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Cotton is an important cash crop for African economies, but production methods often create problems for the farmers involved. Organic cotton may offer an alternative, particularly for small farmers, but there are many obstacles to expanding this market.

Cotton is hugely important to many African countries, with 10 million people in central and western Africa dependent on income from cotton exports. However, cotton produced by conventional methods has many disadvantages for small farmers. One significant problem is global price declines due to European and US subsidies to cotton producers in their own countries. There are also negative effects on human and environmental health from using pesticides.

Research from the Pesticide Action Network, UK, uses case studies from Benin, Senegal, Uganda, Tanzania and Zimbabwe to argue that organic cotton has much to offer small farmers. The authors identify the health advantages of pesticide-free production, the better prices obtained by farmers for this crop and the greater involvement of communities in organic cotton production.

Of the 6,000 tonnes of organic cotton produced worldwide in 2002, 714 tonnes originated from the five case study countries, where serious production only started in the mid-1990s. Most initiatives to produce organic cotton in the region have been supported by donors and focus on the needs of small farmers, with significant investment in training.

However, there are several obstacles to expanding organic cotton production in sub-Saharan Africa. These include:

- the risk that larger companies entering the market will try to reduce the higher prices received by organic cotton farmers
- the difficulties of doing business in sub-Saharan Africa: only highly motivated companies have invested in these countries
- a lack of support from governments and national agricultural research centres, which cater to the interests of companies rather than small farmers
- a lack of transport and poor access to tools,

equipment and organic fertiliser for small farmers

- a lack of capital and knowledge about exports in the African textiles industry
- difficulties with the cost of gaining organic certification for small farmers.

The authors recommend improving understanding of how small farmers operate in the chain of cotton production. They suggest the following policies to support organic cotton production in the region:

- Non-governmental organisations should monitor larger companies entering the market, and prevent the reduction of the cotton prices received by small farmers.
- Non-governmental organisations should lobby companies, donors and governments to absorb initial costs and

investments for small farmers seeking to develop organic cotton businesses.

- Donors and governments should create opportunities for local cotton processing to boost local incomes, provide jobs and build local capabilities; for example, donors could provide funding to develop local knowledge of business management practices.
- The possibility of producing organic cotton for local and regional markets should also be considered, to counter the long-term decline of the global market.

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Organic Cotton: A New Development Path for African Smallholders?, Gatekeeper Series No. 120, IIED: London, by Simon Ferrigno, Saro G.Ratter, Peter Ton, Davo Simplice Vodouhé, Stephanie Williamson and John Wilson, 2006 (PDF)
www.iied.org/pubs/pdf/full/14512IIED.pdf

Cotton produced by conventional methods has many disadvantages including global price declines and negative effects on human and environmental health from using pesticides



Rice-duck farming in Bangladesh

Helping farmers to learn and adopt environmentally friendly cultivation techniques is important for developing sustainable agriculture. Policymakers need to understand how cultivation techniques spread and identify the challenges involved in increasing the scale of these.

Research from the Bangladesh Rice Research Institute (BRRI) and Friends in Village Development Bangladesh (FIVDB) reports on their experience of introducing integrated rice-duck farming. This is a new concept in Bangladesh where farmers rear ducks in paddy fields. This diversifies the farmers' food supply and income sources.

Rice-duck farming is a low-cost, organic method (no herbicides, insecticides or chemical fertilisers are needed) suitable for small-scale farmers. In experiments, rice yields increased by an average of 20 percent. Furthermore, duck eggs and meat not only increased food for farmers, but also provided them with cash. The challenge was then to introduce the concept to more farmers.

BRRI-FIVDB initially promoted the idea to farmers in Sylhet, Bangladesh. Most farmers farm rice and ducks separately, fearing that ducks would harm their rice crops. Farmers also saw dangers in the new system: they would need more time to manage ducks and they would need to eat purchased supplementary feed during some periods of the year. However, cost-benefit analysis, including a promotional video, showed that the increase in cash income would outweigh the increased costs.

