Total Factor Productivity in Global Agriculture

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Crop yield growth has declined, but this is only a partial measure of the rate of technical change
Future agricultural growth will rely more on raising yield rather than expanding resources.
Yield growth may come from input intensification or technological change (total factor productivity)

- Yield growth
- Area growth
- Input intensification
- Area growth
- Total Factor Productivity (TFP) growth

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Raising TFP depends on long-term investments in “technology capital” and enabling institutions.
Improvements in TFP accounts for a rising share of global agriculture growth
Patterns of agricultural growth vary widely across the global economy.

**Industrialized Countries**

- TFP enables output to grow even as resources leave the sector.

**Developing Countries**

- TFP is becoming an important source of growth.

Source: ERS
Through robust overall, agricultural TFP growth is highly uneven among countries.

Average annual TFP growth between mid 1990s and mid 2000s

- > 3%
- 1-3%
- < 1%

Source: Fuglie and Wang (2012)
National “technology capital” strongly associated with rate of agricultural TFP growth

Comparison among 90 developing countries, 1970-2010

Source: Fuglie (2012)