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research findings for development policymakers and practitioners

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Supporting smallholder pig farmers in the Philippines

The rapidly growing pig-rearing industry has great potential to reduce poverty in the Philippines. Smallholder farmers provide close to 80 percent of production. However, there are indications that they are being replaced by larger commercial farmers, who are better able to compete in the current markets.

Pig-rearing is the most important part of the Philippines' livestock sector. In a country where 40 percent of rural people live in poverty, the potential of pig-rearing for increasing income cannot be underestimated. Research from the International Food Policy Research Institute in the USA examines the factors affecting the competitiveness of smallholder pig farmers. The authors compare the performance of different groups of farmers, and suggest ways to overcome barriers to competitiveness.

Trends from the major pig-producing regions of Southern and Central Luzon show a rapid decline in the share of smallholder producers. Consumers are demanding quality, convenience and a range of meat products. The government's National Meat Inspection Service also demands these requirements. Only larger companies can provide this, because they control their own breeding farms, feed, and animal health services, and for a few, their own slaughtering and processing facilities.

The authors analysed household participation in pig farming and their relative efficiencies. The research shows:

- The availability of household resources (such as family labour, money to pay for agricultural resources), pig prices, and access to external markets influence household participation.
- Pig-producing smallholder households are either independent or contract farmers. They can be grouped according to their production levels. The largest producers, which are mostly contract farmers, produce about 40 times more than the smallest (mostly independent) farmers.
- Households producing the least have the lowest profits, and are unlikely to survive increased competition. The next two groups manage profits comparable to or better than larger farms, and should be able to compete. Contract farmers are more competitive than independent farmers for several reasons. They have better access to quality feeds and stock, feed credit, veterinary health services and

credit for expansion. They are often linked to feedmilling and multipurpose cooperatives. Also, contract farmers are more competitive than independent farmers when the cost of family labour is taken into account. This has helped them overcome cost barriers through access to information, technology and markets.

Smallholders who cannot compete need alternative options. The researchers suggest:

- Smallholders not expected to stay in pig-rearing can be helped by improving opportunities for non-farm employment, through general knowledge and skills enhancement, and opportunities for businesses (such as in local foods preparation, household appliances repairs, among others).
- Commercial enterprises with resources and technological expertise in livestock production

should be encouraged to invest in more efficient smallholders.

- Information on feed quality (through labelling) should be provided and quality maintained through monitoring. Coordination between commercial firms and smallholders is also necessary.
- The protected domestic corn industry, which provides food for pigs, can be made more efficient through liberalisation (for example reducing tariffs and removing artificial import controls) and improvements in corn production and distribution; this would boost the livestock sector.

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Do transnational companies respond to the needs of poor farmers?

Can the principles and values of Corporate Social Responsibility be 'mainstreamed' into the core operations of major companies? A case study of a smallholder agricultural extension project, implemented by Monsanto, raises questions about how far poor farmers can hold such companies to account.

Research from the Institute of Development Studies in the UK examines the Small Holder Programme (SHP) run by Monsanto, a leading agricultural biotechnology transnational. The SHP aimed to provide smallholder farmers with a package of extension services, including chemicals and seeds with genetically modified (GM) traits and other support. The programme was implemented in several developing countries between 1999 and 2002. This research focused on India.

The SHP was created partly in response to criticism from consumers and activists about GM crops in the late 1990s. It had several

Monsanto's Small Holder Programme was more than just a public relations exercise; it represented an attempt to integrate socially responsible, developmental goals into their sales and marketing operations

purposes, including representing Monsanto's commitment to social responsibility, helping the company to respond to the sustainable development agenda, expanding the market for the company's agricultural technologies, and promoting GM crops.

Corporate Social Responsibility (CSR) describes what large companies do to address the social or environmental costs of their operations. Many people criticise CSR as an exercise in public relations, which can involve heavy publicity for activities that follow good practice, without addressing the impact of other activities. This has led to calls for the values and principles of CSR to be 'mainstreamed' – introduced across all of a company's operations, in order to make them more socially and environmentally sustainable.

