



The Supply of Fertiliser for Rice Farming in Takeo

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INTRODUCTION

One reason historically for the low rice yields in Cambodia compared with Vietnam and Thailand has been the low use of fertilisers (Theng and Koy 2011), even though many demonstration trials have shown a high yield response to fertiliser application. One key constraint to increased use appears to be limited access to adequate stocks of affordable, good-quality fertilisers. Much of the fertilisers used by farmers are imported from Vietnam and Thailand, but there are important issues of quality, incorrect and indecipherable labelling, unreliable supply, variable prices, and insufficient information about fertilisers and other input use. A study by Schamel and Hongen (2003) shows that farmers chose to abstain from fertiliser markets altogether or apply fertilisers at rates below recommended levels because they had been sold bad-quality products in the past, which deterred buyers who were not willing to pay full market price for the quality of fertilisers 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.

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A study of the fertiliser value chain in Takeo Province was conducted. The hypothesis of the study was that limited access to good-quality, affordable fertilisers is a major constraint to improving rice yields in the province. Fertilisers can help increase rice production, but issues surrounding quality discourage rice farmers from investing in farm inputs. Policy changes to ease this issue could increase productivity and farm income, contributing to improved wellbeing and reduced vulnerability of farm households. The objectives of the study were to (1) analyse the value chain for rice fertilisers; (2) identify the channels for the low-quality fertilisers being distributed; (3) estimate the yield loss associated with low-quality fertiliser application; (3) review government policy to control fertiliser trade; and (4) identify ways to improve the fertiliser market.

A mixed methods approach was applied to analysing the fertiliser value chain (Kaplinsky 2000; Kaplinsky and Morris 2001). Qualitative and quantitative information was collected from different actors in the value chain via group interviews and interviews with key informants. Four group interviews were conducted with farmers in three districts—Tram Kak, Prey Kabbas, and Kaoh Andaet. These farmers represented different rice ecosystems—wet-season (WS) rice, WS rice with supplementary irrigation, and fully irrigated dry-season (DS) rice. Thirteen key informants were interviewed, including fertiliser importers, distributors, and retailers. Other stakeholders such as provincial extension workers, agronomists, and agricultural legislators were also interviewed. Official statistical data were also obtained and analysed. The major themes for the group interviews were fertiliser availability, product preferences and prices, fertiliser quality issues, credit access for farm inputs, government policy on fertiliser use, incentives and risks of fertiliser application, and yield lost due to poor-quality fertilisers. The key questions for the key-informant interviews were fertiliser suppliers and marketing strategies, transportation and logistics issues, fertiliser quality issues, government policy on fertiliser trade and quality control, and challenges of fertiliser trade and competitors.

THE FERTILISER MARKET IN TAKEO

Growth in Farmer Demand

In the past decade, farmers in Takeo Province have shifted rapidly from subsistence production to market-oriented farming, which has entailed a substantial increase in rice production. This rapid transition is due to quick

uptake of high-yielding varieties, increased use of fertilisers and pesticides, increased mechanisation, and improved irrigation. Growth in cross-border trade with Vietnam has been an additional major factor. Dry-season rice is the province's main export, while the main imports are seeds, fertilisers, pesticides, and construction materials from Vietnam.

The rapid uptake of high-yielding rice varieties has entailed greater use of fertilisers and pesticides. Figure 14.1 shows that, with the exception of Doun Kaev District, more than 80% of rice farmers in Takeo Province used inorganic fertilisers. This implies that there was no supply constraint in the market place, a fact confirmed by farmers in all study villages as well as key informants.

