

Mavuno Zaidi

A large-scale outreach to demonstrate balanced fertilization to small-scale farmers in Kenya

¹Mbuthia, L.W. and ²Magen, H.,

¹ ICL Fertilizers, East Africa (lilianwanjiru.mbuthia@icl-group.com); ² International Potash Institute (IPI), Zug, Switzerland (ipi@ipipotash.org)

Mavuno Zaidi, a swahili phrase that means 'plentiful harvest', is a large-scale farmer outreach program that was initiated by Syngenta in conjunction with ICL Fertilizers and run by Technoserve, an NGO that serves farmers across Africa. The large-scale outreach program aimed at training 15,000 small-scale potato and tomato farmers covering 17 counties in Kenya. Farmers were exposed to integrated training that encompassed business skills, agronomy skills and marketing skills.

Focusing on potato production, ICL identified unbalanced fertilization as one of the limiting factors to potato productivity in the country. In Kenya, farmers have relied on two main fertilizer products which are Di-Ammonium Phosphate (DAP) and Calcium Ammonium Nitrate (CAN). This limits their fertilization to only two nutrients, nitrogen (N) and phosphorus (P). Potassium (K), a key nutrient for potato production, is hardly used due to a belief that Kenyan soils are rich in K. This has resulted in nutrient mining, with farmers experiencing declining yields over the years.

Potato farmers in the region generally use two to four bags of DAP per acre and sometimes top dress with two bags of CAN, translating to 90-150 kg N/ha and 225 kg P₂O₅ /ha with an average yield of 10-13 t/ha.

ICL developed a balanced fertilization regime, based on nutrients removal, with a target yield of 30 t/ha. The fertilization regime consisted of