BRRI teamed up with FIVDB, a national non-governmental organisation (NGO), because they had considerable expertise in duck rearing and establishing duckling production units. FIVDB collaborated with a local NGO, the Barisal Development Society (BDS) to establish rice-duck systems in three districts. BDS played an important role in networking with other NGOs, private sector organisations and government institutions and building partnerships to develop a model of rice-duck farming that would work in Bangladesh.

The research identifies important lessons about this model:

- Rice-duck farming will only work in suitable ecosystems, where duck rearing and paddy cultivation already exist together.
- A reliable supply of ducklings is important. A small-scale duckling production unit helped to overcome problems with unreliable supply from government duckling farms. More hatcheries are planned.
- Access to vaccines is also needed. The government is the only supplier, so good contact with government institutions is essential for obtaining vaccines.
- Farmers may require some financial support to embark on rice-duck farming.

case study

Ageing rural populations and farm structure in Thailand

Rapid reductions in both mortality and fertility rates are causing a significant population ageing in Thailand. This demographic change, combined with the tendency of young people to seek non-agricultural employment, has resulted in rapid ageing of the agricultural work force.

Agriculture in Thailand is diversifying away from rice and becoming more capital intensive and market-oriented. Some researchers argue that older farmers are less able or willing to participate in newer agricultural practices. Research from the United Nations' Food and Agricultural Organization examines whether farms headed by older people are significantly different to those headed by younger people.

The research compared farms in terms of: size; the type of crops grown; interactions with wider markets; the use of machinery; the use of chemical inputs; access to credit and productivity. The data collected showed:

- Farms headed by older people have more household workers, own more of the land they farm and have fewer debts.
- Farms headed by older people are just as likely to produce for markets or to move away from rice into new activities, such as flower-growing, vegetable growing, and aquaculture.
- Farms headed by older people are less likely to use fertilizers, machinery and chemical pesticides, however, these differences are small.
- Farms headed by older people are more likely to produce low outputs and to depend on income sources other than agriculture.

Policymakers should not overestimate differences between older and younger farmers, including their capacity and willingness to adopt new farming practices. Furthermore, the ageing of the work force in Thailand does not appear to affect agricultural output significantly. However, there may be future problems: for example, a substantial decline in the numbers of children in rural areas could threaten some family farms. The number of older rural people who are not healthy enough to farm is likely to increase further; these people will become increasingly dependent on the state or their children. This has important policy implications:

- Further research into gender difference, farmer opinions about population ageing and longer-term changes over time will clarify these issues further: this should include research in other countries.
- The ageing of the agricultural workforce does not require significant changes in education and outreach programmes. However, it may be most beneficial to ensure that older people are included in current training and extension programmes.

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Rural population ageing and farm structure in Thailand, Food and Agriculture Organization: Rome, by John Bryant and Rossarin Gray, 2005 (PDF)

www.fao.org/waicent/faoinfo/SUSTDEV/dim_pe3/docs/pe3_051001d1_en.pdf

- Farmers may need credit to set up household duckling production units.
 - Rice and duck farmers need specific training to integrate the two methods successfully.
- Rice-duck farming is a new concept so extension systems must develop the skills and knowledge of both service providers and farmers in all elements of the production system. The research recommends:
- Experienced farmers could train others and convince them to overcome bias against integrating rice and duck systems.
 - Future experiments should evaluate the benefits of integrated rice-duck farming to whole communities.

- Organisations considering promoting rice-duck production must select partner organisations carefully and establish reliable sources of credit, vaccines and ducklings.

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'Integrated Rice-Duck' by Malik Anwar Khan, Gazi Jashim Uddin Ahmed, Noel Magor and Ahmad Salahuddin, pages 143-156 in *Innovations in Rural Extension: case studies from Bangladesh*, CABI: UK, edited by Paul van Mele, A. Sallahuddin and N. Magor, 2005

Livestock management in southern Sudan

Most people in southern Sudan depend on livestock for their food and income. Livestock is also important for social customs and status. However, this dependence on livestock makes people vulnerable to animal diseases and poor health. How can aid programmes reduce this vulnerability?

In the early 1990's, cattle in war-affected areas of southern Sudan were decimated by rinderpest disease. Aid programmes that focused on short-term emergency relief exacerbated this problem and conflict in the area reduced their effectiveness. Research from Tufts University, USA, examines a different approach to livestock health management in southern Sudan.

