scenario like positive externalities, soil health, provide us cheapest source of protein, environmental balance and sustainable.
This study show the production and consumption pattern of woomens in Bihar.woomens farmer show the production of pulses is mainly use for her self consumption
This study is focus on production of pulses special mungbean in Bihar. This study is dpend on primary data and secondary data. This study show the production of mungbean in Bihar is profitable for farmers.it show there is a positive relationship between pulse production and farmers income and there is a positive relationship between pulse production and droughts. Mungbean is also known as green gram. Mungbean has been grown in India since ancient time. It is widely growing in southeast Asea, Africa, South America and Australia . Mungbean serves as a major source of dietary protein for the vast majority of vegetarian. Mungbean in India is mainly grown either as a subsistence monocrop or intercrop during kharif session and single mainly in zaid session.

Keywords: Pulses, Bihar, production pattern, productivity, crop

INTRODUCTION

Pulses are central to Indian food and nutritional security, contributing plant-based protein and improving soil fertility through biological nitrogen fixation. Bihar—a largely alluvial, densely populated state in eastern India—grows a range of pulses (arhar/tur, urad, moong, gram, lentil, rajma, etc.) across its agroecological zones. Despite fertile soils, Bihar's pulse sector shows mixed performance: some districts maintain pulse cultivation while overall area, production and productivity trends have experienced variability over the last decades. Understanding these patterns is vital for designing interventions that increase pulse output, raise farmer incomes, and improve soil health. This paper synthesizes recent statistical data and literature to describe Bihar's pulse production pattern, drivers, constraints and policy implications. Key data sources used include the Bihar e-Statistics portal (Directorate of Economics & Statistics), the Department of Pulses (DPD) national reports, district-level compilations, and peer reviewed studies.

1. Data and Methodology

1.1 Data sources

The analysis draws on the following publicly available secondary sources:

- Bihar e-Statistics (DES): district and state-level time-series on area, production and yield of crops, including pulses.
- Department of Pulses (DPD) / Ministry of Agriculture reports and crop-wise APY (Area, Production, Productivity) tables (national and state breakdowns) for recent years (including 2021–22 and 2022–23 summaries).
- National/state aggregates and time-series databases (CEIC, Indiastat) for longerterm context and district-level breakdowns.
- Peer-reviewed articles and extension studies on pulses in Bihar that document historical change, constraints, and farmer practices.

1.2 **Methods**

- Time-series comparison (area, production, yield) for Bihar across the most recent available years (where datasets overlap) to identify trends and variability.
- Seasonal decomposition by Kharif vs Rabi pulses, noting which pulse crops dominate each season in Bihar.
- Spatial summarization using district-level data where available to identify leading pulse-producing districts and regional patterns.
- Qualitative synthesis of constraints and drivers from the literature and program reports.

Note: this is a desk-based, descriptive-analytic study synthesizing official statistics and peer-reviewed/publicly available inputs (see References). Field-level primary survey data are outside this paper's scope, but the literature cited contains farmer-level observations and case studies that inform constraint analysis.

2. Background: Pulses in Bihar and India (context)

Nationally, pulses occupy both Kharif and Rabi seasons—Tur (arhar), urad and moong are important Kharif pulses, while gram and lentils (masoor) are important in Rabi.

National programs in recent years (including DPD annual planning and the broader pulses mission) have sought to raise production and reduce imports through varietal improvement, cluster approaches, assured procurement in some cases, and support for irrigated / high-yielding pulses. The DPD reported rising production trends across many pulse crops in recent years, with compound annual growth in certain pulse types (e.g., tur, gram, mung) according to the 2022–23 annual update.

At the state level, Bihar's agroecology—rich alluvial soils and canal/groundwater pockets—supports pulses, but the state has experienced variable pulse area and production due to cropping shifts (rice/wheat intensification), market incentives, and input constraints. Earlier studies documented a reduction in pulse area and production over multiple decades in parts of Bihar, though patterns vary by district and pulse type.

3. Results: Production Patterns

3.1 **Temporal trends (area, production, productivity)**

- **Area:** Official state dashboards and compilations show that pulses area in Bihar has fluctuated—declines in several past decades have been documented in published studies, though short-term year-to-year area may rise or fall with prices and seasonal conditions. Recent state APY tables indicate area and production snapshots for 2021–22 and 2022–23 that show modest changes yearon-year.
- **Production:** Bihar's total pulses production has shown variability; national data aggregators report

annual production values with notable year-to-year swings driven by weather, area changes, and input use. CEIC records show pulses production values for Bihar in recent years (for example, a lower production year in 2020 relative to 2019).

- **Productivity (Yield):** Productivity (kg/ha) for pulses in Bihar has generally lagged behind the best-performing states and the national high-yield benchmarks. DPD and state APY tables show that per-hectare yields vary by pulse type; some Kharif pulses (tur, moong) and Rabi pulses (gram) show potential for improvement with better varieties and practices.

Key quantitative note: different sources report somewhat different year-level figures; district-level databases (Indiastat, state DES) provide the most granular numbers for year-to-year comparison. For example, district compilations for 2023–24 are available on Indiastat's Bihar pages, showing the season-wise area/production splits.

3.2 **Seasonal patterns (Kharif vs Rabi)**

- **Kharif pulses** in Bihar are dominated by arhar/tur, urad and moong in many regions; Kharif pulses occupy upland and residual soil niches after paddy or on fallows.
- **Rabi pulses** include gram and lentils in drier, better-drained fields and where residual soil moisture or irrigation is available. The Kharif–Rabi split is important because appropriate crop calendars, seed availability, and extension differ by season. National analyses confirm the importance of both seasons for overall pulse area distribution.