There is no problem to buy fertilisers in our villages. If you have money you can buy any amount or any kind you wish to buy. You can also find different product brands in a shop near our village here. In addition, you can also buy on credit and pay back at the harvest. (Group interviews with farmers in Samrong, Prey Kabbas, and Kaoh Andaet districts)

We have few fertiliser products in my store at this time, because it is off-season and farmers do not need [fertiliser] at the present. During planting time, it is not difficult; we can order any products and amount from different suppliers. We just call to them and they will bring their fertilisers to my shop here within

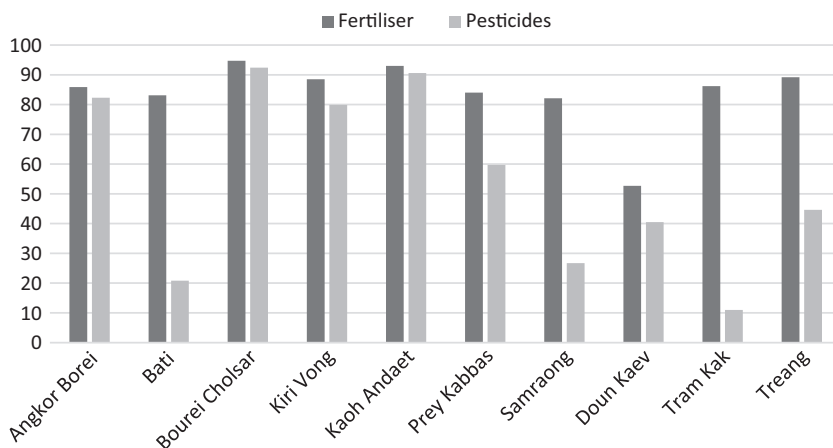


Fig. 14.1 Percentage of households using chemical fertilisers and pesticides in Takeo Province by district, 2010. (Source: Commune Database, 2010)

a day or two. They are in Takeo or from Phnom Penh. (Key-informant interviews with retailers in Samrong and Prey Kabbas districts)

Fertiliser Supply Chain

The fertiliser market structure is evolving rapidly to meet farmers' demands and service the growing rice sector in Takeo. The market structure is well organised and led by the private sector operating a competitive marketing strategy, with prices set by market forces (Fig. 14.2).

There were six major fertiliser supply companies distributing agro-products in Takeo Province from their provincial wholesale outlets to one-stop retail shops in local village markets. Heng Pich Chhay (HPC) Company had business headquarters and warehouses in Takeo, while the other five suppliers had their head offices in Phnom Penh or elsewhere but had major distribution points (though no branch office) in Takeo. HPC Company imported different kinds of fertilisers produced in Japan, the Philippines, the USA, China, and Vietnam through Vietnam traders who entered Cambodia through the Phnom Den checkpoint. This company supplied fertilisers not only in Takeo but in almost all provinces in

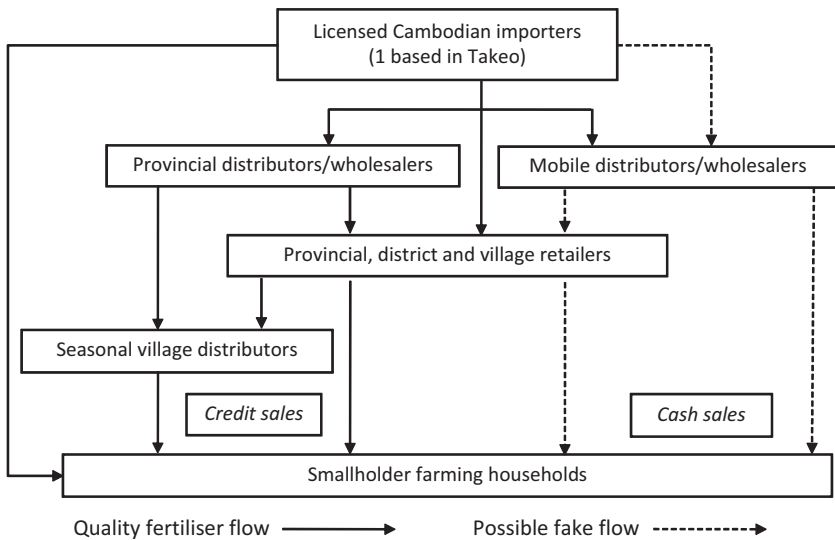


Fig. 14.2 Fertiliser distribution channels in Takeo

Cambodia. The two largest suppliers were the HPC Company and the Yetak Group; their products were widely available in most wholesale and retail outlets, even in small village shops. Other suppliers were Chhun Sok Ann, Cheam Tech, Sayimex, and Lim Bun Heng. The Lim Bun Heng Company only imported and distributed specific fertilisers from Thailand, such as urea, 15-15-15, and 16-20-0. Other importers had different suppliers, from China, Japan, the USA, Vietnam, and the Philippines, but these products mostly came to Cambodia through Vietnam-based traders.

