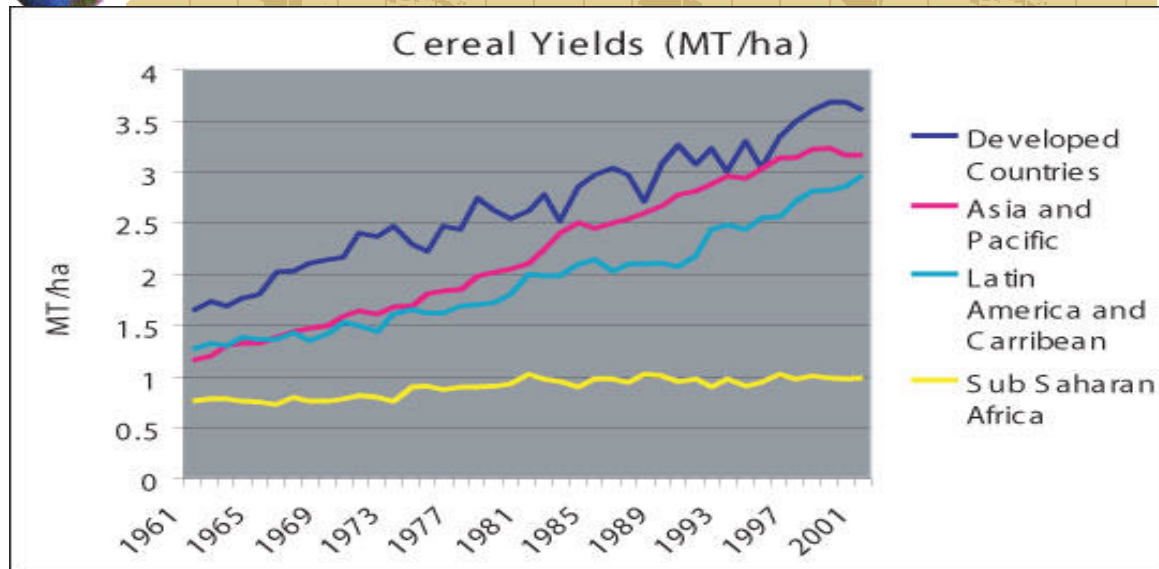


**Breaking the unholy alliance
between soil fertility, soil
degradation and poverty.**

Stein W. Bie, Noragric, Ås, Norway

Driving forces in agricultural productivity

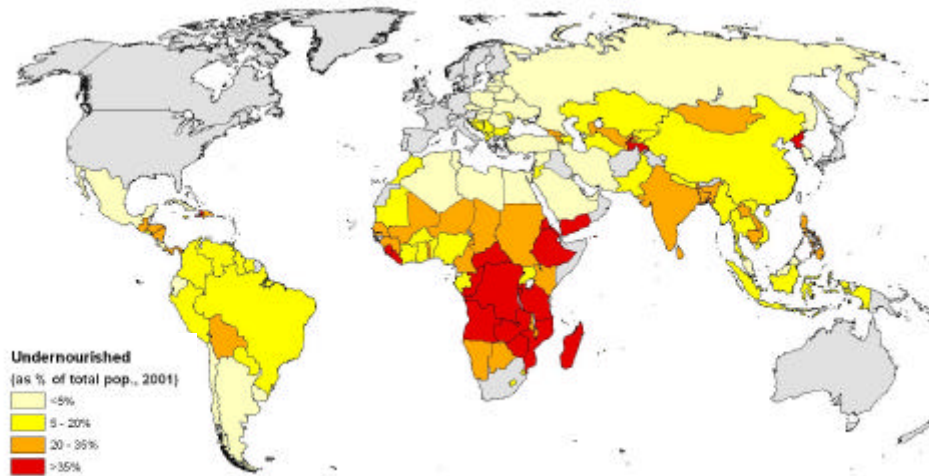
Stagnated Productivity of Agriculture in SSA



Source: FAOSTAT

Food insecurity

 *SSA has the highest proportions of undernourished population*



A problem of uncertainty

- **You are a farmer with limited capital. You have been offered fertilizer for your farm costing NOK 1 000* (payable in advance). You know it will increase productivity by 50%**
- *** = 1 annual per capita income**

But there is a 25% probability it
will be delivered late

- Raise your hand:
- A. Yes, I will order the fertilizer, the chances are good that I will produce more
- B. No, I will not order, I cannot afford to lose the money

You have been guaranteed the
fertilizer will be on time

- **But there is a 10% probability of total loss of yield to locusts this year**
- Raise your hand:
 - A. Yes, I will buy and apply the fertilizer
 - B. No, I will cancel my order

Because many farmers will order fertilizers the crop price will drop 30%

- **And there is a 30% chance of drought that will reduce yields by 50% of expected.**
- Raise your hand
- A. Yes, I will buy and use the fertilizer
- B. No, I will cancel my order

If risks are reduced

- Smallholder farmers will respond by adoption of innovations
- Some innovations will be imported
- Some will be community generated
- Smallholder farmers are not stupid, they are not uneducated in agriculture. But they are poor.

If you can only do ONE THING

- Think of crop and livestock insurance to reduce the risks to smallholders of adopting innovations.
- Farmers organizations, local insurance companies, national and international input vendors can cooperate.
- Development assistance agencies can offer re-insurance

Thank you.