Potato demonstration plot

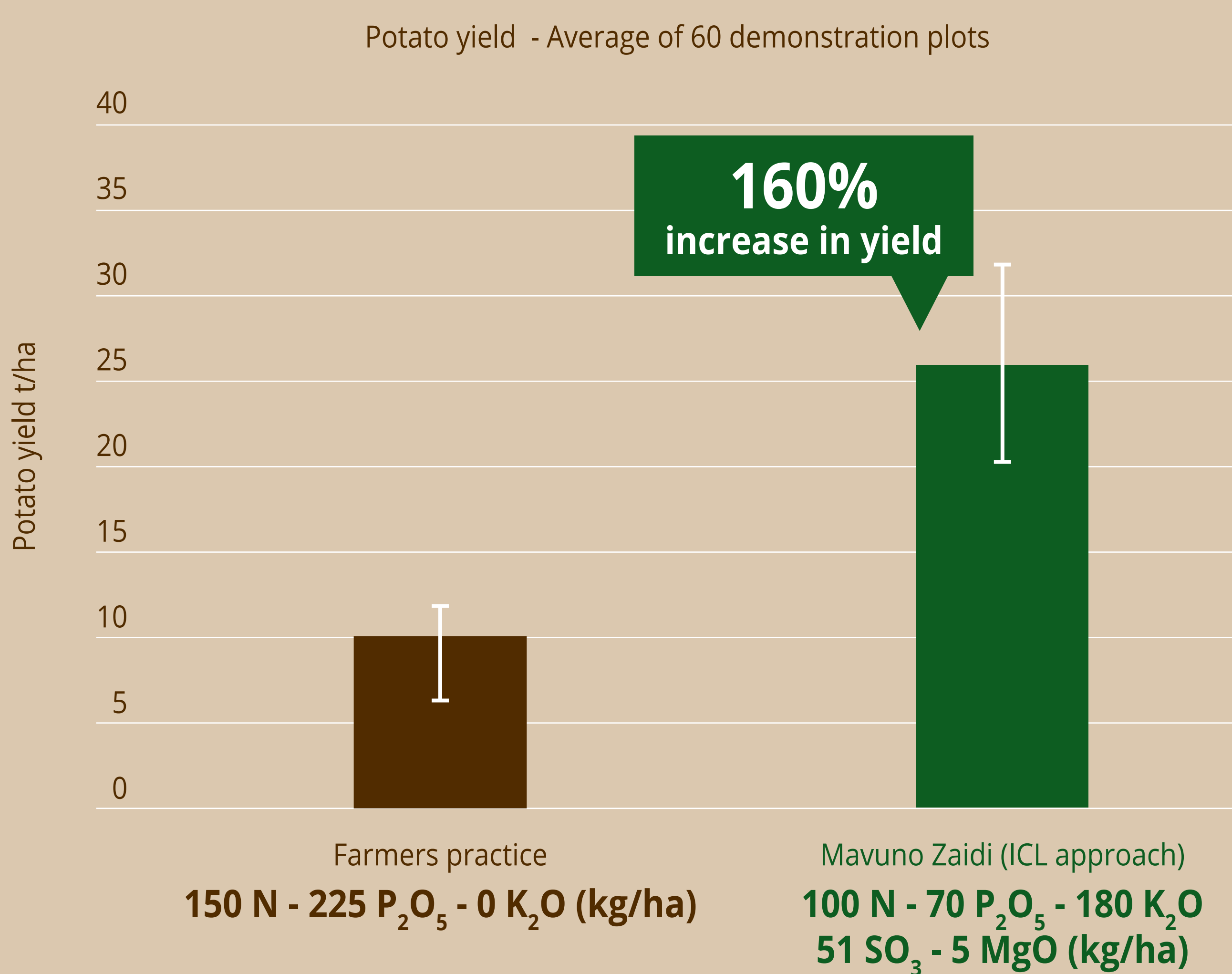


ICL agronomist inspecting one of the demonstration plots

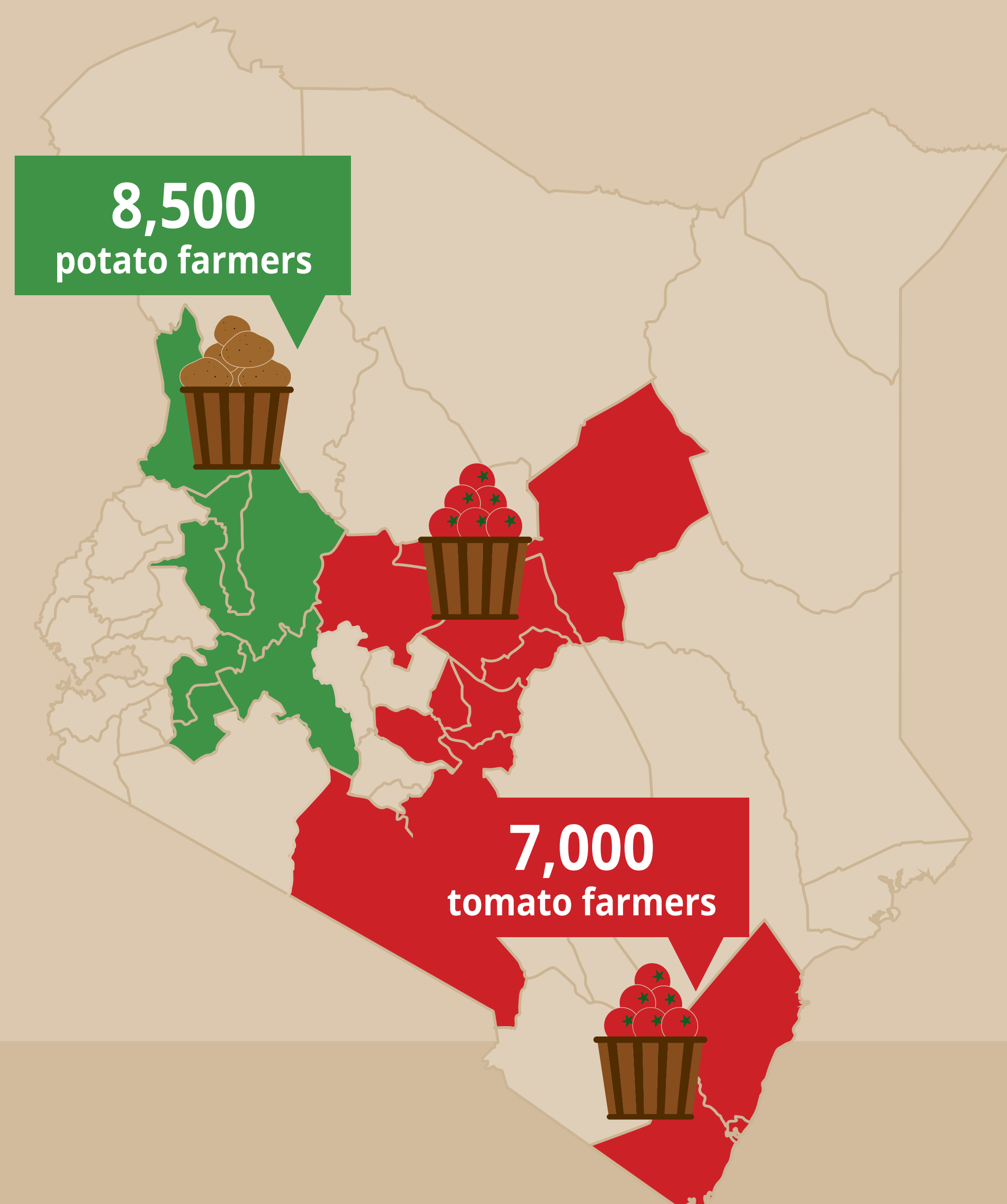
90-100 kg N/ha, 60-70 kg P₂O₅/ha, 170-180 kg K₂O/ha, 51 kg SO₃/ha and 5 kg MgO/ha. The N fertilizer used in the demonstrations was a controlled release fertilizer produced by ICL Fertilizers where 30% of the N is coated. This gives the fertilizer a longevity of 2-3 months thus improving nutrient use efficiency and reducing leaching. The coated fertilizer was also the source of SO₃ and MgO.

Results from 60 potato demonstration plots of 1,000 m² each, planted across seven counties in two seasons, yielded an average of 26 t/ha, varying between 20 and 33 t/ha. This compared to farmers practice whose average yield was 10 t/ha, varying between 7-14 t/ha. ICL's regime proved that balanced fertilization is profitable, with a value cost ratio of \$23 for every extra \$1 spent on fertilizer under the ICL fertilizer regime, where farmers were receiving \$380 gross profit, as a result of higher yields.

Project results



2016 project area by county



The ICL approach

