Development of ecological practices to manage *Phytophthora* root rot of cassava (*Manihot esculenta*)

**INTRODUCTION**

Cassava (*Manihot esculenta*), a starchy root crop, is the fourth most important source of dietary carbohydrate in developing countries. Root rots caused by *Phytophthora* fungi are widespread and cause losses of 20% in world production.

**MATERIALS AND METHODS**

**On-farm field trials** were established in three departments of Colombia to evaluate the effect of three different treatments on the incidence and severity of root rots in harvested stakes. Stakes were grouped and submitted to three types of control as follows:

- **Thermotherapy**: Stakes were immersed for 49 min in water heated to 49°C over a wood fire (Figure 1).
- **Woodfire heats water**: Water is heated by adding cold water to a woodfire, reaching above 49°C.
- **Temperature above 49°C**: Adding cold water to heat water.
- **Introduction of stem cuttings**: Cutting stems to introduce the fungus.
- **After 49 min, take out stems**: Removing stems after 49 min.
- **Planting treated seeds**: Planting treated seeds.

**RESULTS**

The highest yields were obtained with CIAT recommended crop management practices (Figure 2).

**CONCLUSIONS**

The treatments with heat, *Trichoderma*, and varietal resistance are effective alternatives for controlling *Phytophthora* root rot and are currently being validated through technology packages, with the active participation of farmers.

Hot water (49°C) heated in oil drums, without a thermostat, to disinfect infected cassava stakes is effective in controlling *Phytophthora* (also tested in vitro), *Xanthomonas axonopodis* pv. *manihotis* (cassava bacterial blight), *Diplodia manihotis* (stem rot), and insects (data not presented). Resource-poor farmers in Colombia are interested in applying this system. A short pretreatment (10 min) one day before the long treatment (5 hours) prevents undesired losses in germination. This system will allow seed to be distributed at a national level.

**REFERENCES**