

20 years of economic reform in Sub-Saharan Africa.

How have farmers in Mali's *Office
du Niger* irrigated rice system
responded ?

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Africa's Quest for a Green Revolution in Rice

- The goal ...
 - to replicate the Asian models of irrigated rice production
- The reasons for the goal...
 - to diminish risk of crop failure and food insecurity associated with traditional rainfed cereal systems
 - to better respond to expanding rice demand

Success to date?

- Relatively poor track record
 - High costs of irrigation systems
 - Absence of double cropping
 - Capital rather than labor intensive techniques
 - Poor complementary infrastructure (e.g. roads)
- BUT *Office du Niger* in Mali has been more successful than most African rice systems in the past and has recently made impressive advances

Office du Niger : A Sahelian farming system with irrigation

- 500-600 mm rainfall
- Three cropping seasons (potentially)
- Gravitation irrigation
- Six farm types : 3 sizes and 2 levels of irrigation quality
- Labour intensive system
- Household and individual fields

Office du Niger: Early History

- 1932 marks *ON* creation: focus on cotton and rice production
- 1960s : *ON* becomes a Malian public enterprise, controlling all aspects of land and irrigation management, input and output markets, extension, etc.
- 1970s : rice yields stagnate; area far below objectives (55,000 vs 960,000 ha); cotton abandoned
- 1980s : investments to upgrade irrigation infrastructure begin

1980s : Reforms Begin with Domestic Markets

- 1980 decision to gradually liberalize input and output markets
- 1988 paddy price partially liberalized
- 1990 paddy price fully liberalized
- 1995 *ON* mandate restricted to land management and extension; input supply and credit to private sector
- 1995 *ON* rice mills shut down; privatised in 1997

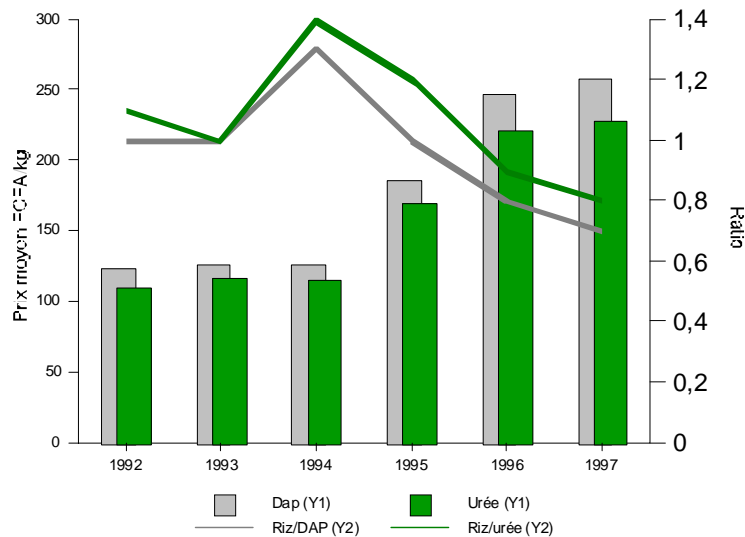
1990s : Reforms Broaden to the Political Arena and Trade

- Democratisation and decentralisation
- Devaluation of the CFA Franc
- Reform of tariff and tax policies (TEC UEMOA)

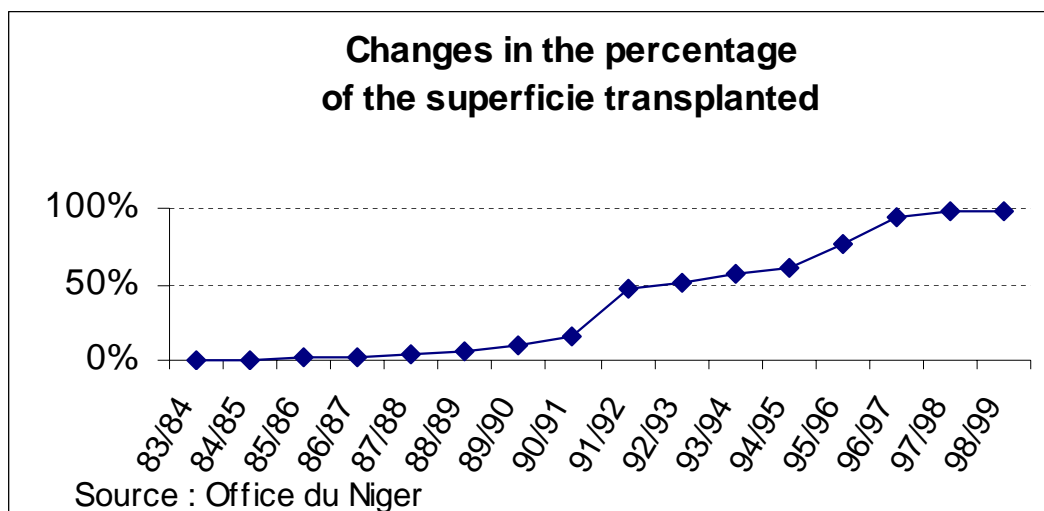
Impacts: Crop Intensification

- Intensification of production
 - Increase in fertilizer use
 - Increase in transplanting
 - Adoption of new varieties
- Intensification increases yields
 - from 2-2.5 t/ha to >4 T/ha
 - Average yield increases of 27% between 1992-93 and 1995-96

