Priming upland rice seed in Ghana reduced risk of crop failure and increased yield substantially.

A low-cost and effective way of improving nutrient supply to crops

Soil nutrients such as nitrogen (N) and phosphorus (P) limit crop growth over huge areas of Asia and Africa but are expensive to buy and transport. Legumes such as chickpea, mungbean and groundnut 'fix' their own N from the air. They do this when they become infected by soil bacteria called *rhizobia* but this beneficial infection is often rather haphazard in the field. A more thorough infection (giving higher rates of N fixation) occurs if *rhizobia* inoculum is added to the seeds prior to sowing. Although this simple technology is common in well developed areas, it is rare for farmers in marginal areas to use it. Studies in eastern India, Nepal and Bangladesh have shown that adding *rhizobia* to the water used to prime legumes is an effective way of inoculating seeds and is more readily adopted by farmers.

In Pakistan, maize seeds primed with a weak solution of phosphate (P) produced 24% more grain than non-primed crops (Fig. 6). The cost per hectare of the additional P is