The research shows:

- The SHP was more than just a philanthropic gesture or a public relations exercise. To a limited degree, it represented a real attempt to integrate socially responsible, developmental goals into Monsanto's sales and marketing operations.
- At the local level, participating farmers were able to exercise a kind of accountability over the SHP project officers, but this was limited.
- The integration of the SHP with regular operations was both a strength and a weakness. Over time, commercial

pressures overcame the philanthropic, social development aspects of the SHP.

- One consequence of the commercial pressures was that the programme did not specifically target the smallest-scale and poorest farmers.
 - The SHP was able to continue while the company had resources to sustain it. When the company faced financial problems, the programme was abandoned.
- The case of the SHP raises questions about the possibility of mainstreaming CSR into the core operations of a transnational company. It suggests that the integration of CSR values may actually undermine those values. The research made the following conclusions for agricultural policymakers to consider:
- Farmers are happy to receive support and advice from various sources, including the private sector. They are capable of judging that advice on its own merits, adopting the practices they find useful and abandoning those they dislike.
 - As the private sector provides more agricultural extension services, special attention will be required to ensure that small-scale and poor farmers in particular have access to independent, impartial and effective technical advice and support.

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www.ids.ac.uk/ids/bookshop/wp/wp277.pdf

Sharing information about animal health in Kenya

Animal diseases are a major issue in livestock production. They create problems such as preventing farmers from making full use of their land and affecting food supplies. In Kenya, many smallholder farmers buy drugs to treat sick animals. How can they be supported to use these drugs effectively?

Research by the University of Edinburgh's Centre for Tropical Veterinary Medicine in the UK looks at bovine trypanosomiasis, a cattle disease found in sub-Saharan Africa. Around 30 percent of cattle in western Kenya are affected by trypanosomiasis and other, tick-borne diseases. Drugs are available to treat trypanosomiasis, but they are only effective if used at particular stages of the disease. Farmers need an accurate diagnosis to get the right drugs.

There are some trained animal health workers in Kenya, but inadequate resources stop them reaching many farmers. Drug use legislation means that animal health workers are the only people legally able to administer veterinary drugs. Despite this, drugs for treating trypanosomiasis are readily available. This means that more and

more smallholder farmers are treating their own animals. However, farmers often do not understand the causes and indicators of trypanosomiasis. This means that their efforts at disease control are not fully effective, especially without any advice or support.

Researchers consulted farmers, and designed information posters and leaflets with messages about how the disease is transmitted and diagnosed, and the range of treatments available. Farmers and veterinary staff evaluated the messages. After this, posters and leaflets were distributed to target groups of farmers, children, agro-veterinary traders and animal health assistants.

The research shows:

- Posters and leaflets had a positive and significant impact on school children's and farmers' understanding of the disease and its control.
- 44 percent of school children in the study area received or saw the leaflets and posters; 97 percent of those who received material said that they shared it with parents, other family members and friends.
- One third of households in the study area said that their messages about the disease had come from school children.
- There was no difference between men and women in how well communication materials were understood.

More and more smallholder farmers are treating their own animals, but often they do not understand the causes and indicators of trypanosomiasis

Farmers were well aware of their own lack of knowledge of trypanosomiasis and keen to learn more. Targeting school children with livestock disease extension messages was an effective method of communication. The researchers recommend:

- Further research should examine how long the knowledge obtained through such campaigns is retained, in order to work out how often to do these communication activities.
- It would also be useful to research the extent to which an increase in knowledge results in changes to animal health care practice.
- Drugs policies should be revised to allow farmers and drug vendors to be given clear guidelines on drug use.

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The Green Revolution 35 years on – what are the impacts in India?

Green Revolution technology was first introduced to India from the USA in the 1960s. At the time it was controversial, with some arguing that the poorest people could not afford to participate and so would not benefit. However, Green Revolution technology continues to be important today.

Researchers from King's College London and Nottingham University, both in the UK, looked at the impact of the Green Revolution in three villages in Uttar Pradesh, north India. These villages were also part of a 1972 study. This region is relatively well-irrigated and was one of the first areas where high yielding crop varieties (such as wheat) were introduced. Farmers also adopted Green Revolution rice and maize.

