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# BIOTECHNOLOGY OPTIONS FOR AGRICULTURAL GROWTH IN WEST AND CENTRAL AFRICA

POWER POINT PRESENTATION

**JULY 2007**

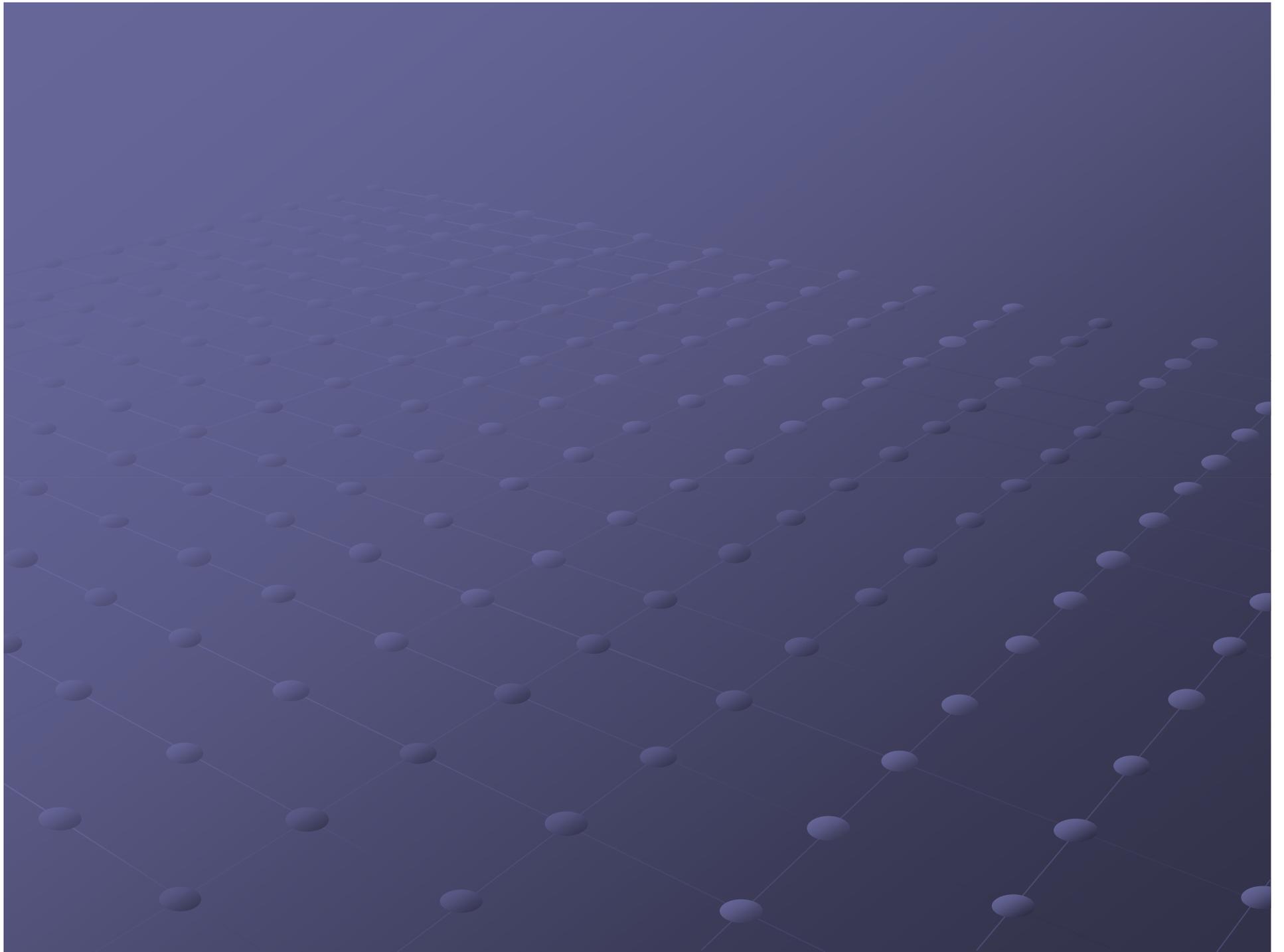
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# BIOTECHNOLOGY OPTIONS FOR AGRICULTURAL GROWTH IN WEST AND CENTRAL AFRICA

POWER POINT PRESENTATION

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# Why biotech?

- Some relatively easy technology transfer (e.g., Bt technology)
- Increase yields through:
  - Lower pest, virus, or fungus losses
  - Lower (monetary and physical) cost of spraying (where used)
- Typically downside risk reducing technology, which helps the poor

# Insect resistant biotech crops

## ● Bt cotton: Insect resistance

- Cost savings or yield increase of 20%
- Fast potential adoption rate
- Private seed industry investments

## ● Bt maize: Insect resistance

- Solves a problem only for the forest zones of coastal and central areas (~10% of land area)
- 33% yield increase in those areas
- Moderate potential adoption rate

# Insect resistant field crops II

## ● Bt cowpeas

- Addresses a significant pest problem (maruca) in an important crop
- Yield increases of at least 20%, could be double that
- Moderate potential adoption rates

# Virus resistant field crops

## ● Mosaic virus resistant cassava:

- ~50% increase in production
- Slow potential adoption rate
- Great benefits to poor

## ● Rice yellow mottled virus (RYMV) resistant rice:

- Risk reduction benefits
- Yield benefits ~20% irrigated areas, lower in rainfed rice
- Fast potential adoption rates in irrigated areas

# Tree Crops

## ● Fungal resistant Cocoa

- 30% yield benefit Nigeria and Cameroon
- 5% yield benefit Ghana and Cote d'Ivoire
- Slow potential adoption rates (5% per year)
- Long lead times in producing the technology  
15+ years away
- But important crop for foreign exchange

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	<b>Total</b>
Cassava	20,851
Cotton	4,676
Cowpea	2,009
VR Rice	1,885
NUE Rice	666
Cocoa	452
Maize	437

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	<b>Coastal</b>	<b>Central</b>	<b>Sahel</b>
<b>Cassava</b>	8,714	12,137	0
<b>Cotton</b>	2,642	367	1,666
<b>Cowpea</b>	752	274	982
<b>VR Rice</b>	1,399	49	435
<b>NUE Rice</b>	519	26	120
<b>Cocoa</b>	329	123	0
<b>Maize</b>	256	181	0

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# Poty virus resistant Tomato

- Research on-going to determine extent of the virus problem
- Potential yield increases
  - depend on size of the virus problem, probably <20%
  - If 50% yield increase values similar to Bt cowpeas
  - If 20% yield increase similar to NUE rice
  - If 5% yield increase, probably very low benefits
- But issues of market size and international competition important in this market

# Summary

- VR Cassava: a clear winner in overall benefits by an order of magnitude
  - Added benefits in terms of helping the poor
  - Lack of formal seed market creates need for
- Bt Cotton: high benefits
  - Formal seed market allows private industry to enter
- Bt Cowpea: high benefits
  - Key role for NARS in breeding varieties
- VR Rice: high benefits
  - Potential rapid adoption rates
- Lower returns for: NUE rice, FR cocoa, Bt corn