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Coop Research Program | Call 1

# Improving buckwheat as an agronomically attractive crop for healthy food

## Background

Buckwheat has long been an important part of many diets around the world. With its nutritional properties (high protein content, anti-oxidant properties and absence of gluten), resistance to various pests and diseases, and ability to grow well in poor soils, it is well suited for sustainable agricultural production. However, buckwheat cultivation is declining globally and has practically disappeared in Switzerland. Relatively low yields and properties such as poor baking quality limit its appeal. Improvement through plant breeding has had limited success. Characteristics like self-incompatibility (one plant must pollinate another to produce seeds) make development of stable breeding lines difficult.

## Objective

The overall research objective is to establish a solid basis to initiate a buckwheat breeding program that could contribute to long-term increase of the use of buckwheat. This will involve characterizing the variability of the crop's agronomic and quality traits to identify those that could make buckwheat more viable for producers and appealing to consumers.

## Research Approach

Collection, description and selection of buckwheat accessions with contrasting agronomic and quality traits using phenotypic and genetic analysis methods; greenhouse and field experiments; breeding experiments; genome fingerprint analysis.

## Relevance and Expected Outcomes

Existing studies of buckwheat quality traits have rarely integrated agronomical experiments that aim at improving buckwheat cultivation to increase beneficial traits. By combining breeding experiments with phenotypic and genetic analysis this project provides the opportunity to improve buckwheat cultivars for specific markets and provide a basis for sustainable growth of the share of alternative crops in agricultural production systems and diversity in food systems.

## Food System Challenges Addressed

Sustainable production systems, Resource efficiency, Alternative crops, Diversifying production systems.

[www.worldfoodsystem.ethz.ch/research/research-programs/CRP](http://www.worldfoodsystem.ethz.ch/research/research-programs/CRP)

**Principal Investigator** Prof. Achim Walter,  
Crop Science

**Co-Investigator** Prof. Bruno Studer

**Postdoctoral Researcher** Dr. Eduardo Perez

**Partners** Prof. Laura Nyström, IFNH, D-HEST,  
Prof. Michael Siegrist, IED, D-HEST, Prof.  
Michael Kreuzer, IAS, D-USYS

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**Project Cost** 272'278 CHF

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