A combination of different relief programmes in the region since then has been more effective. Experiences from these programmes have helped to establish a large-scale community-based animal health worker (CAHW) system. This has led to significant improvements in rinderpest eradication. The research shows:

- The programmes created a better understanding of people's livelihoods. This focused on local knowledge and skills of livestock management, including local institutions such as cattle camps.
- The programmes were run by experts with good interpersonal skills. These people were able to work with United Nations (UN) agencies, non-governmental organisations (NGOs) and donors to

develop effective livestock health policies and guidelines, focussing on best-practice design and implementation of the CAHW system, with supervision by higher-level veterinary staff.

- The field experience of senior programme staff was important, particularly their ability to report what is actually happening in livestock farming communities into decision-making forums.

Conventional views of relief programmes see poor people as passive recipients of aid programmes that are designed and delivered by outside agencies. In contrast, the programmes used in Sudan recognised the capacity of people to analyse their own situations and work with outsiders to design, implement and evaluate livestock management interventions.

The CAHW system has institutionalised communication systems between NGOs and Sudanese partner organisations, for example by agreeing consistent reporting requirements. However, although community-level decision-making and control of resources are critical aspects of development relief programmes, livestock management also depends on appropriate international policies. The research identifies significant weaknesses in the technical capacity of some international development agencies, as well as limitations in communication networks.

To overcome these limitations, the research recommends:

- Strengthening the capacity of UN agencies and NGOs to use livelihoods approaches to livestock programmes in complex emergencies.



A family in the village of Panachier, Sudan, feeds flowers to their goats. In Sudan, goats often eat better and are healthier than the people who tend them. © 2005 Basil A. Safi, Courtesy of Photoshare

- Far greater use of participatory impact assessment to guide livestock policy development and revision.
- The development of international standards and best-practice guidelines for livestock interventions in complex emergencies.

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Policies, Practice and Participation in Complex Emergencies: The Case of Livestock Interventions in South Sudan, Food and Agriculture Organization: Rome, by Andy Catley, Tim Leyland and Suzan Bishop, 2005
www.fao.org/docrep/008/af142e/af142e00.htm

Maintaining rice diversity in Nepal

Rice is the staple food in Nepal, accounting for over 50 percent of food production and nearly 40 percent of nutrition. Over 2,000 different rice varieties are grown in Nepal, but many of these varieties may be lost as the demand for rice increases.

In most parts of Nepal, different types of rice, known as 'landraces', are grown on small, subsistence family farms. Farmers' choices are the main factor that determines whether particular rice crops continue to be grown on farms. Research from the International Food Policy Research Institute, USA, examines why farmers in Nepal choose to grow different rice varieties.

A hillside location is the most important element for growing different rice types. The greater the differences in land features within a particular region, the more likely it is that farmers will grow a range of rice varieties. In Nepal, the most varieties of rice are grown in the hills areas, while in the low wetland areas, it is mostly modern types of rice that are farmed. Other factors that influence the diversity of rice on farms

include the amount of labour available and a household's subsistence needs.

Plant breeders influence crop biodiversity through the supply of new seeds, but recently scientists have expressed concerns that, as farmers gain access to markets and new technologies, the genetic diversity of rice may be lost. However, most farmers cannot afford to grow rice for conservation purposes.

The authors also found that:

- The age and education of decision-makers makes a significant difference in the plains, but not in other areas, where farmers have less experience of growing different varieties.
- Education increases the choice of varieties, while access to information enables women to swap rice products in local markets for their own crops.
- More labour on farms increases rice diversity, particularly in hills areas where there are fewer non-farm opportunities and rice production requires more labour.
- The distance of farms from markets affects the variety of rice grown, as rice cannot so easily be substituted for other varieties if the farm is a long way away.
- Because women make most choices about food, a higher percentage of women in a household means it will grow more varieties.

