

Africa RISING in the Ethiopian Highlands

Improved agronomy increases wheat yield In Africa RISING action sites

Job Kihara, Biyensa Gurmessa, Rolf Sommer, and Lulseged Tamene

Objective:

- To identify best bet soil fertility management options for each of the action sites based on agronomic performance and economic evaluation and identify key yield reducing factor in farmer fields based on agronomic survey among participating farmers
- To demonstrate integrated options in farmer fields within action sites of the Africa RISING project of the Feed the Future initiative in Ethiopia.
- → **Ethiopia** case study: wheat-based smallholder cropping systems

Field trials

Fertilizer-response trials were carried out in the Gudo Beret Kebele (Amhara Region) and Jawe Kebele (SNNPR Region) in 2014/15 as part of the USAID funded AFRICA-RISING project. Furthermore, a scenario was simulated, in which in addition to 65 kg/ha mineral N fertilizer and 3 t/ha manure (45 kg org. N/ha), 50 % of the produced wheat straw was retained on the soil surface after harvest.

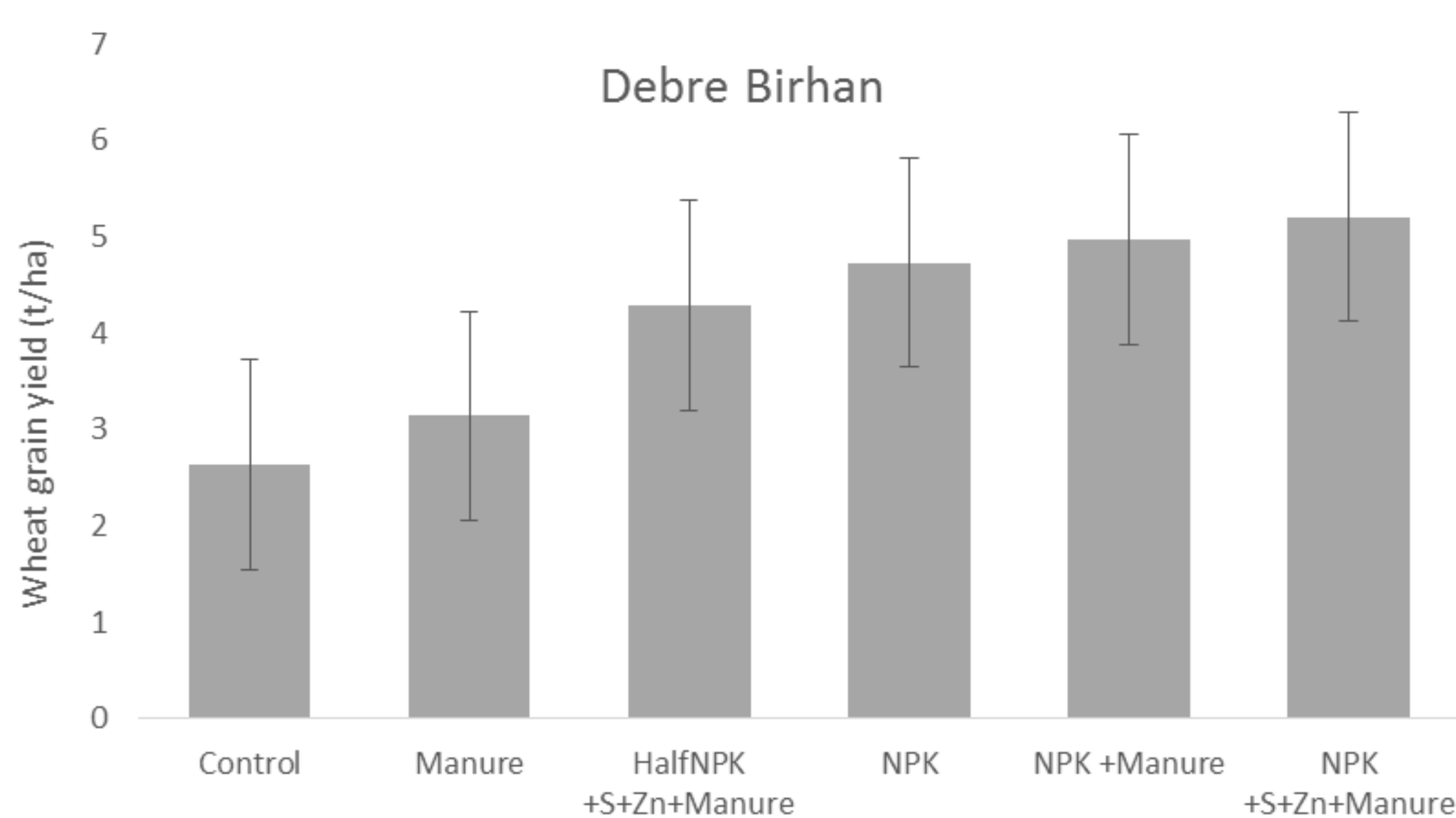


Figure 1: Effect of different treatments on wheat grain yield in Debre Birhan and Hosaina, Ethiopia during 2014/15 cropping season. Error bars are 95% confidence limits



Plates above (from the same farmer's field) show that improved spacing increases yields and even greater benefits are realized with combined inorganic-organic fertilizer combinations