Many kinds of fertilisers, distributed by different importers and distributors, were available in the market. The single-nutrient products were urea and muriate of potash (KCl). Compound nitrogen-based fertilisers included di-ammonium phosphate (DAP) (18-46-0) and ammonium sulphate (16-20-0). Compound nitrogen, phosphorus, and potassium (NPK) products were available on the market in ratios of 15-15-15, 16-16-8-13S, and 20-20-15. All fertilisers were sold in 50 kg bags, though farmers could buy products by the kilogramme.

There was little vertical integration reported during interviews, except for the larger importers such as the Yetak Group and HPC Company. They tried to promote their brands, with a buffalo logo for the Yetak Group and a triangle logo for the HPC Company. These two companies had their representative lead dealers in almost every province and employed agronomists to conduct field demonstrations as part of their marketing strategy, as well as producing leaflets about fertiliser use and application rates in the Khmer language to distribute to farmers. Most of the fertilisers sold in the market were labelled in Khmer, with the exceptions of 16-16-8-13 produced in the Philippines and urea from China and Vietnam, though these products were marked with small stickers in Khmer.

Neither traders nor the Provincial Department of Agriculture (PDA) had any records of the quantity of fertilisers imported or distributed in the province. It has been reported that there was large-scale smuggling of fertilisers from Vietnam into Cambodia, which were then sold on the market (Asian Development Bank 2002: 27). Smuggled goods were readily identified because the bags were not labelled in Khmer or marked with Khmer stickers. It was legal for farmers to come to Vietnam and buy up to 50 bags of fertilisers for use on their farms near the Cambodia-Vietnam border. However, some farmers came to Vietnam many times to buy fertilisers to sell to dealers in Cambodia for profit. This kind of illegal trade was reportedly common in Takeo in the areas close to the Vietnam border. Police at the border knew of this activity but made no arrests, in

exchange for some benefits. In the case of large movements of fertilisers, as would be carried out by the six major fertiliser companies, the bulk of unofficial imports from neighbouring countries (Thailand and Vietnam) would need to be conducted by traders aligned with those companies in their particular zone of operations in order for those traders to have “permission” to operate (Asian Development Bank 2002: 27). The incidence of smuggling may be taken to imply that fertiliser prices in Cambodia are kept artificially high through regulating the quantity traded.

Licensed Cambodian importers stored fertilisers in warehouses near the border (Thailand and Vietnam) and/or in Phnom Penh. The HPC Company had its business headquarters and warehouse in Kiri Vong District near the Vietnam border and had many trucks to transport imported fertilisers both within Takeo and to other provinces. The other five companies did not have fertiliser stockists in Takeo town, but they had appointed lead representatives/dealers to serve as distribution points throughout the province. The amount of fertilisers held by the provincial lead dealers varied according to the planting season. Larger distributors had warehouse facilities that could store from 100 to 1000 tons during peak season. Transport costs varied according to the distance from the main warehouse to the distribution points. Haulage cost about USD 0.25 per bag per 100 km, and loading fertilisers on and off trucks cost about USD 0.05 per bag. Most of the larger distributors had trucks to deliver to district and village retailers. District and village shops were smaller, with limited storage, and usually fertilisers were ordered during the planting season (May to September for wet-season rice and November to February for dry-season or recession rice) to save space for other merchandise.

Village retailers were typically one-stop shops selling a wide range of farm inputs including animal feed, pesticides, seeds, and fuel in addition to fertilisers. In 2011–2012, about 634 traders in the province—mostly shop owners selling farm inputs—were called by the PDA to attend training on trade and safety in farm inputs. Village retailers typically bought fertilisers from the representatives of the main provincial dealers; however, some also used different suppliers depending on prices and services offered and/or to meet specific demands of their customers.