Intensification: Fertiliser



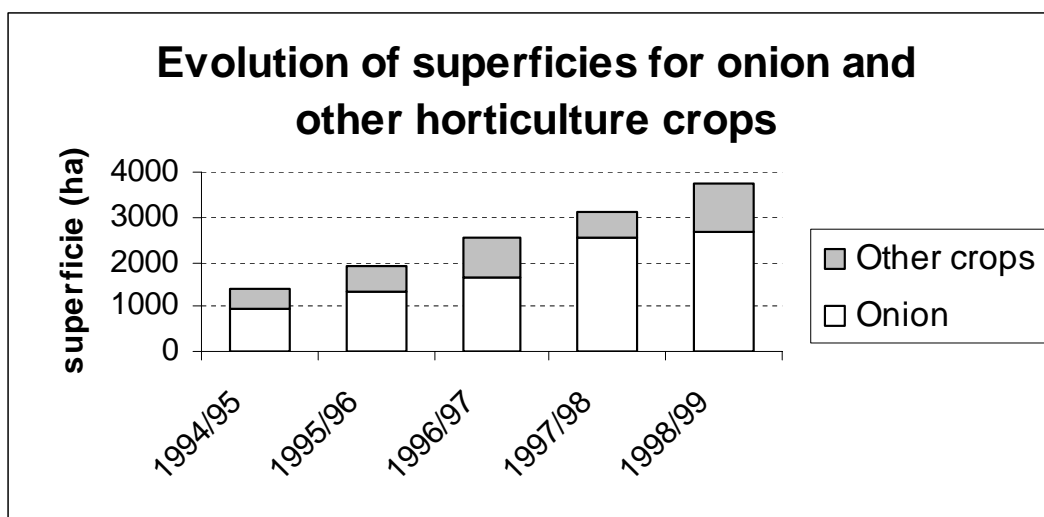
Intensification: Transplanting



Impacts : Diversification

- Income from small scale rice processing increases value added from rice production
- Growth in horticulture crops
 - Provides second source of crop income
 - Promotes double cropping, thereby increasing returns to irrigation investments
 - Increases women's access to personal income

