

Occasionally, sowing may be unavoidably delayed – by heavy rain for example. If primed seed is surface-dried and kept dry it can be stored for several days, then sown as usual and still perform better than non-primed seed.

The fast germination results in rapid development of the seedling's root systems while the soil conditions around the seed are still good.

With nothing to stop the seeds from growing, the results are vigorous crops.

Yield increases after priming seeds

Maize in Zimbabwe and India:

22 % increase in yields

Sorghum in Pakistan and Zimbabwe:

31 % increase in yields

Wheat - India, Pakistan:

37 % increase in yields

Upland rice - West Africa:

70 % increase in yields

Mung bean - Pakistan:

206 % increase in yields

Steps in seed priming:

1. Soak the seeds when you are ready to sow
2. Soak maize for 12-18 hrs. Sorghum for 10 hours. Cowpea for 8 hours.
3. Make sure they are not soaked longer than the given hours. If they continue to take up water they will start to germinate and you might lose the seeds!
4. Surface dry them next day by either drying them with cloth or placing in the sun.
5. Sow them the same day.
6. If you cannot sow because of bad weather, the seeds can be stored in a dry place for several days.

Adapted from the website: www.bangor.ac.uk/priming
of Centre for Arid Zone Studies, Bangor, UK

SEED PRIMING

Improve yields by soaking seeds before sowing



Maize emerges faster and more completely when seeds are primed overnight - as shown in this farmer's field in India (primed left part of photo)

On-farm seed priming – what is it?

Every year, mankind relies on the miraculous transformation of seeds into plants and back into seeds again. About 60% of all food crops are grown anew from seed each year, producing more than 2.3 billion tonnes of grain.

Yet few people realise how fragile this transition from seed to seedling can be. To grow successfully seeds must germinate and seedlings emerge, quickly and uniformly throughout the field so that light, water and soil nutrients may be used with maximum efficiency.

Poor crop establishment: a common problem in a developing world

Crops are like children – give them a good start in life and they usually grow tall, strong and healthy. But if crops emerge and grow slowly after germination, they often become stunted and sickly. Because such plants are easily damaged by pests and diseases, they produce less grain and straw. Giving crops a good start is therefore of crucial importance.

In Southern Africa unpredictable and erratic rainfall, poor soils and low quality seed all contribute to a situation where good crop establishment is often the exception rather than the rule. Once sown, seeds spend a great deal of time just absorbing water from the soil. If this time is minimised, seed germination and seedling emergence can be significantly speeded up. The easiest way to do this is to soak seeds in water before sowing.

This is not a new idea – the technique has been used by farmers from Nepal to Botswana for generations. Remarkably, however, soaking has only been done regularly during particularly poor conditions to “catch up” on time lost to drought. Soaking was never done on a regular basis and the duration of soaking was highly variable.

Researchers from the Centre for Arid Zone Studies (CAZS), have calculated safe limits – the maximum length of time for which seeds can be soaked and which, if exceeded, could lead to seed or seedling damage – for a wide range of tropical and sub-tropical crops. By reducing the recommended soaking time to less than the safe limit, they were able to promote on-farm seed priming as a low-cost, low-risk intervention.

The results were remarkable. Farmers reported that primed crops emerged faster and grew more vigorously. This alone is reason enough to adopt seed priming. In many cases, however, crops also matured earlier and gave higher yields.

No cases were reported where priming was worse than not priming. This is significant because, since priming has essentially zero cost, the practice can be considered as reliable “insurance” for farmers.



The contrast is striking - Primed mungbean at right - Pakistan

For practical purposes, overnight soaking has been shown to be effective, although a superior response is often obtained from soaking rice and maize for 18 hours.

Farmers can prime their own seed if they know the safe limits. These safe limits are calculated for each variety so that germination will not continue once seeds are removed from the water. Primed seed will only germinate if it takes up additional moisture from the soil after sowing. It is important to note this distinction between priming and pre-germination – sowing pre-germinated seed under dryland conditions can be disastrous. In most cases seed can be primed overnight and is simply surface-dried and sown the same day. Apart from swelling slightly and weighing more, primed seed can be treated in the same way as non-primed seed.