

## Liming materials, supply and costs

Agricultural lime is ground limestone and hence a natural product. There are huge deposits of lime stone in Ethiopia, suitable for the production of lime. These resources include marble, limestone and dolomite. Currently, government lime crushers, cement and marble factories are serving as potential sources of lime for acid soil treatment. So far, it is supplied free of cost for demonstration purposes through the bureaus of agriculture, cooperative unions and projects. However, supply is very limited and for the required large scale application of lime well established and sustainable supply mechanisms are needed.



Recently, following massive demonstrations and awareness creation, demand for lime is growing and, as a result, the Amhara regional bureau and GIZ SLM are piloting the supply of lime through private agro-dealers at subsidized costs. For this purpose, a private agro-dealer, Ato Abebe Ababayehu, is involved in the supply of lime in Debremarkos areas. The Woredas provide support in consolidating farmers' demand and linking to the private dealers. The dealers closely work with the offices of agriculture and deliver the lime at different sites, according to the demands. In the starting year of this piloting (2017), the lime is sold to farmers by the private dealers at only 80 birr per quintal.



Lime produced at government owned crushing factory



Lime produced at marble factory



Lime demonstration on wheat (left treated and right farmer practice)

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## SUSTAINABLE LAND MANAGEMENT PROGRAM (SLMP)

### Using Agricultural Lime to Treat Acid Soil and Enhance Productivity



Implemented by: **giz** Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

## Introduction

A soil is considered acidic when it has a pH value lower than 7. The lower the pH value the stronger is the acidity. Soil acidity mainly occurs in regions with high rainfall, high temperature and old landscapes. Continuous cropping with no or only little organic input can amplify the acidity of soils.

Soil acidity limits crop production primarily by impairing root growth thereby reducing nutrient and water uptake. Acidic soils also create toxicity in the soil solution that hinders growth of plants, resulting in poor crop yield. The toxicity also hinders micro-organism activities, and results in soil compaction and erosion. Moreover, soil acidity converts available soil nutrients in to unavailable forms. Acidic soils are poor in basic cations and some micronutrients which are as essential to crop growth and development. Crops grown on acidic soils can be stunted and are not responsive to fertilizers causing their productivity to be very low.

## Impact of soil acidity on agricultural productivity

Soil acidity is one of the major factors limiting agricultural productivity in the Ethiopian highlands, affecting more than 40% of the agricultural land. In some areas crops sensitive to soil acidity like faba bean and barley are going out of production.



On highly acidic soils only oats can be cultivated. In severe cases, the soil becomes barren. Crop yields in acid soils are frequently reduced by 50% up to crop failure. Increased soil acidity may lead to a host of problems, including: reduced yields, poor plant vigor, uneven pasture and crop growth, poor nodulation of legumes, stunted root growth, persistence of acid-tolerant weeds, increased incidence of diseases, and abnormal leaf colors. The crop loss in wheat alone is estimated to be 9 billion birr per year.

## Effect of lime on crop productivity

Application of lime is a main strategy to enhance productivity of acidic soils. However, lime should be combined with compost, that also helps to combat soil acidity, and other soil fertility management technologies (improved seed, blended fertilizer and improved agronomic practices) in order to boost production. Field trials on farmers' fields show that use of agricultural lime in acidic areas could increase crop yield by up to 300% and on average by 80%.



## Lime application

Lime should be applied 4 to 8 weeks prior to planting. Since lime does not readily move in the soil, it should be uniformly applied and incorporated by deep ploughing to ensure a thorough blending with the soil. The rate of application varies mostly from 20-60 quintals per hectare depending on the level of soil acidity and quality of liming material. However, lime

requirement for each field should be determined based on soil pH analysis at regional soil laboratories or research institutes.



The application of lime should be considered for, strongly acidic soils with pH less than 5.5. The effect of a single application of lime could last for around 5 years before another application is required. To reduce costs of transportation and application, farmers can apply on one '*timad*' of land every year to gradually cover a larger size, and continue on a rotational basis.

## Where to buy lime?

Further information and lime can be obtained from:

Ato Abebe Ababayehu  
Tel: 0912048759  
Debre markos