The researchers compared current crop yields, prosperity and well-being in three villages with 1972 data. They assessed the benefits that these new varieties appear to have brought to farmers and their families. Early in the Green Revolution, it was argued that rich people would benefit at the cost of the poor people, and the divide between the two would grow. To assess this, the researchers looked at changes for farmers with large and medium farms, those with a small farms (three acres or less), and for landless people.

Overall, local people felt that Green Revolution technology had improved their lives and they were no longer hungry. The major impacts are:

- Wheat and rice production have increased significantly, and more land is now given to growing these crops. Other crops, such as pulses, are grown much less now.
- Large and medium farmers combine crops for consumption with cash crops such as sugar cane, while small farmers have few cash crops.
- Poorer farmers cannot achieve yields as high as those with better access to water, fertiliser and land.
- More people own land, but it is being divided into smaller and smaller plots.

This is because of population growth and land redistribution schemes.

Overall, well-being has improved. The gap between rich and poor has increased, but the lives of the poorest members of scheduled castes have improved significantly. Everyone consulted felt that Green Revolution technology had been the main cause of improvements, from better food security to increased employment opportunities. However, inequality remains and some issues still need to be addressed. The researchers make the following conclusions:

- Government schemes to benefit poor people, including land redistribution, have been important alongside Green

Revolution prosperity.

- Yields increased steadily for 15 years after the Green Revolution, but have now slowed or reversed. This means food security could again become a problem as the population continues to grow rapidly.
- Heavy use of inorganic fertilisers means that soil lacks micronutrients, which are also perceived to cause new illnesses.
- Increased use of organic compost as fertiliser should increase yields in a sustainable way. This would mean some income loss for those selling dung as fuel, but less expenditure on inorganic fertiliser.

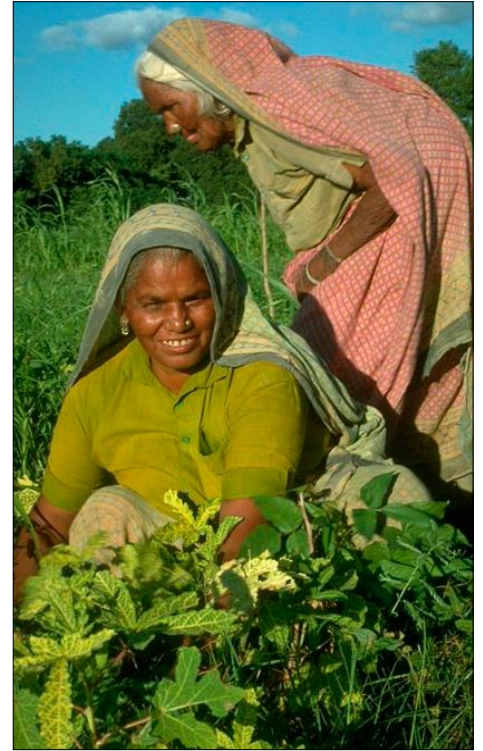
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Beneficiaries of India-Second Uttar Pradesh Public Tubewells Project work in an irrigated vegetable garden in Chandrakopar, India
IFAD Photo by Katia Dini

case study

Floating cultivation in Bangladesh

Many communities in Bangladesh use traditional methods to make a living without damaging the environment. Researchers from the University of Durham in the UK looked at a traditional method of growing crops in the floodplains of Bangladesh's Pirojpur District.

Farmers use a floating cultivation method which involves making platforms (dhaps) from decomposing water hyacinths covered in ash and coconut matting. These layers of organic matter provide the nutrients for crops to grow. After six months, the platforms are towed to the shallow edge of freshwater lakes and piled up to create further platforms for growing fruit and vegetables, thus reclaiming areas of marshland for agriculture.

