



Doubled-Up Legumes in Malawi: An Innovation for Sustainable Rain-Fed Cereal Production in Developing Countries

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Africa - 7 to 10 kg/Ha fertilizer





Two types of legumes

Annuals - for food



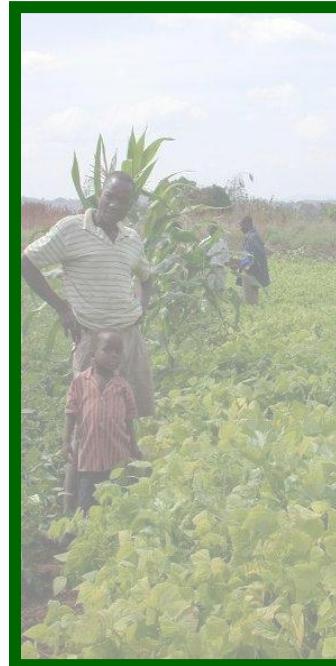
Bean, groundnut & soyabean

Perennials – agroforestry soil fertility & fuelwood



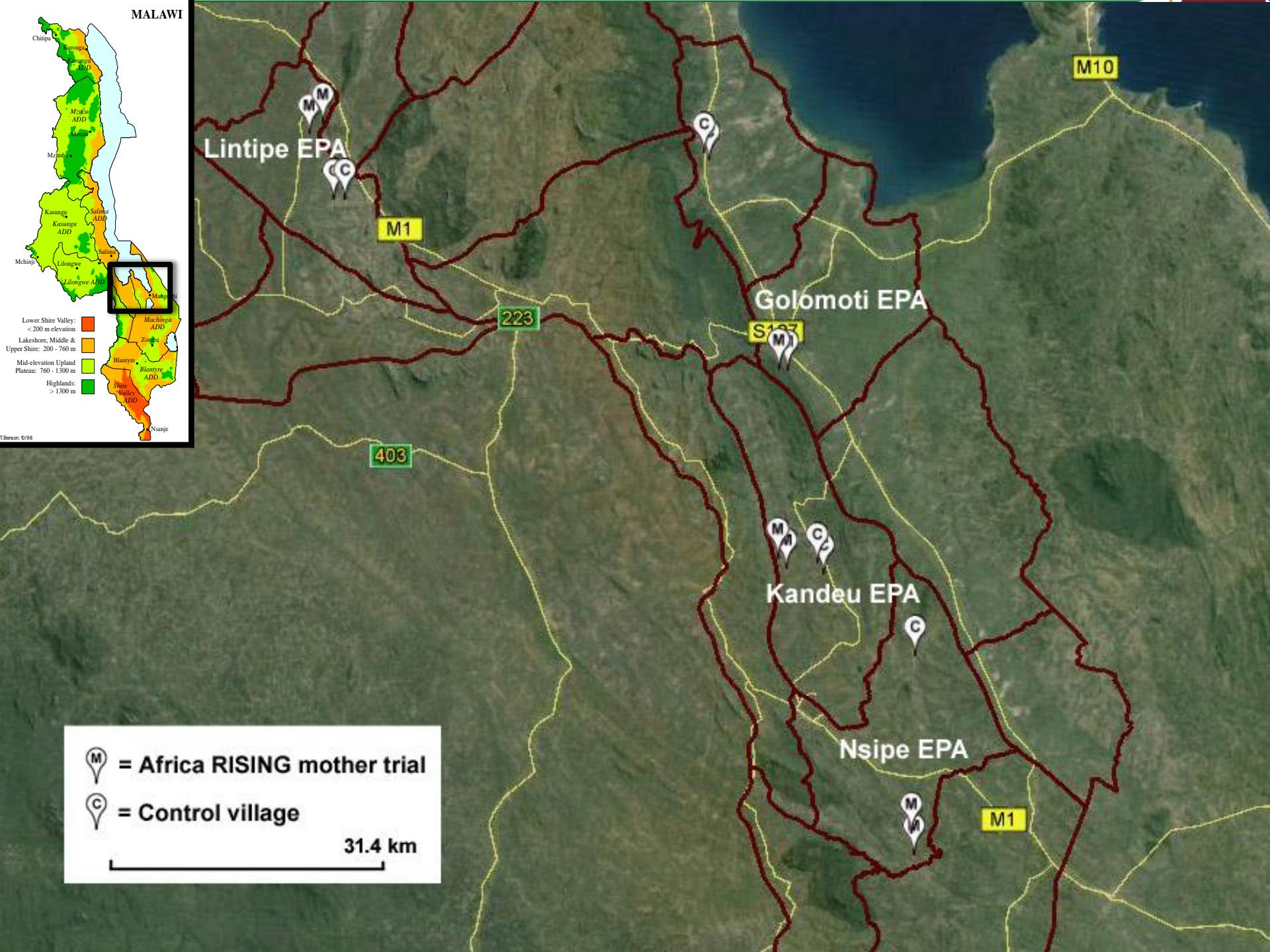
Gliricidia & tephrosia trees

A third way: doubled up legumes



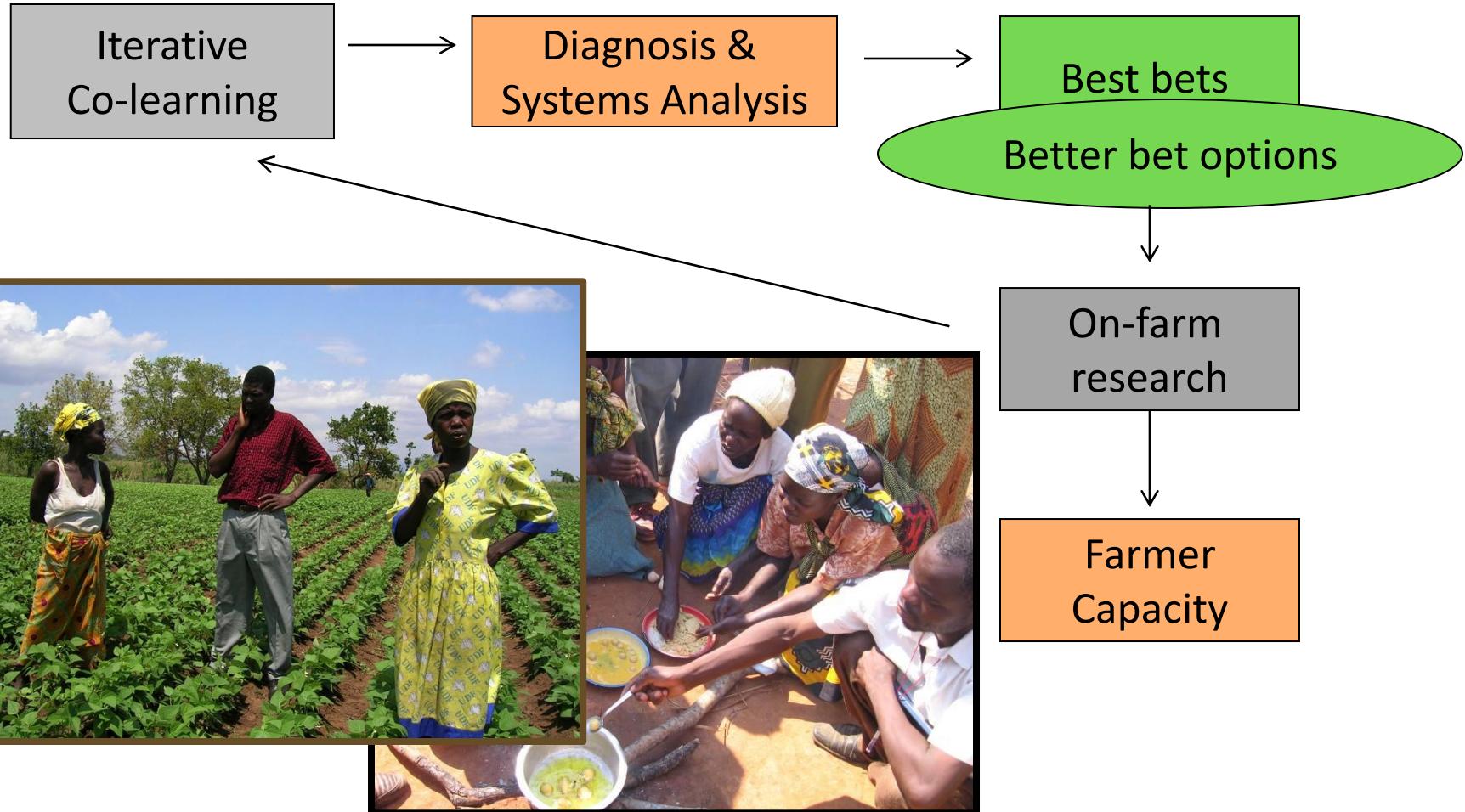
A third way: doubled up legumes







