

LIFTING THE CURSE OF THE GRASS PEA: REDUCING TOXINS IN A KEY FOOD SECURITY CROP



Grass pea (*Lathyrus sativus*) holds great potential for food security in **marginal areas** of sub-Saharan Africa and beyond. This crop is highly **tolerant to drought** and **flooding**, is high-yielding, rich in protein and able to grow with **minimal inputs**. Yet, it produces a toxin (ODAP) that puts those who rely heavily on the crop at risk of a devastating **neurological disease**. Ethiopian, UK and BecA-ILRI Hub researchers are collaborating to make grass pea safe, so farmers can utilize the full potential of this nutritious and hardy **orphan crop**.



Grass pea: a blessing and a curse



- The only reliable food crop for many of the poorest in drought-prone areas of Ethiopia, Bangladesh, India, and beyond
- Can cause paralysis (lathyrism), currently affecting >100,000 people
- Previous attempts to reduce the toxin have not resulted in reliably low-ODAP varieties; project collaborators have successfully identified low-ODAP mutants.

Expected outputs:

- 1) Genetic and biochemical (ODAP levels) diversity characterized in Ethiopian collections
- 2) Tools and materials for the Ethiopian breeding program to develop safer, more nutritious grass pea varieties.
- 3) Resources to raise the profile of grass pea among breeders, policymakers and regulators



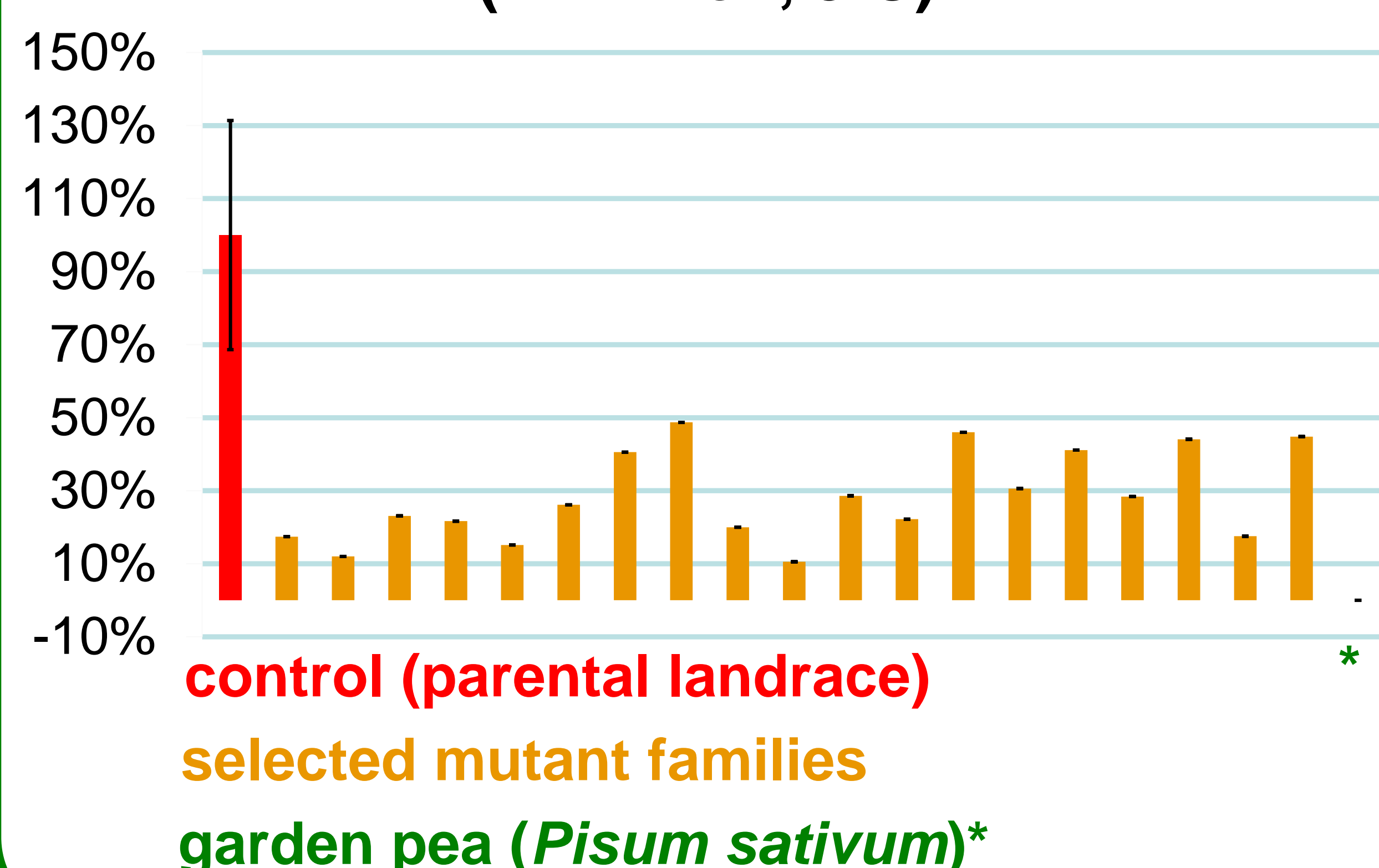
Potential impacts:

- Reduced incidence of lathyrism
- Improved sustainable utilization of low-input farming
- Through increased adoption of safe grass pea, increase income and food and nutritional security for target groups of 1.6 billion people living in drought-prone areas

Objectives:

- 1) Identify low-ODAP grass pea material from Ethiopian collections and a mutagenized population
- 2) Determine the genetic and morphological diversity of the germplasm
- 3) Researchers within the NARS-BecA-JIC Alliance collaborate to develop skills, methods and transfer them to Ethiopia and the BecA-ILRI Hub.

Low ODAP content in mutant seeds (Emmrich, JIC)



Collaborative partnership:

Aksum and Haramaya Universities (Ethiopia): Alemu Abate (ABCF fellow) – nutritional and molecular assessment; Firew Mekbib, Asnake Fikre – supervision

JIC (UK): Peter Emmrich – mutant screen, capacity building; Trevor Wang, Cathie Martin – supervision

BecA-ILRI Hub: Jagger Harvey, Tilly Eldridge, Robert Ngeno – linkages, supervision, strategic support

