

Fertiliser Value Chains in Cambodia: A Case Study in Takeo Province¹

Introduction

Compared with neighbouring countries Vietnam and Thailand, rice yield in Cambodia remains low. One major reason for this is the low use of fertiliser (Theng & Koy 2011), even though many demonstration trials have proved the high response of rice yield to fertiliser application. One key constraint to increased input use appears to be limited access to adequate stocks of affordable, good quality fertiliser. Much of the fertiliser used by farmers is imported from Vietnam and Thailand but there are important issues of dubious quality, incorrect and indecipherable labelling, unreliable supply, variable prices, and insufficient information about fertiliser and other input use. Empirical study by Schamel and Hongen (2003) shows that farmers choose to abstain from fertiliser markets altogether or apply fertiliser at rates below recommended levels because they have been sold bad quality products in the past, which deters buyers who are not willing to pay full market price for the average quality of fertiliser available. Identifying the constraints that

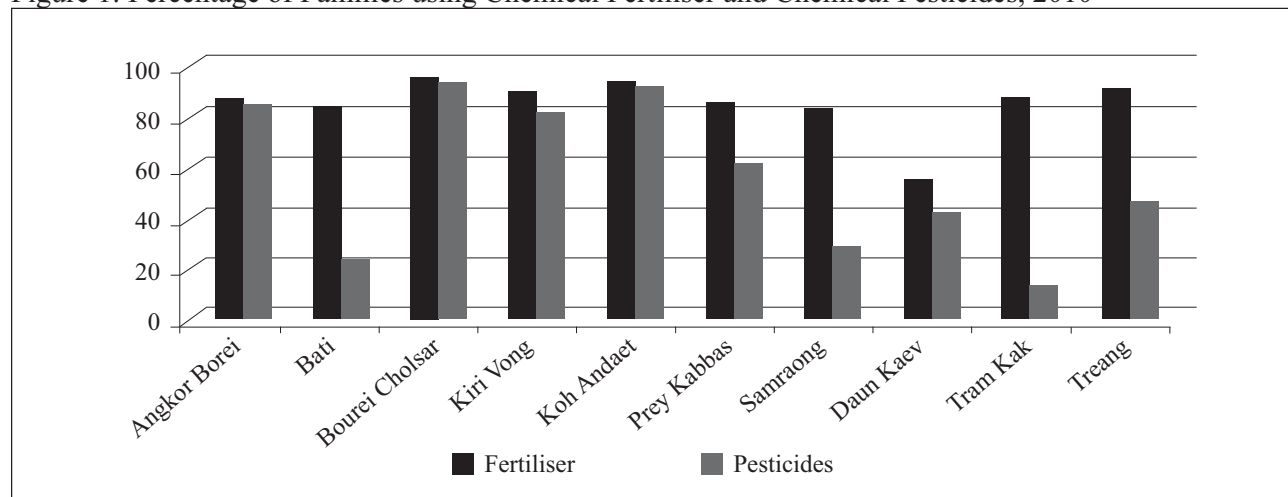
inhibit the use farm inputs will help to highlight possible policy interventions to improve farmers' access to and informed use of these inputs.

Fertiliser can intensify rice production, but issues surrounding quality discourage rice farmers from investing more in farm inputs. The hypothesis of the study is that limited access to good quality, affordable fertiliser is a constraint to improving rice yield. Policy changes to ease this issue could increase productivity and farm income, contributing to farmers' improved wellbeing and reduced vulnerability. The objectives of the study are: (1) to analyse the value chain of fertiliser farm inputs; (2) to identify the issues of low quality fertiliser and the channels through which it is distributed; (3) to review government policy to control fertiliser trade; and (4) to identify ways to improve the fertiliser market.

The case study employs a qualitative approach in analysing the fertiliser value chain in the study areas of Takeo province. Information was collected from different actors in the value chain via focus group discussions (FGDs) and key informant interviews (KIIs). Participants included farmers, fertiliser importers, distributors and retailers and other stakeholders such as provincial extension workers, provincial agronomists, and provincial agricultural legislators.