Retailers’ transactions with farmers were done in cash or on credit. Field interviews revealed that about half of retail sales were made on credit, with an added mark-up of KHR 15,000–20,000 per bag per planting season (three to six months).¹

If we sell on a cash basis, we could make a profit of only about 1,500 to 2,000 riels per bag. Prices are very competitive among retailers in the market; if we do not sell with this profit, other shops will sell ... If we sell on credit we can mark-up about 15,000–20,000 riels per bag and receive repayment from farmers within 3–6 months, but we sell on credit to those whom we know well and who pay back on time after harvesting their crops. Payment can be made either in paddy or cash. Every year, about half of sales are made on credit. If depending on cash sales we can earn very little from this business. (Interviews with retailer shops in Tram Kak District)

Some provincial distributors and district retailers resold their fertilisers to seasonal village traders who sold and delivered fertilisers directly to farmers. All traders who sold agro-chemical products needed to be annually registered at the PDA's regulatory office; otherwise, their business activity was illegal. However, the seasonal village traders were not required to be registered and could sell fertilisers in many locations in Takeo. Many were better-off farmers in the villages with good connections with the main dealers, and hence they could make a profit from this business. Most of the seasonal traders resold fertilisers on credit to farmers and received repayment during the subsequent harvest. These credit sales involved a mark-up of as much as USD 5 per bag per planting season (six months for the wet season and three months for the dry season). HPC Company also sold on credit directly to farmers; about 500 tons were sold to farmers during the 2011 planting season. This involved a premium of about USD 1.50 per bag for three months—a much lower rate than demanded by the village traders.

Mobile distributors formed another distribution channel. They had no specific business office nor was it clear exactly where they came from, but they could be contacted by phone and delivered fertilisers as and when retailers needed their services. They were well connected and had long-standing business relationships with some importers. They purchased fertilisers from importers and loaded them onto trucks for delivery and re-sale to provincial, district, and village retail shops, and directly to farmers.

Marketing Margins

An analysis of fertiliser margins in Takeo was undertaken based on estimates provided by informants of the purchase prices, selling prices, handling costs, transport costs, unofficial road haulage fees, and mark-ups by

different actors along the supply chain, together with the annual and monthly retail prices of different fertiliser products from secondary data sources.

The prices of all common fertilisers available in the Takeo market increased steadily from 2002 and spiked in 2008, in line with the worldwide spike in food and fuel prices in that year (Fig. 14.3). During 2008, prices of fertilisers increased to about USD 40 per 50 kg bag, while DAP rose to about USD 60 per bag. At these prices, all kinds of fertilisers were unaffordable for most smallholder farmers and the financial returns to fertiliser use were negative. The fertiliser prices then returned to normal trend in 2009. During the field visit in February 2012, the village price of urea was about USD 28 and that of DAP was USD 36 per 50 kg bag; these prices matched price trends recorded by the Ministry of Agriculture, Forestry and Fisheries (MAFF).

An estimate of marketing margins for DAP imported from the USA is presented in Table 14.1. This shows that the overall margin from the importer to the village retailer was about 15%. The mark-up for import companies (of which there were six) was about 5%, which does not appear excessive, whereas for traders further along the supply chain it was only

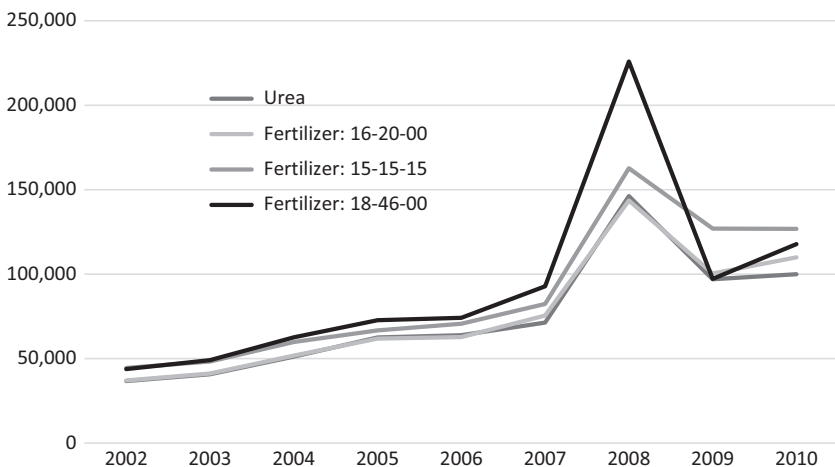


Fig. 14.3 Yearly average nominal retail prices of major fertilisers in Takeo, 2002–2010 (KHR/bag). (Source: Agricultural Marketing Office 2002–2010 (USD 1 = KHR 4000))