The research found:

- **This method provides significant employment opportunities, including farm labour and transporting produce to market.**
- **Women are well-represented as farmers and labourers. This provides a source of income and an opportunity for women to meet together, which can have social and business benefits.**
- **Farmers make around US\$800 per season from a hectare – significantly more than people in neighbouring floodplains.**
- **Floating cultivation is a useful way to adapt to sea level rise. In suitable**

areas, it could help people avoid migration when water levels rise. Around 50 percent of Bangladesh is wetland and many floodplains are up to a metre deep in water for five or more months a year. Floating cultivation has enabled people to stay in rural areas, when they might otherwise have migrated to urban slums. This technique represents a useful model for sustainable food production and income generation, for other parts of Bangladesh and other countries.

Aid agencies now recognise these benefits and encourage floating cultivation. However, policymakers should note:

- **Floating cultivation should be introduced alongside, rather than instead of, modern agricultural technology to improve productivity and nutrition.**
- **Issues of land tenure for marshes need resolving. In many places, local elites buy up titles and rent leases back to local farmers, usually at very high rates.**

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Can transgenic seeds repeat the success of the Green Revolution?

New technology and crop varieties reduced poverty in much of Asia and Latin America, and some parts of Africa, during the Green Revolution. However, from 1985 this progress slowed. Can new research into transgenic crops revive poverty reduction through agricultural technology?

Most poor farmers cannot readily obtain more land or water, as these resources are finite. Yet, the farm population and workforce are still growing. Research from the Poverty Research Unit at the University of Sussex, UK, examines how the Green Revolution reduced poverty via increased consumption; improved nutrition; increased cereal production; higher incomes through employment; reduced risks for farmers; and greater ecological sustainability. The researcher asks if transgenic crops (crops with genetic material transferred from another organism) can achieve similar benefits and fill in the 'gaps' from the Green Revolution.

Improved farm technology can help poor farmers by increasing land and water

productivity, thus raising food availability. This was the main aim of Green Revolution researchers. Partly by luck, partly by being flexible, they also increased food entitlements (not just availability) for other groups of poor people – near-landless rural workers and urban labourers. To repeat this success, transgenic or other new farm technology must 'walk two tightropes'. This means:

- raising labour productivity, so poor farmers get more reward for their effort, but raising land and water productivity faster, so employment rises without using more land and water
 - cutting the price of staple foods through increased output (so non-farm poor people benefit), but raising total factor productivity (the conversion of farm inputs to outputs) faster, so poor farmers also benefit.
- One gap in Green Revolution technology – is the failure of high-yielding staple crops in areas with scarce or unreliable water, including most of Africa. A lack of water reduces the effectiveness of fertilisers. Transgenic crops could adapt African staples that perform well in water-scarce regions by using DNA from other crops to improve yields.

Transgenic crops already benefit poor people, Bt, cotton, which is modified to increase resistance to bollworm, has reduced pesticide needs. This improves farmworkers' health and cuts costs. But can transgenic crops build on the major successes of the Green Revolution?

Being concentrated in the public sector (both international and in developing countries), Green Revolution researchers could be flexibly pro-poor, because they did not depend on profits from royalties of large farmers. Most current transgenics research is from a few private firms, which normally survive through such profits and are therefore not necessarily pro-poor. However, modern seed research and innovation normally enhances the yield and robustness of crops. Therefore, unless transgenic seeds reduce labour use per hectare, they will normally benefit poor people in adopting areas.

The researcher identifies some concerns:

- Such benefits will be small unless researchers prioritise higher-yielding, more drought-tolerant, more nutritious food staples, suitable for small-farm systems.
- Private profits must come less from farmers' royalties, and more from contracts, collaboration, prizes funded by states and international organisations, or charities and foundations.
- Poor people may still lose from specific transgenic innovations (for example, better herbicide-tolerance that displaces weeding labourers), or from innovations heavily concentrated on poor farmers' competitors.

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'Plant Breeding and Poverty: Can Transgenic Seeds Replicate the 'Green Revolution' as a Source of Gains for the Poor?' *Journal of Development Studies*, 43(1) 31–62, by Michael Lipton, 2007

One gap in Green Revolution technology is the failure of high-yielding staple crops in areas with scarce or unreliable water; transgenic crops could adapt African staple crops that perform well in water-scarce regions

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