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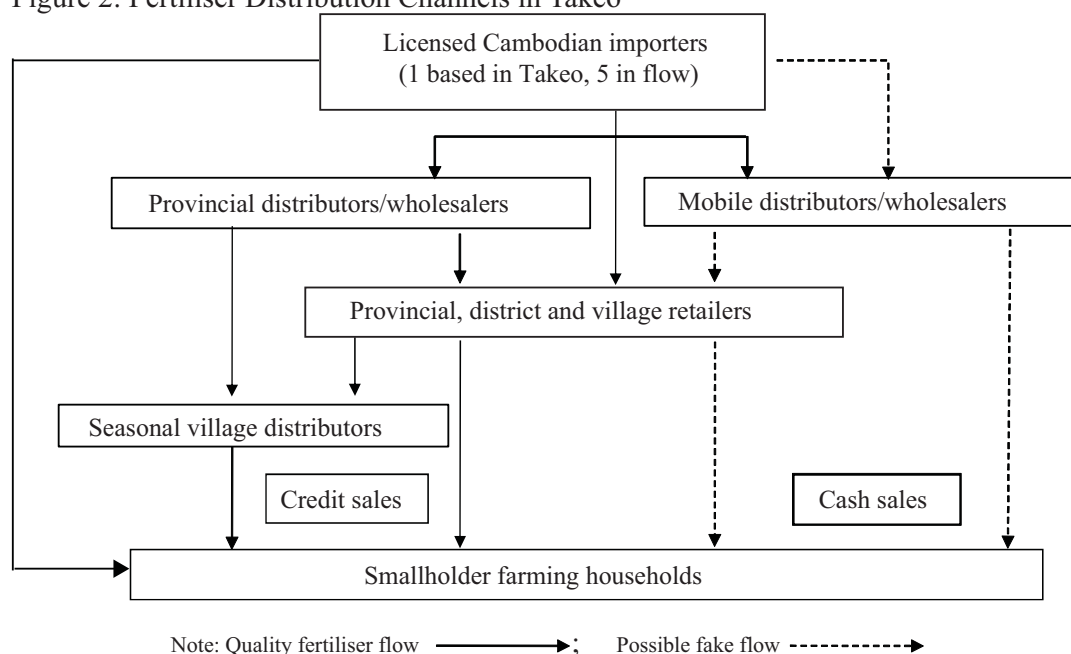
Figure 1: Percentage of Families using Chemical Fertiliser and Chemical Pesticides, 2010



Source: Commune Database (2010)

Note: Percentage is calculated as total households using agro-chemicals divided by village total households

Figure 2: Fertiliser Distribution Channels in Takeo



Results and Discussion

Fertiliser Market in Takeo

In the past decade Takeo province has shifted rapidly from subsistence production to market-oriented cash-crop farming, which has entailed a substantial increase in rice production. This fast transition is due to irrigation system development (improved irrigation and better water availability), quick uptake of high-yielding varieties, abundant use of fertilisers and pesticides, and increased mechanisation. Trans-border trade with Vietnam is an additional major factor in rice sector development in Takeo. The sale of rice to Vietnam is crucially important as a fundamental precondition for agricultural development and economic growth. Dry season rice is the province's main export, while the main imports are seeds, fertilisers and pesticides from Vietnam.

The rapid uptake of high-yielding rice varieties entails greater use of fertilisers and pesticides. Figure 1 shows that with the exception of Daun Kaev district, more than 80 percent of rice farmers in Takeo province use inorganic fertilisers. This implies there is no fertiliser supply constraint in the market place, a fact confirmed by farmers in all study villages who reported no problems accessing fertiliser.