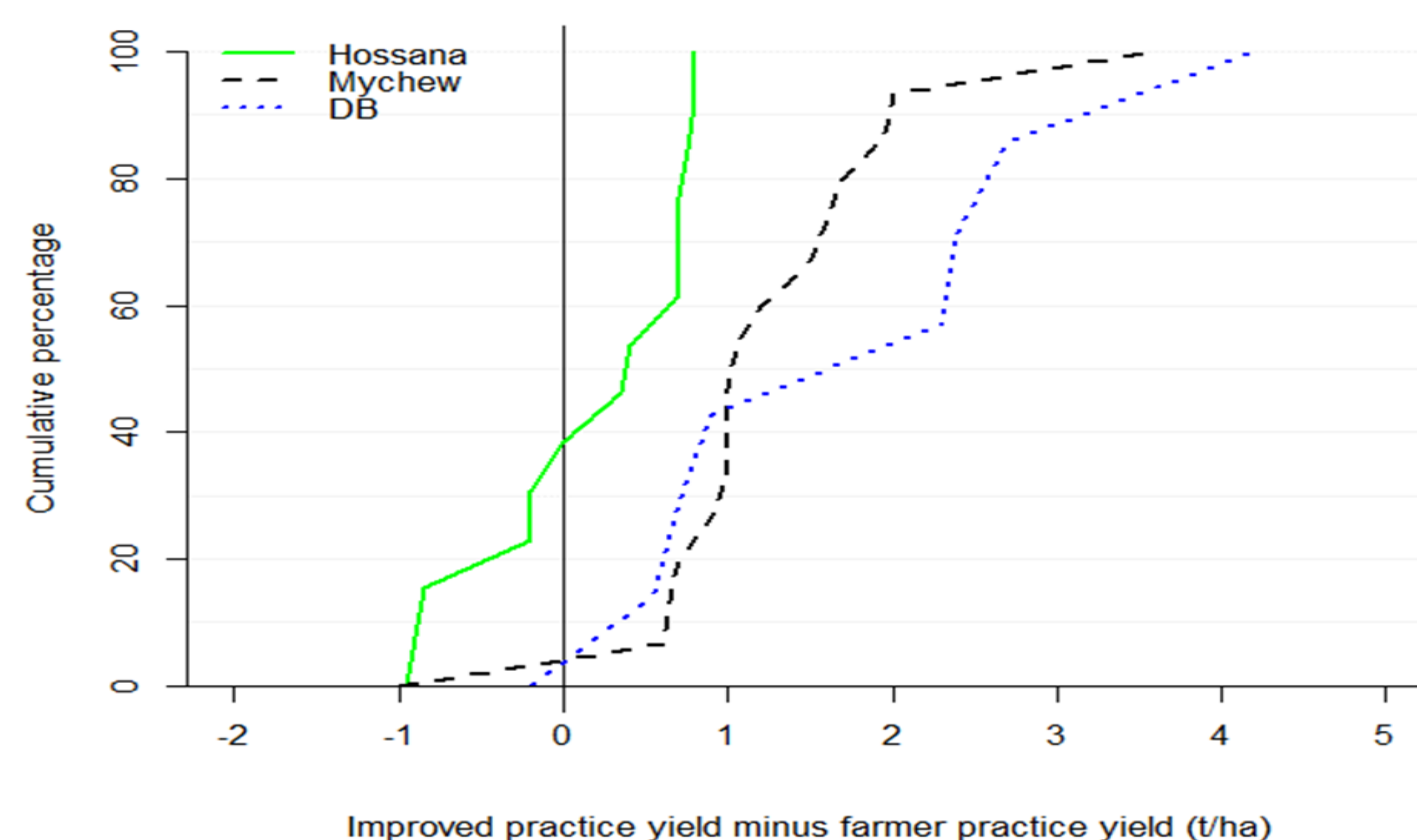


Figure 2. Yield gain obtained over the farmers practice by farmers in Debre Birhan (DB), Maychew and Hosaina, Ethiopia (38 fields) during 2014/15 cropping season

Results

- Yield increase of at least 1 t/ha over the farmers practices is obtained in at least 50% of the fields in Maychew and Debre Birhan.
- Application of NPK combined with manure or manure and micronutrients significantly increased yield over the control (unfertilized).
- Half NPK with manure and micronutrients increased yields by 63% over the control.
- Application of recommended NPK increased yield by 80% over the control.
- Application of manure alone (at 5 t ha⁻¹) resulted in low yield response.

Conclusions

Proper spacing alone can increase wheat productivity in farmer fields by 1.3 t/ha. If 55% of farmers in Ethiopia (0.88 m ha of the 1.6 m ha for wheat production) can increase yield by 62% (i.e., 1.3 t/ha) as in the farmers practice through use of appropriate plant densities, 1.15m tonnes can be added to food basket.

Demonstrations with farmer partnerships on combined application of inorganic fertilizer and manure are needed to achieve greater awareness and potentially uptake of this promising practices.

Core partners



We thank farmers and local partners in Africa RISING sites for their support



This poster is copyrighted by the International Livestock Research Institute (ILRI). It is licensed for use under the Creative Commons Attribution 4.0 International Licence. November 2016