3.3 Spatial (district) patterns

Leading pulse-producing districts tend to be those with mixed cropping, pockets of irrigation, and historic pulse culture (Patna, Bhojpur, Aurangabad, Nalanda and some southern districts are often cited as important pulse districts). However, district-level performance is heterogeneous: some districts have seen area declines while others maintain or expand pulses depending on farmer preferences and market links. Research and district statistics highlight Rajma/beans in hilly or specific northern pockets and moong/urd pockets in southern districts.

4. Drivers and Constraints

4.1 **Drivers for pulse cultivation (where positive)**

- **Soil and cropping fit:** Pulses fit well in rice-wheat and rice-fallow rotations, offering nitrogen benefits and fit for bunds and marginal land.
- **Rising national focus & programs:** Recent national-level pulse initiatives and assured procurement/cluster interventions (in some states) encourage area expansion in targeted pulses.
- **Market demand:** Pulses have stable domestic demand, which can motivate farmers if price signals are favorable.

4.2 **Constraints**

- **Area substitution by cereals and cash crops:** Many farmers shifted parcels to higher-return or more assured crops (rice, wheat, vegetable cash crops), contracting pulse area over decades in some zones. Historical studies document significant area loss and its impacts on total state pulse output.
- **Low adoption of improved varieties and seed access:** Farmer reliance on local landraces and lack of timely availability of high-yielding pulse seed varieties reduces potential yields. DPD reports and research emphasize varietal gaps.
- **Limited irrigation & institutional credit for pulses:** Although pulses are relatively drought-tolerant, irrigated pulses realize much higher yields; limited irrigation access reduces productivity.

- **Pest & disease pressures:** Kharif pulses (e.g., tur) are susceptible to pod borers and other pests, requiring integrated pest management that is not uniformly applied.
- **Market & price volatility:** Uncertain MSP or market prices discourage area expansion.
- **Extension gaps & mechanization:** Pulses often have narrower extension focus compared to cereals; mechanization suitable for small pulse plots is limited.

5. Discussion

5.1 Interpretation of trends

The evidence indicates that Bihar's pulses sector has experienced variability driven more by cropping choices and market/price factors than by inherent agroecological limits. While the state has agroecological potential, systemic constraints in seed systems, extension, and incentives have kept productivity below possible levels. National pulse policy attention (e.g., DPD initiatives and broader pulses mission planning) provides an enabling environment, but state-level targeted interventions must align with district cropping realities.

5.2 Opportunities

- **Varietal and seed systems:** Strengthening seed multiplication of high-yielding, pest-resistant pulse varieties in Bihar can boost yields.
- **Cropping system optimization:** Promoting pulse-based cropping intensification (e.g., pulse intercropping or inclusion in rice-fallow rotations) can reclaim fallow or low-return areas.
- **Market linkages and assured procurement:** Where feasible, assured procurement or price-support clusters can stabilize farmer incomes and encourage area expansion. National policy directions around pulses (cluster approaches and procurement) create windows for state-level piloting.

6. Recommendations

1. **Seed & varietal program:** Fast-track multiplication and distribution of highyielding varieties for key pulses (tur, moong, urad, gram) and promote community seed systems so seeds reach farmers before sowing windows.
2. **Targeted district-level strategies:** Use district-level DES data to identify "pulsepromise" districts (those with residual area and market access) and prioritize them for cluster-based interventions. (State DES / Indiastat district tables are a resource for this targeting).
3. **Integrated crop management & extension:** Scale-up integrated pest management, balanced fertilization (including micronutrients), and waterconserving practices for pulses with strong frontline extension.
4. **Irrigation & mechanization support:** Encourage small-plot-suited mechanization (seed drills, thresher rentals) and micro-irrigation support for Rabi pulses to increase yields.
5. **Market & price instruments:** Strengthen market linkages (aggregation, farmer producer organizations) and explore assurance mechanisms (e.g., MSP support for targeted pulses) to reduce price risk.
6. **Monitoring & evaluation:** Maintain and publish district-level pulse APY timeseries to track interventions' impact and adapt strategies annually.

7. Limitations and Further Research

This paper synthesizes secondary data and published studies; it does not include primary household- or

field-level surveys, which would be necessary to quantify farmer adoption behavior, profit comparisons across crops, and fine-grained constraints. Further research should include: randomized trials of improved varieties across Bihar agroecologies; cost–benefit studies of pulse vs alternative enterprises; and policy experiments (e.g., procurement pilots, seed subsidy effects).

8. Conclusion

Bihar has the agroecological potential to contribute more substantially to India's pulse basket, but realizing that potential requires a coordinated push on seed systems, extension, irrigation for critical pockets, market stability, and district-targeted strategies. National attention to pulses creates an enabling context; state and district policymakers should leverage program funds and data to reverse the long-term decline of pulse area and raise yields through farmer-friendly, evidence-based interventions.

References

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2. Bihar e-Statistics (Directorate of Economics & Statistics, Govt. of Bihar), **Public Dashboard — Crop Production (Pulses)**. Available district and state tables for area/production/ productivity.
3. Research studies: Pulses Production in Bihar: An Overview of Constraints and Opportunities (ResearchGate/peer literature) documenting historical area/production trends and constraints in Bihar.
4. CEIC data: **Agricultural Production: Pulses: Bihar** — time-series snapshots and historical comparisons (for year-level production numbers).
5. Indiastat / district-level compilations: district-wise area/production for 2023–2024 (seasonal breakdowns).
6. Background on pulse cropping patterns (national analysis): National pulses scenario and plan-wise analysis (DPD thematic documents).