Participatory research and education





Annual Food Legume



Pigeon pea

Groundnut

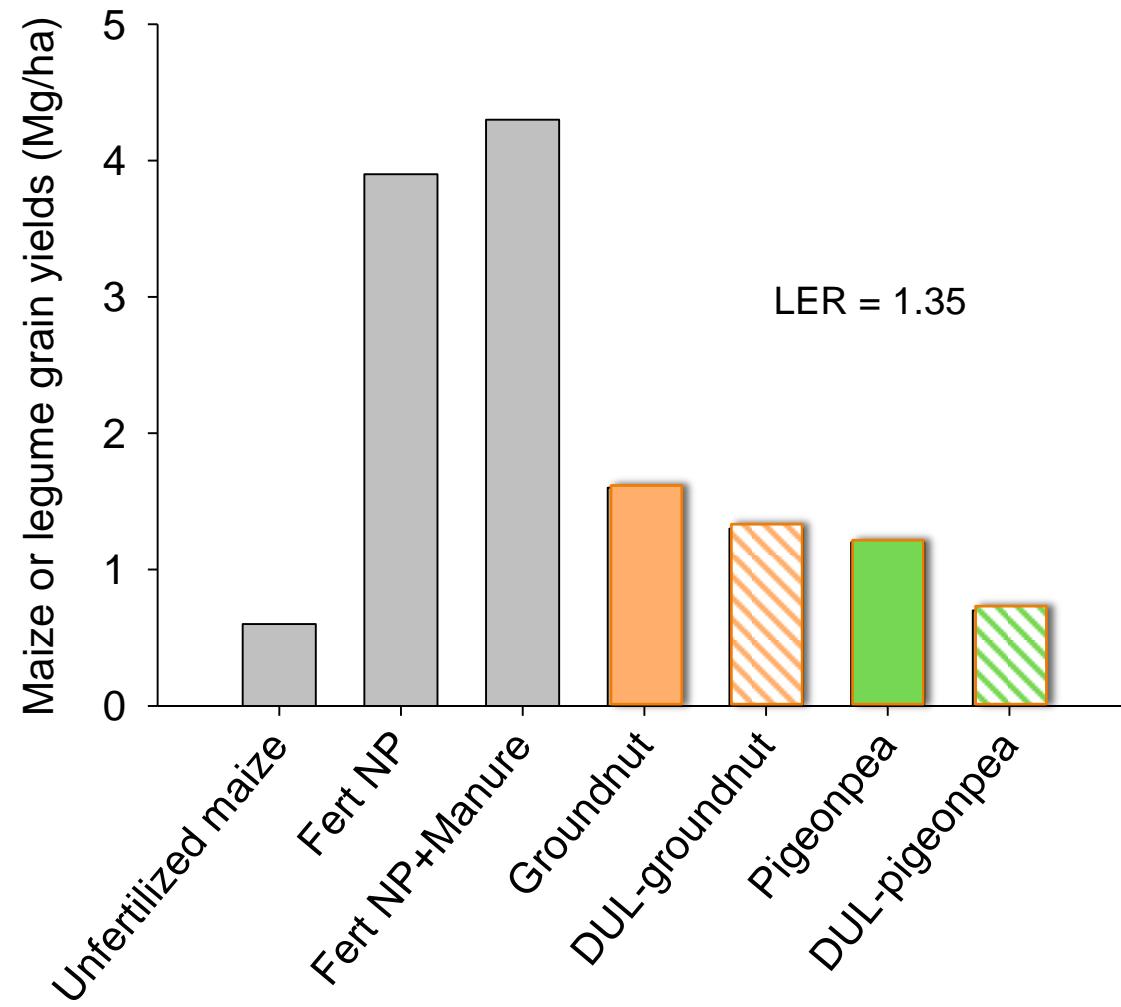
Year 1: Doubled Up Legumes



Year 2: Maize