Table 14.1 Analysis of marketing margins for imported di-ammonium phosphate

	<i>USD/50 kg</i>	<i>% of imported price</i>
<i>Cost to importer at Vietnam border</i>	31.5	100
Transport to Cambodia (<100 km @ \$0.25)	0.3	0.8
Transfer into border warehouse	0.1	0.2
<i>Cost into border warehouse</i>	31.8	101.0
Label changes and importer's mark-up	1.7	5.3
<i>Importer's selling price</i>	33.5	106.3
Transport to province (100 km @ \$0.25)	0.3	0.7
Distributor mark-up and handling	0.8	2.2
<i>Into store of provincial distributor</i>	34.5	109.3
Provincial distributor mark-up	0.5	1.4
<i>Distributor selling price</i>	35.0	110.7
Transport to village dealer and handling	1.0	2.9
<i>Into store of village dealer</i>	36.0	113.6
Dealer mark-up for cash sale	0.5	1.4
<i>Retail cash price in village</i>	36.5	115.0
<i>Value added—importer to retailer</i>	5.00	15

Source: Author's calculations based on data from field interviews in February 2012

1.5–2%. When operating costs were taken into account, the margins for fertiliser traders at the provincial, district, and village levels were very low. The highest margin other than the importers' mark-up was the transport cost from provincial distribution points to village shops (3% of the imported price), which was largely due to unofficial fees paid to roadside police during transportation. In general, the analysis indicates that the fertiliser supply chain in Takeo was very competitive, particularly for a commonly used product such as DAP. These findings are consistent with those of the International Fertiliser Development Centre (IFDC 2010).

FERTILISER QUALITY ISSUES

Fertiliser quality problems arose in Cambodia as a result of the huge price spike in 2008, creating an opportunity for malfeasance in the fertiliser sector in response to the demand from farmers for “cheaper” fertilisers (IFDC 2010). IFDC (2010) conducted nutrient analysis of sampled fertilisers from ten provinces and found that almost all compound NPK and NP (16-20-0 and DAP) fertilisers sold on the market were well below acceptable quality index values (Table 14.2). However, the nutrient

Table 14.2 Nutrient analysis of selected fertiliser samples, mid-2010

Sample	Product (N-P-K-S)	% N	% P ₂ O ₅	% K ₂ O	% S	Total nutrients (%)
5	20-20-15	21.90	10.50–11.40	9.00		77.00
12	20-20-15+TE	16.40–16.80	16.70–17.40	14.20		88.00
21	20-20-15+TE	17.10	18.20–18.00	13.60		68.22
24	20-20-15	17.70–18.50	19.50	11.60		90.18
28	20-20-15	20.70	19.60	9.77		91.04
34	20-20-15+TE	17.20	17.50–17.30	12.80		86.36
38	20-20-15	17.80–18.10	21.20	10.40		90.36
42	16-16-8-13	13.90	5.51–5.47	0.15	12.10	48.90
43	16-8-8-13	17.20	8.66	2.85	15.60	89.72
46	20-20-15-13	24.60	12.80–12.20	11.90	2.12	89.64
60	16-8-8-13	16.30	6.80–6.92	3.47	15.00	83.41
73	20-20-15+TE	17.80–19.00	20.30	9.41		88.56
88	20-20-15+TE	16.10–16.20	20.30	11.70		87.64
92	20-20-15+TE	15.80–16.10	21.10	9.79		85.44
97	25-20-10+TE	23.00	19.60	12.30		99.82
102	20-20-15+TE	21.60	16.20–16.60	9.43		86.60

Source: IFDC (2010)

Note: TE = trace elements; benchmark index value is 98%

content of most of the single-nutrient fertilisers analysed (urea) and some DAP was within an acceptable range (IFDC 2010: 25–35).

