Pulse Crop Health Initiative Funded Projects – Fiscal Year 2025

Food Technology

Accessible cultivar and processing strategies for improve pulse flour quality

FY25 Funding: $177,732

Karen Cichy (PI), USDA-ARS, East Lanning, MI

Processing effects on the composition of pulses (beans, peas, chickpea and lentils) and the resulting benefits in the prevention of type-2 diabetes

FY25 Funding: $66,291

Elvira de Mejia (PI), University of Illinois

Isolating and characterizing protein fractions from black beans and lentils for use as novel oil structuring agents: Development, optimization and nutritional implications

FY25 Funding: $98,000

Andrew Gravelle (PI), University of California – Davis

Harnessing Fermentation Technology to Overcome Functionality, Nutritional and Sensory Challenges in Pulse Protein Ingredients for Food Applications

FY25 Funding: $82,418

Lutz Grossmann (PI), University of Massachusetts – Amherst

Impact of Storage on Functionality and Shelf Life of Chickpea Flour

FY25 Funding: $68,853

Clifford Hall (PI), South Dakota State University

Improving texture and nutritive value of pulse-based protein-rich ingredients with fiber adducts formed with high pressure homogenization and heat

FY25 Funding: $105,445

Audrey Girard (PI), University of Wisconsin – Madison

Enhancing Pea Protein Functionality through Glycation Following a Novel and Efficient Upcycling Approach

FY25 Funding: $114,999

B. Pam Ismail (PI), University of Minnesota

An innovative supercritical carbon dioxide-based drying approach to enhancing functionality and sensory properties of pea and lentil proteins

FY25 Funding: $98,234

Ali Ubeyitogullari (PI), University of Arkansas

Re-structuring pulse proteins into valuable fibrils via biocatalysis

FY25 Funding: $91,238

Yi Zhang (PI), Pennsylvania State University

Impact of a feasible protein co-extraction from three pulse crops on protein and co-products properties

FY25 Funding: $119,101

B. Pam Ismail (PI), University of Minnesota

Developing and evaluating chickpea ingredients as natural wheat dough improvers for enhanced baking quality and functional properties

FY25 Funding: $101,733

Yonghui Li (PI), Kansas State University

Human Health

Maternal supplementation of pea fiber to protect against obesity and hypertension in offspring

FY25 Funding: $170,910

Prasanth Chelikani (PI), Texas Tech University

Impacts of pulse consumption on human health, diet cost and environmental sustainability

FY24 Funding: $145,697

Zach Conrad (PI), College of William & Mary

Impact of structural modification techniques on pea (Pisum sativum L.) protein's ability to modulate human gut microbiota

FY25 Funding: $84,113

Leqi Cui (PI), Florida State University

Effects of a pulse-based USDA-diet on gut microbial metabolites and biomarkers of healthspan: An 18-week randomized controlled crossover feeding study in older adults

FY25 Funding: $43,329

Moul Dey (PI), South Dakota State University

To determine whether adding polyphenol-rich pulses to daily diet improves skin health by reshaping the skin microbiome and lipids, and reducing oxidative stress and inflammation in women

FY25 Funding: $95,355

Liwei Gu (PI), University of Florida

Pulse Consumption Improves Gut and Bone Health and Metabolic Outcomes of Postmenopausal Women

FY25 Funding: $0 (continuation of project funded in prior FY)

Edralin Lucas (PI), Oklahoma State University

The effect of regular lentil and chickpea intake on gut microbiome and metabolic health in healthy young adults: A pilot randomized clinical trial

FY25 Funding: $101,867

Ravinder Nagpal (PI), Florida State University

Comparative Analysis of the Impact of Type of Pulse Consumed in Human Subjects and Pre-Clinical Models

FY25 Funding: $115,502

Henry Thompson (PI), Colorado State University

Tempeh Fermentation of Dry Chickpeas and Dry Peas for Enhanced Protection against Western Diet – Induced Health Risks

FY25 Funding: $108,440

Hang Xiao (PI), University of Massachusetts – Amherst

Identification of molecular traits of specific pulses that maximize human health

FY25 Funding: $134,669

Danielle Lemay (PI), USDA – ARS – Davis

Impact of Pulse Consumption on Lowering Antimicrobial Resistance in Gut Microbiomes

FY25 Funding: $115,336

Danielle Lemay (PI), USDA – ARS – Davis

Effects of pulse consumption on child health

FY25 Funding: $100,164

Xiaozhong Wen & Todd Rideout (PI), State University of New York – Buffalo

Customizing interventions to promote pulse consumption among heterogeneous consumer segments

FY25 Funding: $48,020

Christopher Gustafson (PI), University of Nebraska – Lincoln

Enhancing Dietary Perception and Acceptance of Pulses in Children through an Innovative Nutritional Intervention Program: Bringing Pulses to the Dining Table

FY25 Funding: $89,344

Ravinder Nagpal (PI), Florida State University

Exploring the Impact of Pulse Consumption as Part of a Healthy Diet on Cardiometabolic Health Outcomes in Older Adults with Overweight/Obesity: The Role of Inflammation and Gut Microbiome

FY25 Funding: $102,399

Jamie Baum (PI), University of Arkansas

Breeding and Sustainability

Chickpea genetic improvement for drought and heat stress resilient grain yield

FY25 Funding: $0 (continuation of project funded in prior FY)

Ramachandra Penmetsa (PI), University of California – Davis

Rapid and in situ screening for key quality traits in pulse crops

FY25 Funding: $98,962

Luis E. Rodriguez-Saona (PI), Ohio State University

Enhancing Winter Pea production in the annually cropped, rainfed region of the Inland Pacific Northwest

FY25 Funding: $0 (continuation of project funded in prior FY)

Kurtis L. Schroeder (PI), University of Idaho

Assessing the impacts of dryland wheat-pea rotations and compost application on soil health and soil carbon dynamics

FY25 Funding: $88,730

Shikha Singh (PI), Washington State University

Improving Production of Winter Pea Cropping Systems through Enhancement of Beneficial Microbiomes

FY25 Funding: $99,990

Svetlana Yurgel (PI), USDA – ARS – Prosser, WA

Increasing the quantity and quality of protein in chickpeas

FY25 Funding: $20,456

George Vandemark (PI), USDA – ARS - Pullman

Enzymatic modification of pulse proteins to improve technical and health functionalities for diversified food applications

FY25 Funding: $99,821

Haotian Zheng (PI), North Carolina State University

Improving Environmental and Economic Sustainability Outcomes through Incorporation of Pulses into Irrigated and Dryland Crop Rotations

FY25 Funding: $151,494

Jessica Davis (PI), Colorado State University

ChickpeAI: Deployment of machine learning to develop chickpea with improved nutritional, functional and yield profiles

FY25 Funding: $199,050

Marilyn Warburton (PI), USDA – ARS – Pullman

Functional Properties and Nutritional Quality of Pea Starch and Protein as Affected by Genetic and Environmental Variables

FY25 Funding: $155,500

Sean Finnie (PI), USDA – ARS – Pullman

Reinventing nitrogen fixation in cultivated chickpea with wild-derived traits

FY25 Funding: $100,000

Douglas Cook (PI), University of California

PulseHeat - Enhancing Lentil Resistance to Heat Stress

FY25 Funding: $99,000

Marilyn Warburton (PI), USDA – ARS – Pullman

Next-Gen Nitrogen Fixation: Tailoring Rhizobial Inoculants to Winter and Spring Field Pea Systems

FY25 Funding: $93,378

Christopher Graham (PI), South Dakota State University