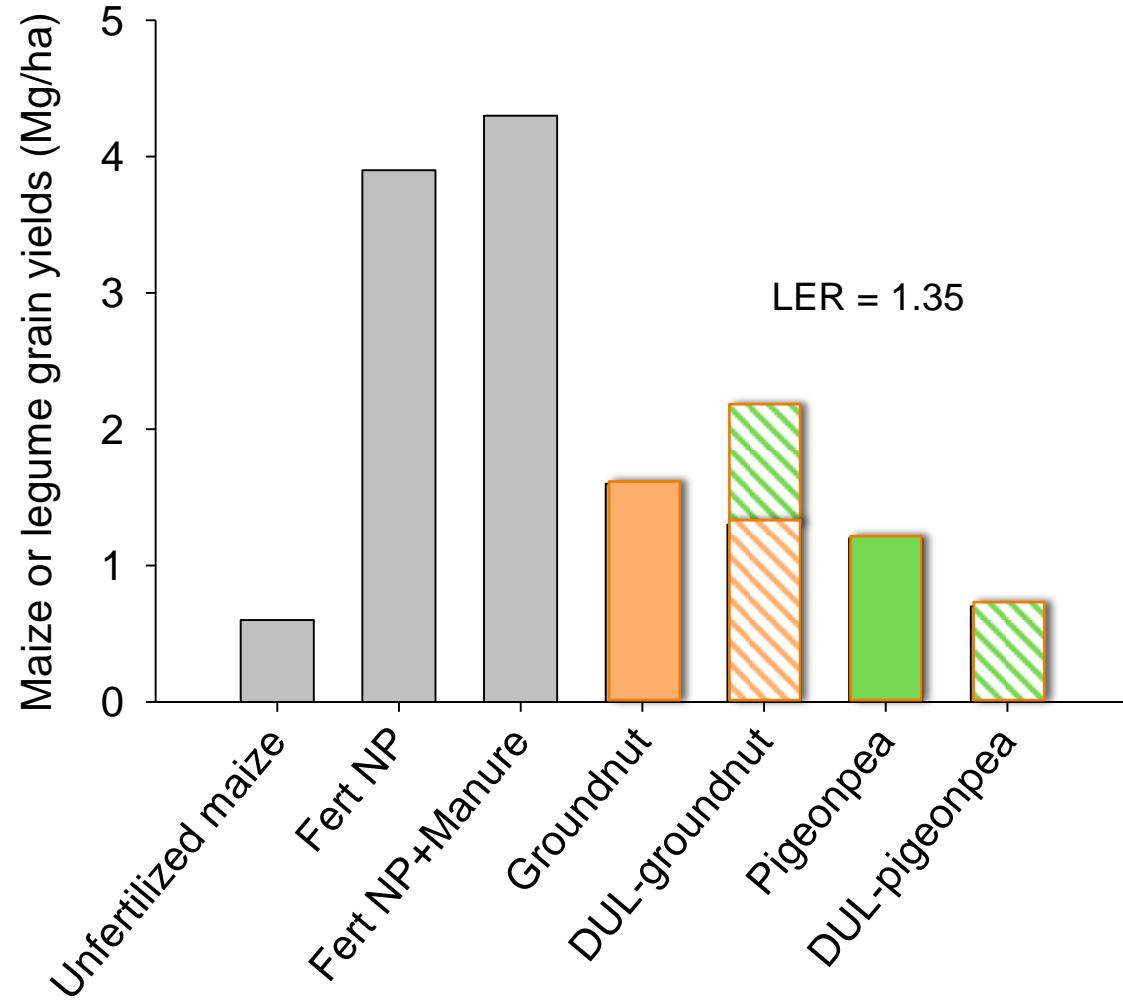


YEAR 1: Sole or doubled-up legumes in maize based systems (4 sites, n=12)



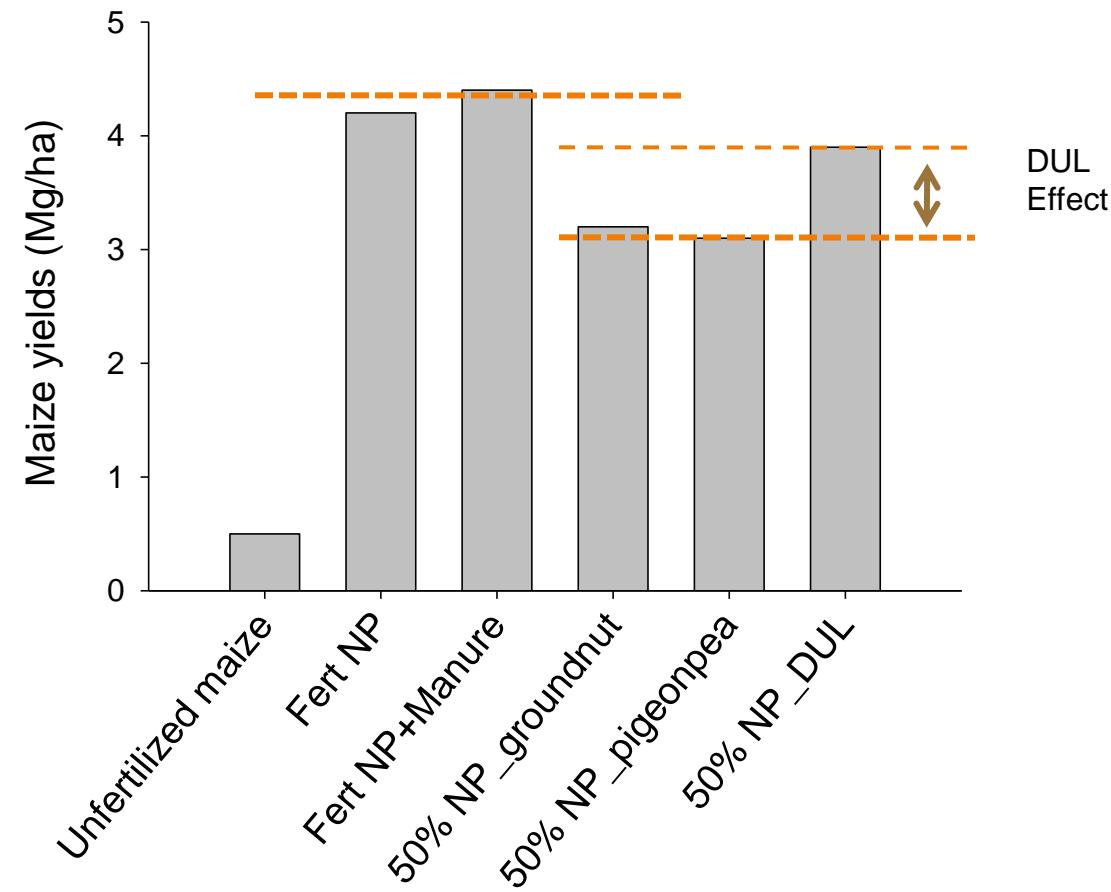
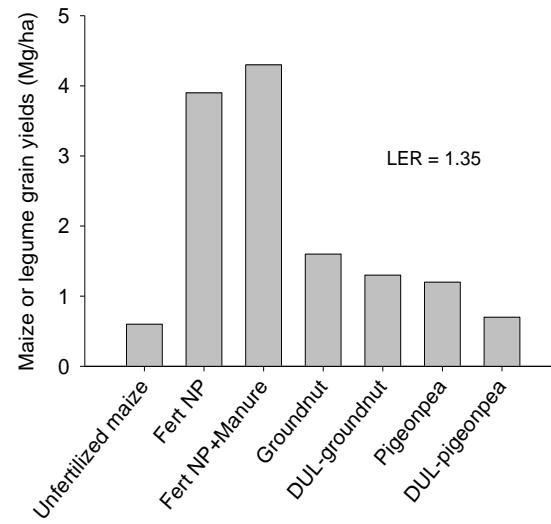


