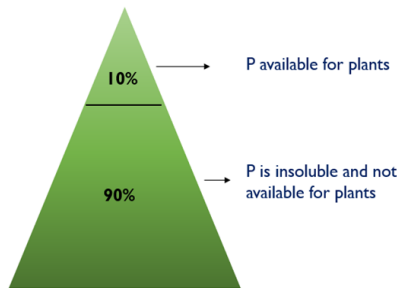


Why is Phosphorus Important ?

- Phosphorus is one of the most important essential nutrients for plants, together with nitrogen and potassium
- Without enough phosphorus, plants will not be able to grow properly and develop
- Even though a lot of phosphorus is present in the soil, more than 90% of it is not available to plants

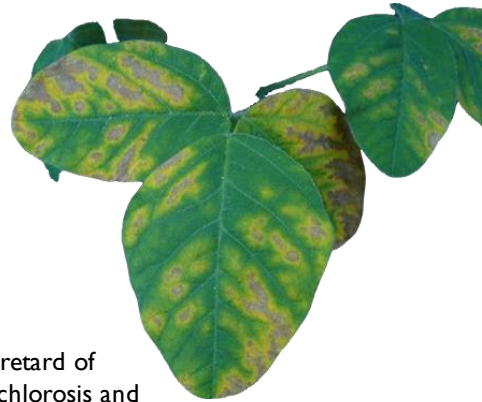


P availability to plants from overall P present in the soil

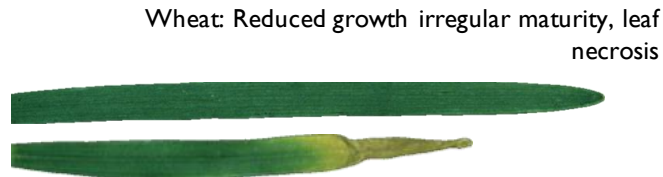
Phosphorus Deficiency Symptoms in Cotton, Wheat and



Cotton: Leaf discoloration, stunted root and shoot growth, poor boll development



Soy: Overall retard of growth, leaf chlorosis and necrosis



Wheat: Reduced growth irregular maturity, leaf necrosis

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How to make Rock Phosphate more efficient in Organic Agriculture?

What are the Phosphorus Challenges in Organic Agriculture ?

- In most cases crops depend on the additional phosphorus input for efficient production
- In case of organic farming, the synthetic phosphorus fertilizers are prohibited
- Rock phosphate is an allowed and easily available phosphorus source for organic farming
- However, rock phosphate without acidulation is not easily available to plants in soils with low organic matter



Figures references:

<https://www.flickr.com/photos/cimmyt/5084216978/in/photostream/>

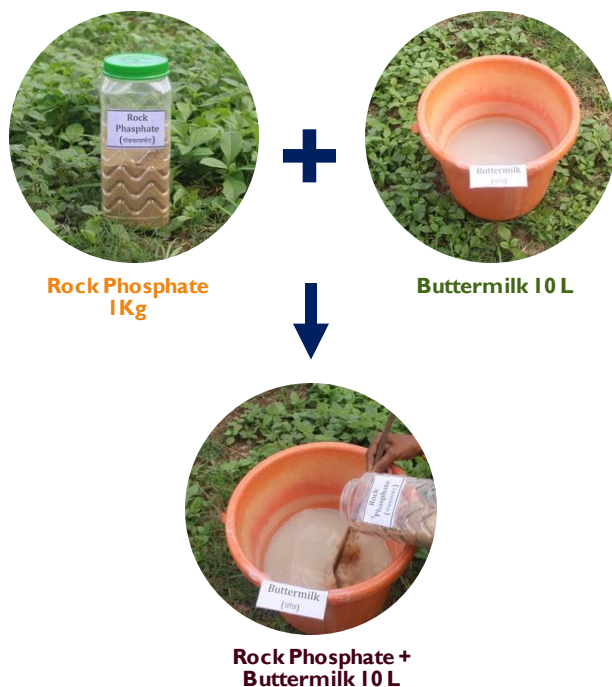
<https://www.yara.us/crop-nutrition/soybean/nutrient-deficiencies/phosphorus-deficiency-soybean/>

<https://www.yara.us/crop-nutrition/cotton/nutrient-deficiencies/phosphorus-deficiency-cotton/>

How to Make Phosphorus Efficiently Available to Plants from Rock Phosphate?

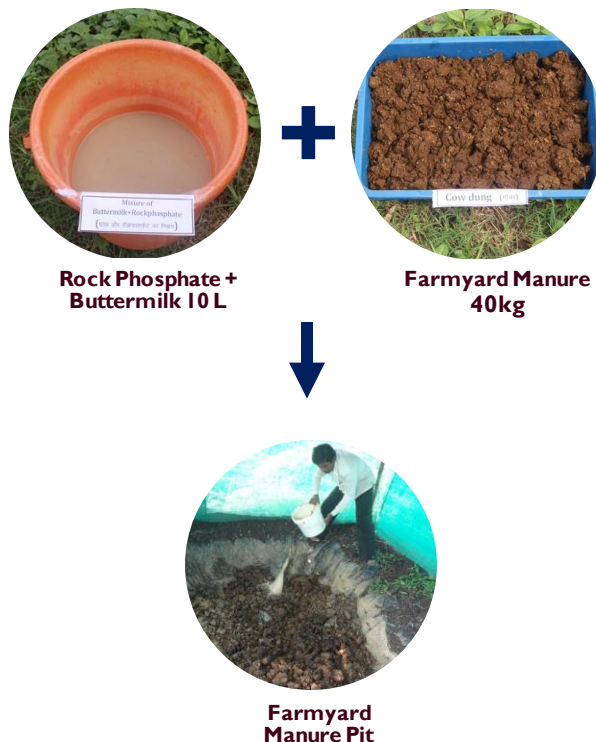
- Mixing rock phosphate with buttermilk increases the phosphorus availability to plants. This mixture should then be added to farmyard manure to efficiently supply it to the plants. In this way, farmyard manure is enriched with phosphorus that is easily and readily available to plants.

1. Method of preparation



- Rock phosphate and buttermilk should be kept for 7 days and stirred every two days

2. Preparation with Farmyard Manure



- Add the mixture in the farmyard manure pit every week.

3. Method of Application



Ideally 5 tons of FYM is recommended for one hectare per year

During SysCom on-farm trials, using farmyard manure with rock phosphate acidulated with buttermilk, researchers have found that :

On average, cotton yield increased by 150 kg/ha, soy by 150 kg/ha and wheat by 100 kg/ha in the plots fertilized with rock phosphate acidulated farmyard manure compared to farmyard manure without acidulation.