In response, the Department of Agricultural Legislation (DAL) has made concerted efforts to minimise the incidence of “fake” products in the market place, including increased certification of dealers, providing training to dealers on how to assess fertiliser quality, and instructing dealers on the signs of adulteration, oil coating contamination, and/or re-bagging. However, the method of fertiliser quality control employed so far is based on visual inspection only owing to the lack of analytical capacity in DAL headquarters in Phnom Penh. Visual inspection can only detect very obviously adulterated products but has limited ability to detect adulterated fertilisers or fertilisers with lower than specified nutrient analysis. Effective control requires capacity to analyse products chemically.

You can see these samples we took from some dealers and retailers in Takeo, we suspected that they are fake products, we can inspect by visual inspection only, and we did not know exactly whether these samples have low nutrient analysis. If we want to analyse these samples at the headquarters laboratory in Phnom

Penh we need money to pay for the services, but we have no budget to do so. These are the problems and the capacity limitation of our staff to control the fertiliser quality problems here. (Interviews with provincial agricultural regulatory officers)

Fake products were widely reported by customers, importers, dealers, and senior PDA officials during the field visits and interviews, confirming the findings of IFDC (2010). The most common practice was 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. Importers interviewed reported that some retailers had been brought to the authorities to get them to confess and promise not to buy and sell fake products using their brand name. Senior PDA officers, dealers, and retailers reported that, although there was a significant drop in the incidence of fake products, the problem persists, affecting about 5–10% of fertilisers in the market (compared with about 30% during the price spike in 2007–2008).

Last production year, about 200–300 tons of fake DAP products were sold in this area. Some mobile dealers drove their trucks loaded with DAP products with trademark of HPC brand name and sold to either farmers or retailers with cheaper prices than usual. When we inspect fertiliser inside the bags, they are not the products of HPC brand. We cannot find those who carried out this malfeasance, but we arrest retailers who on-sell to farmers. Farmers complained about no crop response though they applied more fertiliser than usual ... Now farmers realised that cheap fertilisers are not good fertilisers. They want good quality fertiliser though it has a bit higher price. (Interviews with fertiliser importer and dealers in Prey Kabbas)

Some retailers sell Thai urea, a blue bag urea, a most popular well-known urea for most farmers; but in fact the product inside is not the Thai one. It may be a granular urea produced either in Vietnam or China, but it is re-bagged with the Thai brand and sells as the Thai product. It is difficult for farmers to differentiate the Thai product from the urea produced either in Vietnam or China because it's granular and the shape is almost the same. Farmers can know it is fake only by the crop response, but fertiliser dealers know which is Thai and which is not, and mobile distributors cannot cheat us. Thus, it is easy for malfeasance to occur for urea. This is the most common fake product in the market. (Interviews with retailers in districts visited and PDA officials)

The problem of fertiliser is still affecting the farmers, who are the fertiliser users, but the problems have reduced greatly compared to the peak price level in 2008. Presently, it is affecting about 5-10% of sales in the market. (Key-informant interviews with importers and senior PDA officials)

Dilution and adulteration of fertilisers were also reported by interviewed farmers. Farmers said that their crops were not responding as well to fertiliser compared to the previous year's crops and they blamed the low crop response on low-quality fertilisers. Technical experts, however, argued that such claims are almost impossible to put down to poor-quality fertilisers alone because other factors, such as different seasonal conditions, seed quality, and cropping practices, also affect yield. Nevertheless, the combined evidence from interviews with farmers, fertiliser dealers, and importers, and the fertiliser nutrient analysis conducted by IFDC (2010) strongly 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 area.

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 instances occurred during 2008; such problems were no longer considered commonplace. Farmers stressed that the most common issues they faced were re-bagging and adulteration.