YEAR 1: Sole or doubled-up legumes (DUL) with maize





YEAR 2: Rotational effects of sole or doubled-up legumes sequenced with maize



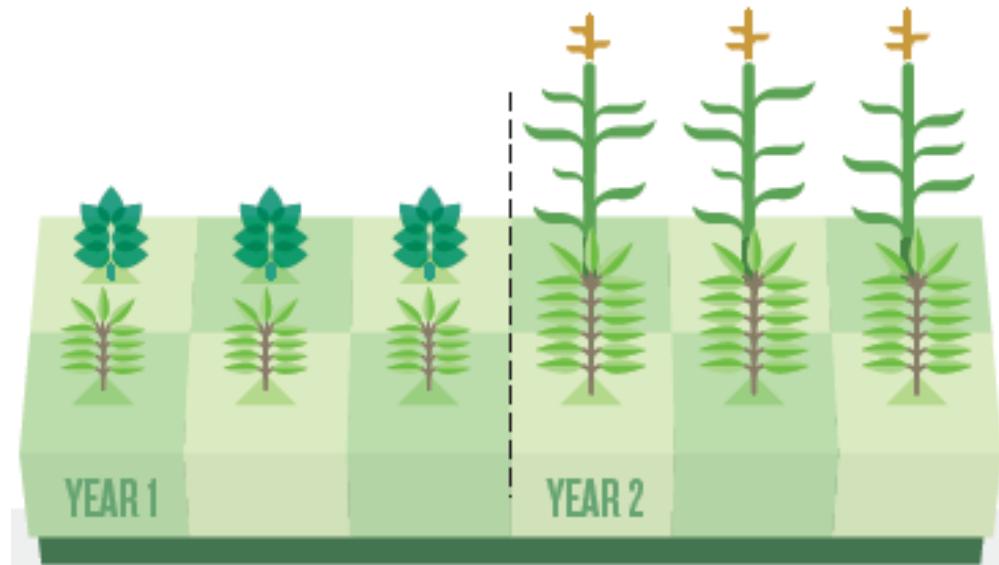


	Mz+Pp						
Mz+Fea ert	Mz+Fer t	Mz+Co mp	Mz+Bea ns	Mz+Gn uts	PPea+B eans	PPea+ Gnuts	PPea +Soy
✓	✓				✓		
			✓		✓		
			✓			✓	
			✓			✓	
	✓						✓
✓							✓
✓					✓		
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✓	✓		✓				✓
✓					✓		✓

A photograph of a agricultural field under a clear blue sky with a few white clouds. The foreground and middle ground are filled with tall maize plants, their green leaves and yellowish-brown husks reaching upwards. Interspersed among the maize are dense patches of green, leafy pigeon pea plants, their small flowers visible. The overall scene depicts a sustainable farming practice.

**Year 2: Maize intercropped with ratooned
pigeon pea**

COMBINE complementary life forms



DOUBLED-UP LEGUME SYSTEM

- ◆ Increases plants' efficiency of fertilizer use
- ◆ Improves yield of protein-rich grains
- ◆ Decreases labour requirements
- ◆ Improves families' diets

Glover et al., 2012

Pulse plus!





Thank You

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