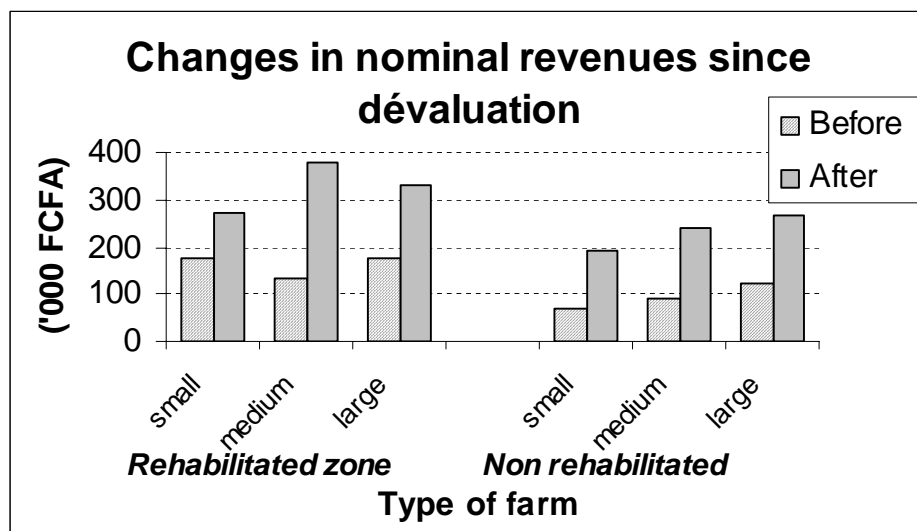
Growth in onion production



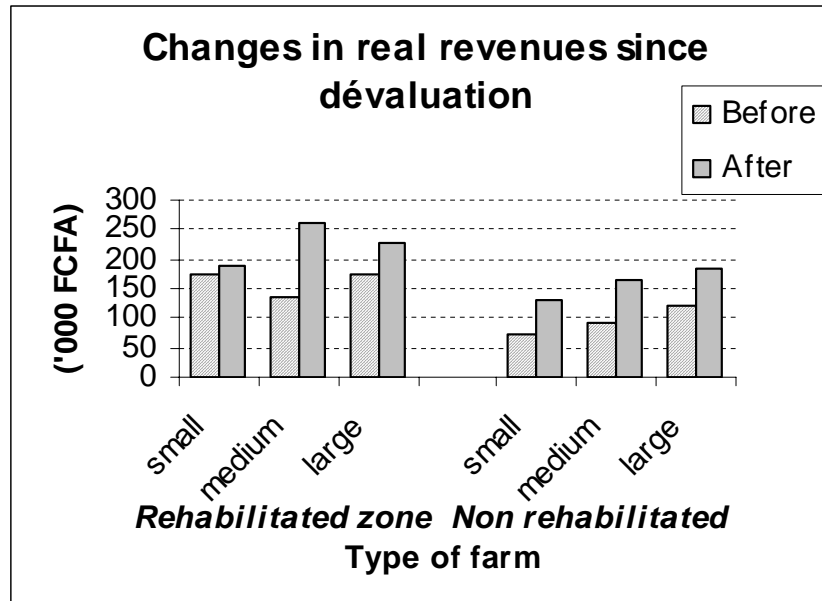
Impacts : Higher incomes and lower risks

- Improved net incomes from rice
- Low production risk for rice
- Complementary income from processing and horticulture further reduces income risk

Higher Nominal Incomes



Higher Real Incomes



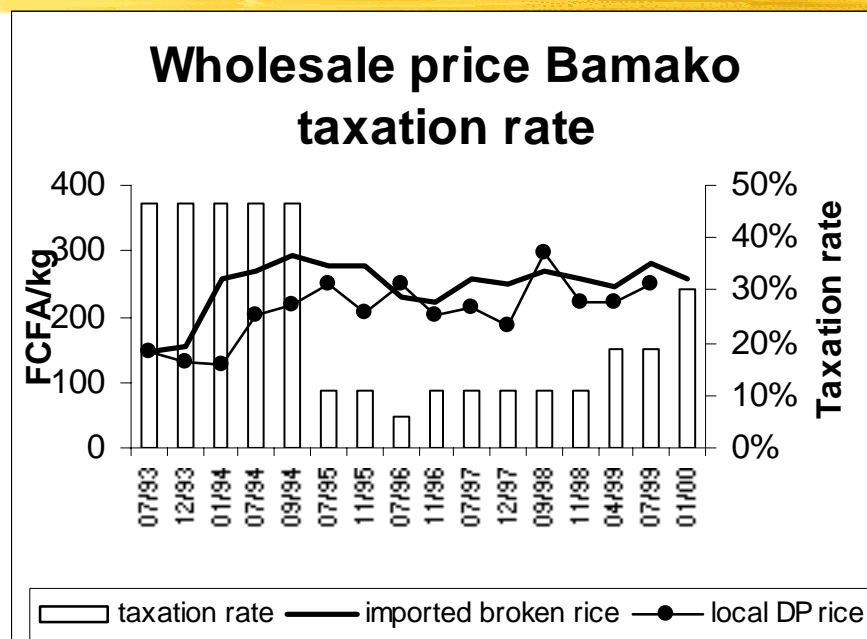
Linking Reforms to Impacts

- No simple formula
- Many years and many different reforms contributed to current growth
- BUT a key factor seems to be that the multiple reforms have made Malian rice competitive with Asian imports in Mali and in neighboring countries

Competitiveness of Malian Rice

- Devaluation of CFA Franc: CIF price of imported rice in Dakar doubles
 - Reduction of import tax from 46% to 11% reduces devaluation impact somewhat
 - World prices decline in 1999 but increase in VAT and TEC from UEMOA keeps Mali competitive
- ➔ Malian rice cheaper than imported rice

Competitiveness of Malian Rice



Key factors promoting increased competitiveness

- Liberalisation of output market: more traders and lower margins
- Domestic and regional demand for Malian rice and onions improved with devaluation
- Liberalisation of input market: has kept fertilizer prices from skyrocketing and maintained supply
- Development of local credit schemes: availability and access to credit for fertilizer in most villages; credit for horticulture for women

Key factors promoting increased competitiveness

- Liberalisation of rice milling, shutting down of public industrial mills: lower cost of processing with small units
- Extension
 - promote rather than outlaw rice/hort complementarities
 - rice: transplanting, new rice varieties resistant to common diseases
 - onion: storage facilities to improve marketing
 - labour intensive techniques

Conclusions

- Increased income due to rice productivity gains and diversification (horticulture, paddy processing)
- Main factors
 - Investments to upgrade the irrigation system;
 - Extension messages focusing on transplanting seedlings, introduction of new varieties, and horticulture;
 - Liberalisation, devaluation and import policy reforms;
 - TIME.....

Conclusions

- Sustainability of the system?
 - Fragile credit scheme
 - Public subsidies from state and donors for the maintenance and investments in the infrastructure
 - Low capacity of farmers to participate in financing irrigation investments (estimated at 10% of costs unless more productivity increases realized).

Conclusions

- ➡ Need to find new opportunities to maintain and even increase incomes

Specialisation versus diversification: an unexploited potential? Horticulture: 6% of the total area and 72 % in onion

Demand and output markets for other products?

- Lesson from Mali: importance of the coherence and timing of the reforms. The devaluation at the right time?