Possible distribution channels for fake products are shown in Fig. 14.2. Senior agricultural regulators and importers were confident that most of the main dealerships and retailers did not distribute fake products to customers. However, they blamed the distribution of cheap, problem fertilisers to small retailers and farmers on intermediaries and mobile distributors. According to the regulations for agro-chemical distribution, agro-chemical dealers and retailers have to register with the Provincial Department of Agriculture to get certification for distributing agro-chemicals; otherwise their business activity is illegal (RGC 1998). Therefore, because the intermediaries and mobile distributors, including seasonal village traders, are unidentified and unregulated, the concerted efforts by MAFF and PDA to crackdown on fertiliser problems have so far had little effect.

It was reported that mobile distributors in particular had a clear opportunity to adulterate fertilisers—by mixing low- and high-quality products and selling them as high-quality fertilisers, re-bagging low-quality fertilisers in bags labelled with a high-quality brand, and even selling short-

weight bags. During the field study, it was also reported that someone would pay farmers for their empty high-quality brand bags, that is, those with YITAK and/or HPC brands, and use them for such forms of malpractice.

In Takeo there are a lot of mobile distributors and we cannot control their business activity. They have no specific office and we cannot find exactly where they come from. They have a long and good relationship with some importers, and thus they can buy fertiliser and load onto their trucks to resell to any shops and even farmers. They can adulterate the fertiliser before they deliver and resell it to retailers. They have both good- and low-quality fertilisers to deliver and sell to retailers; usually the fake ones are kept inside the trucks and the authorities have difficulty to find them. (Interview with provincial agricultural regulatory officer)

Almost every day someone comes to ask us whether we have used fertiliser bags to sell to them. They ask only for used bags that have good brands and are in good condition. If we have them we can get 4,000 riels per bag. (Group interviews with farmers in Tram Kak, Prey Kabbas, and Kaoh Andaet)

While there is no evidence that seasonal village traders sold problem fertilisers to customers, there was a very high possibility that this was the case since they too were unregulated and could easily make connections with mobile distributors to resell fake products at any time.

There are a lot of mobile dealers who come to ask us [to buy their products] almost every day. They have many kinds of fertiliser on their trucks and different product brands with different prices. They have cheaper prices but they are not as good as the higher-priced ones. We are retailers, we know which is good quality and which is low quality (fake products). The fake product is for those who want lower prices. Sometimes when we run out of stock and need fertilisers to sell, we can order from these mobile dealers. We do not know their office but we normally contact them by calling. (Interview with retailer in Prey Kabbas)

Farmers indicated they would monitor the quality of fertilisers supplied by local retailers (by observing crop response) and adjust their future purchases accordingly.

If you buy cheap fertilisers, you have a high chance to get fake fertilisers. Cheap fertiliser is not as good as the higher-priced one. If we note that we bought fertilisers of poor quality from a retailer, we may buy from another retailer next

time. (Group interviews with farmers in Tram Kak, Prey Kabbas, and Kaoh Andact)

In the absence of field trials to measure the actual yield loss due to the use of fake products, an estimate was made based on farmers' perceptions and recall. Farmers reported that they suffered a yield loss of 40–60% if they applied poor-quality fertilisers and did not follow up with a second round of good-quality fertilisers. If, however, on seeing that their crop did not respond to the first application, they applied a second round of good-quality fertilisers, the yield loss was restricted to about 20%. As noted above, importers and senior PDA officials reported that currently about 10% of sales are of fake products. Hence, it can be assumed that 10% of rice farmers in Takeo used fake products in 2011 and incurred between 20 and 50% yield loss.

In Takeo, there were about 179,800 rice farming households (CDB 2010) producing on average about 6.2 tons of paddy in 2011 (MAFF 2012). A yield loss of 20% would correspond to a loss of about 1.2 tons per household, worth USD 285.² If 10% of farmers used poor-quality fertilisers and suffered a yield loss of 20%, the total annual crop loss for Takeo as a whole would be about USD 5.2 million. This loss would increase to about USD 13 million if farmers did not have the funds to then buy good-quality fertilisers after seeing the poor crop response (Table 14.3). If the same assumptions are extended to Cambodia as a whole, the losses would be of the order of USD 40 million and USD 106 million, respectively.

