

# **Response of Arabica Coffee Seedling to Lime and Phosphorus:**

## **I. Shoot and Root Growth**

**A. NETSERE<sup>1</sup>, H. GEBREKIDAN<sup>2</sup>**

<sup>1</sup>Jima Agricultural Research Center, P. O. Box 192, Jima, Ethiopia

<sup>2</sup>Alemaya University, P. O. Box 138, Dire Dawa, Ethiopia

### **SUMMARY**

Low soil pH and low available P are among the major constraints hampering the productivity of coffee industry in Ethiopian. Yet, information on the potential beneficial effects of lime and inorganic P fertilizer on soil fertility for improved coffee production is virtually absent. Hence, pot experiment was conducted at Jima Agricultural Research Center with the objectives to investigate the effects of lime and P on shoot and root growth of arabica coffee seedlings and establish optimum combination of these agricultural inputs for practical use on Nitosols of Jima area. The treatments were six levels of lime [0, 2.31, 4.62, 6.93, 9.24 and 11.55 g/2.5 kg soil (pot)] and four P rates (0, 250, 500 and 750 mg P/pot) and were laid out in factorial experiment in a randomized complete block design in triplicates. Results depicted that lime and P rates significantly ( $p < 0.01$ ) affected shoot (plant height, stem diameter, and leaf number and area) and root (tap and lateral root length) growth of coffee seedlings. Likewise, the interaction of lime and P significantly ( $p < 0.01$ ) affected only shoot growth. A combination of 0 g lime and 750 mg P/pot and 2.31 g lime and 250 mg P/pot gave the highest, but non significant values of the aforementioned parameters. In conclusion, vigorous and transplantable arabica coffee seedlings could be produced by applying P at a rate of 750 mg P/pot or a combination of low lime (2.31 g lime/pot) and low P (250 mg P/pot) rate. However, the scenario might be quite different after planting in the field. Therefore, further studies are suggested for the future in this area.