From seed to transformation: The golden journey of pulses research at Pantnagar

Every grain of pulse carries more than nutrition — it carries years of scientists' effort, farmers' trust, and a long story of agricultural progress

India has long been called the land of pulses, they're an inseparable part of Indian food, and the most accessible source of protein for hundreds of millions of people. But there was a time when the country's pulse production was hemmed in on every side: low productivity, disease and pest damage, a shortage of quality seed, and farming still largely at the mercy of rainfall.

Today, the All India Coordinated Research Project on Pulses at G.B. Pant University of Agriculture and Technology, Pantnagar, is counted among the country's leading pulses research centres, with 73 varieties developed and officially released to date. This is not just the story of one project. It's a story of science, dedication, and research built around the farmer's own needs.

From a small sub-centre to national recognition

Pantnagar's All India Coordinated Research Project on Pulses began in 1968–69 as a sub-centre. Given Pantnagar's geographic position, its strong tradition of agricultural research, and its scientific capacity, pulses research was given priority here from the start. In recognition of the quality of that research and its results, the sub-centre was elevated to full centre status in 1974–75, a mark of the dedication and foresight of Pantnagar's scientists.

Research that began with farmers' problems

At the time, pulse crops were frequently affected by disease and pest damage, and farmers had limited access to scientific management knowledge. Pantnagar's scientists didn't just read about these problems in books, they went into the fields to understand them firsthand.

A broad scope of research

The Pantnagar centre's goal was never simply to develop new varieties. The aim was to develop high-yielding, disease- and pest-resistant varieties of the major pulse crops, urd, moong, arhar (pigeon pea), lentil, chickpea, and pea, to refine production techniques, and to get both into farmers' hands. That included responsibility for nucleus and breeder seed production, so that quality seed could actually reach the farmers who needed it.

Varieties that made history

The centre has released 73 varieties to date, including 15 chickpea, 14 lentil, 19 pea, 4 arhar, 8 moong, and 13 urd varieties. Thirty of those have been released in just the last five years.

UPAS 120, an exceptionally early-maturing arhar variety is the clearest example of the programme's impact. Where traditional arhar took 180 to 250 days to mature, this variety is ready in roughly 120 to 130, a change that made an arhar-wheat cropping system viable across North India for the first time. Pant Moong 2 played a significant role in expanding moong cultivation across the Indo-Gangetic plains. Pant L 406 lentil, released in 1979, proved that resistance to major diseases like rust and wilt could be bred into the same variety as high yield. And Pant G 114 chickpea remained popular with farmers for years, thanks to its stable yield and broad adaptability.

Beyond new varieties

Pantnagar's achievements haven't stopped at variety development. Scientists recently identified a new disease in urd i.e. pod rot, caused by the pathogen Fusarium humuli, a significant achievement in crop protection research. A “Plant Pathogen Behaviour Study Chamber,” developed to study how plant pathogens behave, was granted a patent in 2025.

Science that reached the fields

Research only succeeds when its benefits actually reach farmers. Front-line demonstrations, farmer training, field days, farmers' fairs, and scientist-farmer dialogue programmes have all been used to carry these new techniques out to the fields. “The seeds Pantnagar has developed and made available have given me better yields, which has increased my income”, said Gulab Singh Lodhi, a progressive farmer from Narsinghpur village, Madhya Pradesh, who has sourced pulses seed from Pantnagar for several years and has been honoured at the state and national level for his contribution to agriculture.

Trust reflected in seed demand

The clearest evidence of any variety's success is the demand for it. Over the past five years, sustained, large-volume demand for breeder seed of varieties like Pant Masoor 9, Pant Matar 347, Pant Urd 10, Pant Urd 12, and Pant Arhar 7 shows that farmers, seed agencies, and agricultural institutions alike have placed their trust in these varieties.

Recognition at the national level

The Indian Council of Agricultural Research, New Delhi, honoured Pantnagar's All India Coordinated Research Project on Pulses (Kharif) Centre with a Best Centre Award in both 2024 and again in 2026, for developing high-yielding, disease- and pest-resistant varieties of moong, urd, and arhar. Scientists have also received awards and citations for developing varieties including Pant Gram 5, 7, 8, and 9, and Pant Arhar 7.

Steps toward the future

Agriculture today is moving through a new era - climate change, erratic rainfall, new diseases and pests, shrinking landholdings, and shifting market demands are all presenting fresh challenges. Against that backdrop, Pantnagar's pulses research programme matters more than ever. Scientists are now working on climate-resilient varieties, multi-disease-resistant genotypes, nutrient-dense pulses, and digital and precision-agriculture techniques. The goal isn't simply higher yields, but building a farming system that can withstand the challenges still to come.

Today, when a bowl of dal is served at our table, the scientific journey behind it is a reminder that change doesn't happen in laboratories alone, it happens when science reaches the fields, farmers adopt it, and society benefits from it. Pantnagar's pulses research programme is a living example of exactly that kind of change: a journey that began in 1968, and continues to move forward today.