Integrated Soil Fertility Management Affect Profitability of Soybean in Northern Ghana

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Key research activities

A split-plot design with 2 soybean varieties (TGX-1904-6F & Jenguma) as main plots and 5 integrated soil fertility management (ISFM) methods as subplots. ISFM methods used include: Triple superphosphate at 60 kg/ ha(TSP) , Fertizol at 4 t/ ha (F), TSP + F, TSP + F + Boostxtra. Grain and fodder yield were measured and benefit cost (BCR) was estimated.

Results and main findings

- Soybean variety affected only fodder yield (Table 1).
- ISFM affected both grain and fodder yield (Table 2).
- Majority of farmers preferred TSP+F+Boostxtra application on soybean N (Fig. 1).
- ISFM affected benefit cost ratio (Fig. 2).

Implications of the research for generating development outcomes

- Jeguma variety may be grown with TSP at 60 kg/ha to increase yield and profitability.

How this work would continue in Africa RISING phase 2

Results from this study can be used for scaling-up activity in Africa RISING phase 2 to improve soybean productivity in in northern Ghana.

Current partnerships and future engagements for out scaling

Current : Ministry of Food and Agriculture (MoFA)
Future: 1) Agricultural Technology Transfer project (ATT)
2) Agricultural Development and Value Chain Enhancement Program (ADVANCE)

Table 1: Effect of variety on grain yield and fodder yield of soybean

Variety	Grain yield (kg/ ha)	Fodder yield (kg/ ha)
Jenguma	1374.3	2925.9
TGX-1904-6F	1398.3	2568.8
s.e	88.99	88.81
P-value	ns	0.0361

Table 2: Effect of IFM on grain yield and fodder yield of soybean

ISFM	Grain yield (kg/ ha)	Fodder yield (kg/ ha)
Farmer practice	971.7	1833.4
TSP at 60 kg/ha	1435.4	2955.8
Fertizol (F) at 4 t/ha	1289.4	2758.3
TSP + F	1671.1	3182.6
TSP + F + Boostxtra	1563.8	3006.4
s.e	141.97	180.33
P-value	0.0081	<.0001

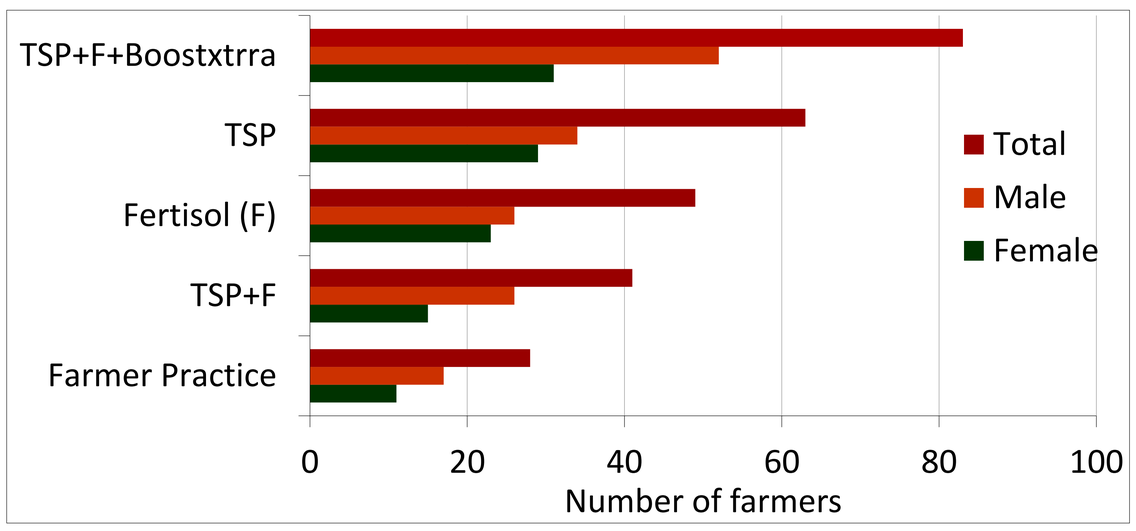

Fig. 1: Farmer preference for ISFM on soybean

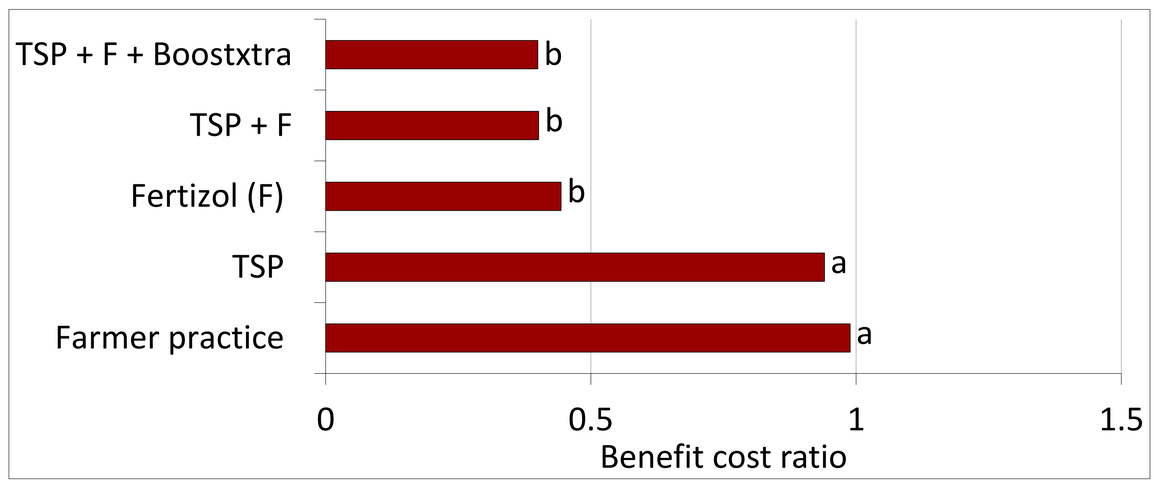

Fig 2: Effect of ISFM on benefit cost ratio

The Africa Research In Sustainable Intensification for the Next Generation (Africa RISING) program comprises three research-for-development projects supported by the United States Agency for International Development as part of the U.S. government's Feed the Future initiative.

Through action research and development partnerships, Africa RISING will create opportunities for smallholder farm households to move out of hunger and poverty through sustainably intensified farming systems that improve food, nutrition, and income security, particularly for women and children, and conserve or enhance the natural resource base.

The three projects are led by the International Institute of Tropical Agriculture (in West Africa and East and Southern Africa) and the International Livestock Research Institute (in the Ethiopian Highlands). The International Food Policy Research Institute leads an associated project on monitoring, evaluation and impact assessment.

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