There are six major fertiliser supply companies distributing agro-products in Takeo province, from provincial wholesale outlets to one-stop-retail shops

in local village markets. Heng Pich Chhay (HPC) Company has business headquarters and warehouses in Takeo, while the other five suppliers have business head offices in Phnom Penh or elsewhere but have their distribution points/shops (though no branch office) in Takeo. Two larger suppliers are YITAK Group and HPC Company; their products are widely available in most wholesale and retail outlets, even in small village one-stop-shops.

Many kinds of fertilisers, distributed by different importers and distributors, are available on the market. The single nutrient products are urea and muriate of potash (KCl). Compound nitrogen and potassium (NK) fertilisers are di-ammonium phosphate (DAP) (18-46-0) and ammonium phosphate sulphate (16-20-0). Compound nitrogen, phosphorus and potassium (NPK) products are available on the market in ratios of 15-15-15, 16-16-8-13s and 20-20-15. All fertilisers are sold in 50kg bags, though farmers can buy products by the kilogram depending on available cash or amount they need.

Most of the fertilisers sold on the market are labelled in Khmer with the exceptions of NPK 16-16-8-13s produced in the Philippines and urea from China and Vietnam, though these products are marked with small Khmer stickers. There is no official data available on the amount of fertiliser distributed or sold in Takeo province. Neither traders nor the Provincial Department of Agriculture (PDA)

had any records of the quantity of fertiliser imported or distributed in the province. It is believed that there is large scale smuggling of fertiliser from Vietnam into Cambodia, which is then sold on the market. Smuggled goods are readily identified because the bags are not labelled in Khmer or marked with Khmer stickers.

Fertiliser Distribution Channels and Value Chain Analysis

Fertiliser market structure is evolving rapidly to meet farmers' demands and serve the growing rice sector in Takeo province. The market structure is well organised and led by the private sector operating a very competitive marketing strategy with prices set by market forces (Figure 2).

Licensed Cambodian importers store fertiliser in warehouses near the border and/or in Phnom Penh. The HPC Company has its business headquarters and warehouse in Kiri Vong district near the border, and has many trucks to transport imported fertiliser both within Takeo and to other provinces. The five other companies do not have fertiliser stockists in Takeo town, but they have appointed lead representatives/dealers to serve as distribution points throughout the province. Transport costs vary according to the distance from the main warehouse to the distribution points; haulage costs about USD0.25 per bag per 100km, and loading fertilisers on and off the trucks costs about USD0.05 per bag.

Most of the larger distributors have trucks to deliver to district and village retailers. District and village shops are smaller with limited storage, and usually fertilisers are ordered during the planting season (May to Sept for wet season, and Nov to Feb for dry season or recession rice) to save space for other merchandise.

Village retailers are typically a one-stop-shop selling a wide range of farm inputs including animal feed, pesticides, seeds and fuel in addition to fertilisers. In 2011/12, about 634 traders—mostly shop owners selling farm inputs—were called to attend training on farm inputs trade and safety in the province. Village retailers typically buy fertilisers from the representatives of the main provincial dealers; however, some also use different suppliers depending on prices and services offered and/or to meet specific demands of their customers/farmers. Retailers' transactions are done in cash or on credit. Field interviews revealed that about half of retail sales are made on credit, with an added mark-up of 15,000 to 20,000 riels per bag per planting season (3-6 months).

Mobile distributors/ intermediaries form another farm input distribution channel, as reported during field study. They have no specific business office nor is it clear exactly where they come from, but they have phone contact details and deliver fertilisers as and when retailers need their services. They are well connected and have long-standing

