

# Projects Description *for* ARASIA TC Programme TC Cycle 2016-2017



**Project Number:** RAS/5/074

**Project Title:** Enhancing Wheat and Barley Productivity through Induced Mutation with Supportive Breeding and Related Biotechnology Techniques (Phase III)

---

**Overall objective:** To contribute to the enhancement of national food security in ARASIA Member States.

**Project duration:** 2 years

## PROJECT DESCRIPTION

**Regional Gap / Problem / Need Analysis:** Wheat and Barley are the key crops in ARASIA Member States, as they considered as one of the important source of food and income generation for a wide range of farmers so far. Drought, disease, heat and salinity are major constraints affecting sustainable Agricultural productivity in ARASIA States Party. Most of cultivated areas depend on rainfall. Where cropping relies on limited rainfall, the concerned areas have been affected by adverse effects of climate change and variability led to loses a significant part of crop production. Where the complementary part depends on irrigation, disease infection results in significant reduction in yield. To address these problems Mutation Project was started in ARASIA Member States in 2007, which extended twice aimed inducing high yielding mutants of Wheat and Barley crops resistant to biotic and abiotic stresses. During Projects life over the two phases (RAS5048, PHASE I and RAS5058, PHASE II) a significant progress has been done, different mutant variants were developed with desirable traits in wheat and barley crops such as., early maturing, resistant to diseases and high yielding than existing local variety. To that end, for a better adaptation of those developed mutant variants plant breeders must grow and evaluate them in diverse ecological conditions under which crops were grown for final evaluation. This activity should be done in partnership with farmers to be the selections more effective and they challenge with drought, disease, heat and salinity constraints. Based on this and in order to achieve this goal, additional time is needed which is beyond of the duration of Phase II. It's obvious for every breeder in any breeding program how long it takes to develop a new mutant/variety, required from 10-12 years, so, based on the progress made under the preceding ARASIA TC projects (phase I & phase II) whereby the developed mutant variants with favorable traits need to be further testing in different environments of the region it's worth to extend the project for a third Phase.

**This project is proposed as a regional activity for the following reason(s):** The project aims at addressing the common capacity building needs of the participating Member States in a uniform manner and in the spirit of the ARASIA cooperative agreement by providing training and technical advice to support the member states' needs while promoting cooperation and coordination amongst their relevant institutions in order to ensure the sustainability of the undertaken programme

**Stakeholder Analysis and Partnership:** The main counterparts are the core national teams concerned with research and development programmes of new varieties of wheat and barely as well other relevant stakeholders working in the agricultural sector e.g. Ministry of Agriculture extension services, farmers, other interested parties and eventually the consumer through enhanced food security.

**Role of nuclear technology:** The project's main technique is mutation breeding which is a well-established and recognized technique that complements other related biotechnologies such as tissue culture, molecular biology and marker assisted selection. The role of IAEA will be crucial providing technical advice and in training the national teams of the participating countries on mutation induction and selection as well as other related biotechnologies through training courses, fellowships and scientific visits.