Farmers choose which crop to grow according to its market value and the features of their farm. But the choices farmers make affect not only their welfare, but also that of future communities. Agricultural policies must conserve the variety of rice types, but supporting one type of rice can be negative for other types. Policymakers should:

- develop one set of policies to support the conservation of diverse landraces, and separate policies for specific rare landraces
- target the conservation of valuable rice varieties in areas where households have more access to land, labour and capital
- increase seed provision to farmers from plant breeders, scientists and conservationists
- continue existing initiatives such as public awareness campaigns and diversity fairs
- investigate further the market opportunities for different types of rice.

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'Managing Rice Biodiversity on Farms: The Choice of Farmers and Breeders in Nepal', by Devendra Gauchan, Melinda Smale, Nigel Maxted and Matthew Cole, pages 162-176, in *Valuing Crop Biodiversity: On-farm Genetic Resources and Economic Change*, CABI Publishing: Wallingford, edited by Melinda Smale, 2005

Supporting farmer organisations for market access

Farmer organisations are playing an increasing role in supporting smallholder agriculture in Africa. However, previous experiences have been mixed: what support do they need to contribute effectively to poverty reduction?

Recent years have seen growing interest in farmer organisations (FOs) as mechanisms for supporting agricultural development. FOs are increasingly seen as an important bridge between the private sector and farmers. Research from Imperial College, UK, and the University of Malawi assesses what policies and practices can support FOs in this role.

In Malawi, as in many other countries, FOs have a mixed record and face several challenges. There are striking examples of successful FOs which have improved members' incomes through better access to market and other services. However, many FOs have failed.

FOs face several challenges, including:

- Conflicting interests and expectations among farmers, employees, governments, donors and non-governmental organisations. These groups may look to FOs to provide low cost commercial

services to members, increased incomes or wider social services to rural communities.

- The need for strong leadership, but dangers of resource misuse by strong leaders in weak organisations where members lack basic literacy and business skills.
- A weak and often unhelpful business and institutional environment with high risks, poor security, traditional attitudes to business, political interference and unhelpful regulations governing FOs.
- Physical difficulties in agricultural production (for example, poor soils and uncertain rainfall).
- Poor infrastructure and rural services.
- Poor health status in rural areas, particularly the effects of HIV and AIDS.
- A difficult wider economy with high interest rates and inflation.
- Low literacy levels amongst farmers

limiting their ability to contribute to the FO.

These challenges make FOs difficult to manage. They reduce the benefits of FO membership, increase uncertainty, encourage short-term planning strategies and limit members' willingness and ability to invest in FOs. They also have implications for external support: the greater the challenges facing FOs, the more they need external support. Unfortunately, this often undermines the ability of FOs to focus on their members' long-term interests.

Establishing and governing FOs is difficult. Local adaptability, diversity and accountability to members must be balanced

The greater the challenges facing farmer organisations, the more they need external support. Unfortunately, this often undermines their ability to focus on their members' long-term interests

against the need for clear, stable and standard procedures. FOs must be effective and professional, but with low-cost management. They should focus on linking their members to other organisations providing technical, financial and market services, but limit the services they provide themselves to their members.

The research recommends that:

- FO establishment and governance, activities and external support must 'fit' each other and the challenges FOs face.
- FOs and their leadership must be independent of political influence.
- Some long-term support is justified for most FOs; this should build FO governance and encourage FOs to be more accountable to their members.
- Governments should provide a supportive legislative environment, including independent and transparent FO auditing.
- External support to FOs should be long-term to allow them to learn how to be effective and efficient before they expand.

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Walking Tightropes: supporting farmer organisations for market access, Natural Resource Perspectives, Number 99, by Ephraim Chirwa, Andrew Dorward, Richard Kachule, Ian Kumwenda, Jonathan Kydd, Nigel Poole, Colin Poulton and Michael Stockbridge, 2005 (PDF) www.odi.org.uk/nrp/99.pdf

useful websites

Bangladesh Rice Research Institute
www.brribd.org

United Nations Food and Agriculture Organization (FAO)
www.fao.org

Institute for Animal Health
www.iah.bbsrc.ac.uk

International Fund for Agricultural Development
www.ifad.org

International Rice Research Institute
www.irri.org

Organic Exchange
www.organicexchange.org

Pesticide Action Network UK
www.pan-uk.org

Sustainable Agriculture Research and Education
www.sare.org

The World Agricultural Information Centre of the FAO
www.fao.org/waicent

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