Table 1: Urea and DAP Value Chain Analysis, February 2012

| | Granular Urea | | DAP (USA) | |
|--|----------------------|---------------------|------------------|---------------------|
| | (USD/50 kg) | % of imported price | (USD/50 kg) | % of imported price |
| Bag Cost Importer at Vietnam border | - | - | 31.5 | 100 |
| Transport to Cambodia (<100km@\$0.25) | - | - | 0.3 | 0.8 |
| Into store | - | - | 0.1 | 0.2 |
| Cost into Border Warehouse | - | - | 31.8 | 101.0 |
| Label changes & importer's mark-up | - | - | 1.7 | 5.3 |
| Importers Selling Price | 24 | 100 | 33.5 | 106.3 |
| Transport to province (100 km @ \$0.25) | 0.3 | 1.0 | 0.3 | 0.7 |
| Distributor mark-up and handling | 0.8 | 3.1 | 0.8 | 2.2 |
| Into store Provincial Distributor | 25.0 | 104.1 | 34.5 | 109.3 |
| Provincial distributor mark-up | 0.5 | 2.0 | 0.5 | 1.4 |
| Distributor selling price | 25.5 | 106.1 | 35.0 | 110.7 |
| Transport to village dealer & handling | - | - | 1.0 | 2.9 |
| Into store at village dealer | - | - | 36.0 | 113.6 |
| Dealer mark-up for cash sale | 3.3 | 12.7 | 0.5 | 1.4 |
| Retail Cash Price | 28.8 | 118.9 | 36.5 | 115.0 |

Source: Author calculation based on data from field interviews in February 2012

business relationships with some importers. They purchase fertiliser from importers and load it onto trucks for delivery and re-sale to provincial, district and village retail shops, and direct to farmers. It was reported that there is a very high opportunity for traders to adulterate fertiliser in this process, either by mixing low and high quality products and selling it on as higher quality fertiliser, re-bagging low quality fertilisers in bags labelled with a higher quality brand, and even selling short-weight bags. During our field study it was also reported that someone pays farmers for their empty high quality brand bags, i.e. YITAK and/or HPC, and uses them for malpractice in the fertiliser sector.

Fertiliser value chain: cost prices, selling prices, handling costs, transport costs, unofficial road haulage fees and mark-up by different actors in the fertiliser supply chain recorded during field visits, together with the annual and monthly retail prices of different fertiliser products from secondary data sources, were used for the fertiliser value chain analysis in Takeo.

Value chain analysis shows that the mark-up for traders beyond the importers is very low, at around 1.5 to 2 percent, whereas the mark-up of import companies is about 5 percent (Table 1). This indicates that the fertiliser market in Takeo is very competitive, particularly for the most common products, urea and DAP. When operating costs are taken into account, the margins for fertiliser traders at provincial, district and village level are very low. During our field visit in February 2012, the price of urea was about USD28 and that of DAP was USD36 per 50 kg bag.

The results suggest that the fertiliser market is very competitive among traders for marginal profits beyond the importers. The most value-added beyond the importers is the high transport cost from provincial distribution points to village shops, which is largely due to high unofficial fees paid to roadside police during transportation. Therefore, when operational and logistic costs are accounted for, the mark-up does not allow high marginal profits for most fertiliser traders in Takeo; the high value-added cost of fertiliser is composed of importers' mark-up (5 percent) and transport and logistics costs (3 percent). The finding is consistent with a study by the International Fertiliser Development Centre (IFDC 2010).

Problems of Fertiliser Markets – How are Fake Products Distributed?

Fertiliser quality problems arose because the sudden price spike in 2008 created opportunity for malpractice in the sector in response to farmers' need for cheaper fertilisers. The IFDC (2010) found that the nutrition analyses of almost all compound NPK and NP (16-20-0 and DAP) fertilisers sold on the market were well below acceptable quality index values. However, the nutrient content of most of the single nutrition fertilisers (urea and some DAP) analysed was within an acceptable standard (IFDC 2010: 25-35).

The most common quality issue is that of "fake" fertilisers. The fake products reported by customers, importers, dealers and senior PDA officials during the field visits and interviews were almost universal. They are not new, but similar to those identified by the IFDC (2010). The most common practice is re-bagging less expensive fertilisers such as DAP and urea in sacks labelled with a high quality brand, for instance urea from Thailand and DAP produced in the USA, which are well known high quality products. Thus some traders re-bag low quality products and resell them as high quality trade brands to customers.

