1. Project title
Improvement of Rainfed Cropping Systems in the High Barind Tract of Bangladesh

2. Abbreviated title
Rainfed cropping systems in Bangladesh

3. Is the research strategic / adaptive? (delete as appropriate)

4. Project summary
Much of the High Barind Tract (HBT) in northwestern Bangladesh remains fallow after harvest of rainfed rainy season rice. This area has limited irrigation potential but there is scope for rainfed rabi (winter season) cropping. Chickpea has proven to be a suitable rabi crop for the HBT and its area has expanded during the previous decade. An earlier project (R7540) evaluated seed priming (overnight soaking of seed in water prior to sowing) as a means of increasing grain yields and as a vehicle for expansion of cultivation of the crop. Over four seasons, grain yield responses to seed priming in many on-farm, operational-scale trials conducted across the HBT ranged from 22 to 48%, with responses inversely proportional to winter rainfall. Farmers readily adopted the simple priming technology, and at least 25% of the chickpea sown in 2001 was primed. Improved varieties of chickpea and appropriate fertilizer practices for the crop were also introduced. An impact analysis conducted in 2002 quantified benefits to rural households of increased cultivation of chickpea.

Further large-scale dissemination of optimum chickpea cultivation technology depends on its comprehensive demonstration across the entire HBT. This will be done in the context of the entire rice-based cropping system, by linking with the second phase of another DFID-funded project on “weed management in rice” (R7471). This linked project will promote optimum methods of rice cultivation to enable timely sowing of chickpea or other rabi crops. The presently proposed project will contain activities designed to improve the rabi cropping component. Appropriate methods of chickpea seed production, storage and dissemination will be widely
demonstrated to encourage village-level entrepreneurship in seed supply. As continued chickpea cultivation on the same land would lead to build-up of pests and diseases, efforts will be made to identify alternative *rabi* crops with which chickpea can be rotated. A participatory varietal selection programme for chickpea and *t. aman* rice varieties will be initiated. The extent of limitation by deficiencies of phosphorus, nitrogen and molybdenum will be quantified across the HBT and appropriate methods for their alleviation developed. Integrated pest management (IPM) methods for management of pod borer in chickpea, emphasizing the use of nuclear polyhedrosis virus (NPV), will be further refined and evaluated on an operational scale.

Successful outcomes of the proposed activities will result in immediate livelihood benefits for resource poor rural households in the HBT in the medium land-holding to landless categories. Anticipated diversification of the HBT cropping system, especially by increasing coverage of *rabi* cropping, will increase total system productivity and favourably influence the entire ecology of the region.

### 5. Keywords

Bangladesh, chickpea, short duration rice, cropping systems, High Barind Tract (HBT), integrated pest management (IPM), molybdenum, nuclear polyhedrosis virus (NPV), on-farm demonstration, participatory varietal selection (PVS), phosphorus, rainfed rice, rice fallow crops, seed preservation, seed production, seed storage, seed priming.

### 6. Production System

Semi-arid production system

### 7. Project goal

Production of target crops sustainably increased in semi-arid production systems

### 8. Geographic Focus

Bangladesh

### 9. Commodity Base

Rice, chickpea, rice fallow crops

### 10. Applicant’s full name(s), title(s), post(s) held, and departments(s)

AM Musa, Agricultural Adviser, PROVA

JVDK Kumar Rao, Special Project Scientist, ICRISAT

D Harris, Senior Research Fellow, CAZS, UK.

### 11. Name, address, telephone and fax. numbers of applicant’s institution

Peoples’ Resource Oriented Voluntary Association (PROVA)

B/220, Kazihata, G.P.O. Box 15, Rajshahi 6000

Bangladesh

Tel: 880-721-770512; 880-721-760291  Fax: 880-721-750230

Email: musaprova@rajbd.com  Email: shezan@librabd.net

International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)
12. Name and address of any overseas collaborators
BARI – OFRD and PRC (Bangladesh Agricultural Research Institute – On-Farm Research Division and Pulses Research Centre), Joydebpur, Gazipur, Bangladesh.
BRRI (Bangladesh Rice Research Institute), Joydebpur, Gazipur, Bangladesh.
DAE (Department of Agricultural Extension), Khamarbari, Farmgate, Dhaka-1215, Bangladesh.
ICRISAT (International Crops Research Institute for the Semi-Arid Tropics), Patancheru, Andhra Pradesh 502 324 India.
IRRI (International Rice Research Institute), Los Banos, Philippines.
NRI, (Natural Resources Institute), University of Greenwich, UK.

13a. Project Location
High Barind Tract, Bangladesh

13b. Project Statistician
Very briefly describe the statistical techniques that may be used:
Randomized complete block design with dispersed replication for on-farm trials with >2 treatments; paired "t" tests for on-farm, operational scale evaluations of technology packages; stratified random sampling for rapid rural appraisals, household surveys, adoption studies, etc.

15. Starting and finishing dates
1 October 2002 – 28 February 2006

16. Is this proposal a continuation or extension of work already funded by the DFID?
If so, please state project reference No. and title.
Yes.
R7540 Promotion of chickpea following rainfed rice in the Barind area of Bangladesh (PSP) and R7471 Developing weed management strategies for rice-based cropping systems in Bangladesh (CPP).