Dilution and adulteration of fertilisers was also reported by interviewed farmers. Farmers said that their crops were not responding as well to fertiliser compared to last year's crops, and blamed the low crop response on low quality fertiliser. Technical experts, however, argue that such claims are almost impossible to put down to poor quality fertiliser alone because other factors, such as different seasonal conditions, seed quality, and cropping practices also affect yield. Despite what the experts say, evidence from our interviews with farmers, fertiliser dealers and importers and fertiliser nutrient analysis by IFDC (2010) suggests that the low quality of fertilisers sold on the market is a critical problem affecting crop yield and resulting in financial loss for farmers in the study areas.

The selling of short-weight bags and coating low grade NPK fertilisers with oil to change the product's appearance were also reported by farmers and fertiliser dealers during field visits. However, these incidences happened during 2008; presently, such problems are not commonplace. Farmers stressed that the most common issues are re-bagging and adulteration. Senior PDA officers, dealers and

retailers reported a significant drop in fake products, but the problem still affects about 5 to 10 percent of fertilisers sold on the market.

Figure 2 depicts possible distribution channels for fake products. Senior agricultural legislation officials and importers were confident that most of the main dealerships and retailers do not distribute fake products to customers. However, they blame the distribution of problem fertilisers to small retailers and farmers at lower prices on intermediaries and mobile distributors. Because the latter are unidentified and unregulated, the concerted efforts by MAFF and PDA to crackdown on fertiliser problems have so far had little effect. These fertiliser operators need to be regulated. At the very least, they could be registered so that their business activities can be monitored and controlled and the problem of adulterated fertilisers minimised.

Government Policy on Fertiliser Markets

MAFF is the government authority responsible for controlling fertiliser trade in Cambodia. The import of agro-chemicals such as fertilisers and pesticides requires a licence, which importers have to renew annually. To apply for a licence, importers must provide details of the products and quantities to be imported, along with laboratory test results of the imported products to confirm quality. Each application, whether for single or multiple products, is restricted to a maximum of 30,000 tonnes.

An agro-business expert argued that the import licensing procedures are complex, out of touch with market demand, and restrict market competition. The procedure creates rent-seeking opportunities, and many unofficial fees are paid through the facilitator to ensure granting of the licence. Furthermore, the restrictive import tonnage per importer is contrary to all market principles, a considerable commercial drawback hindering economies of scale for importers. In all market economies, the private sector should be free to determine supply based on market and commercial risk assessments. The government's role should concentrate on monitoring quality based on truth-in-labelling legislation. The licensing and tonnage quota system also encourages illegal imports and prevents small firms from entering the market.

In response to the rash of fertiliser problems since 2008 and to crackdown on fake products, MAFF and the Department of Agricultural Legislation (DAL)

of PDA have put in place urgent policy measures. These include more certification for fertiliser dealers and retailers; training for wholesalers, retailers and farmers on how to spot signs of fertiliser fakery, adulteration and re-bagging; competition among major fertiliser importers for market share in a small total market; and adopting a new law in late 2011 to regulate the registration, trade and use of agrochemical products in Cambodia.

Policy Implications

Based on the evidence from field study, the fertiliser market could be improved not only in Takeo province but also in Cambodia as a whole by addressing the following concerns:

1. Simplifying and easing fertiliser import licensing procedures and regulations would remove rent-seeking opportunities and reduce illegal imports.
2. It would be more appropriate for import licences to be approved based on the suitability of a product's use in Cambodia, and then importers could be allowed to import any quantity of registered fertiliser products based on market demand and risk assessment by the private sector.
3. Besides the certification of dealers and retailers, it is timely for MAFF and provincial DAL to take further steps to also certify third party traders (intermediaries, mobile distributors, seasonal village retailers) who purchase and deliver fertiliser to villages for re-sale to farmers.

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