Table 14.3 Estimated value of production losses due to use of fake fertilisers in Takeo in 2011

Season	Paddy output ^a (t)	20% yield loss (t)	50% yield loss (t)	Paddy price (KHR/kg) ^b	Gross value of lost output (USD)	
					20% yield loss	50% yield loss
Wet	64,935	12,987	32,467	1000	3,246,725	8,116,813
Dry	45,569	9114	22,784	850	1,936,666	4,841,664
Total	110,504	22,101	55,251		5,183,391	12,958,476

Source: Author's estimate

^aOutput of the 10% of households buying fake fertiliser

^bUSD 1 = KHR 4000

FERTILISER POLICY

MAFF is the government authority responsible for controlling fertiliser trade in Cambodia. All agro-chemical importers have to be registered with the Ministry of Commerce and then have to apply to MAFF to become agro-business companies. To import agro-chemicals, including fertilisers and pesticides, these companies need a licence, which is renewable annually. To be granted 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 their quality. Each application, whether for single or multiple products, is restricted to a maximum of 30,000 tons. An official fee of USD 75 is charged for each imported product registered.

IFDC (2010) has 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 a facilitator to ensure the granting of the licence. Furthermore, the restriction on import tonnage per importer is contrary to market principles, creating a considerable commercial drawback in that it hinders the full realisation of economies of scale by importers. According to the IFDC, in a market economy, the private sector should be free to determine supply based on market and commercial risk assessments. The government's role should be to concentrate on monitoring quality, based on "truth-in-labelling" legislation. The licensing and tonnage quota system also prevents larger importers from cost-effective importing from the international market and hence forces importation through either Vietnam or Thailand, which adds to the transaction costs for customers. In addition, the licensing and tonnage quota system encourages illegal imports and prevents small firms from formally entering the market.

In response to the rash of fertiliser problems since 2008 and to crack down on fake products, MAFF and DAL in the PDA have put in place urgent policy measures as follows:

- increasing certification for fertiliser dealers and retailers and providing training for wholesalers and retailers about the signs of fake fertilisers, adulteration, and re-bagging;
- providing training for fertiliser users to increase awareness about fake fertilisers;
- increasing competition among the 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 agro-chemical products in Cambodia. The new law is comprehensive and needs to be applied in conjunction with specific regulations (sub-decrees) that can be amended by MAFF without parliamentary approval.

The efforts by MAFF and PDA to provide training about fake products, combined with farmers' direct experience with fake products, has helped farmers to realise that cheap fertilisers do not necessarily provide the nutrients needed for a good crop response. However, the broader issues raised by IFDC (2010) have not yet been addressed.

CONCLUSION

Based on this study, farmers' access to affordable, good-quality fertilisers could be improved, not only in Takeo Province but also in Cambodia as a whole, by addressing the following concerns. MAFF could amend the import licensing procedures and regulations for fertilisers, simplifying and speeding up the licensing process and thus removing the scope for rent-seeking behaviour and the need for facilitators to expedite the issuing of licences. Easing licensing procedures and regulations would also reduce the incentive for illegal imports. It would also be more appropriate for import licences to be approved by MAFF based on the suitability of a product's use in Cambodia; then importers could be allowed to import any quantity of a registered fertiliser product based on market demand and their own commercial risk assessment. This would also reduce the scope for illegal (and therefore unregulated) imports. All imported fertiliser products should be labelled to identify the manufacturer. This would enable the sources of sub-standard fertilisers to be traced, particularly from Vietnam and China, where it is claimed that sub-standard blends and granular products are produced. Besides the certification of dealers and retailers, it is timely for MAFF and PDA to take further steps to also certify third party traders (intermediaries, mobile distributors, and seasonal village retailers) who purchase and deliver fertiliser to villages for re-sale to farmers. Finally, fertiliser dealers, retailers, and other fertiliser traders should buy fertilisers only from certified importers or distributors and transport to villages for direct re-sale to farmers. PDA inspectors should monitor and spot-check fertiliser operators to help reduce fertiliser quality problems for smallholders.

NOTES

1. 1 USD = KHR 4000.
2. In addition, there is the cost of replacing the fake fertiliser in order to limit the yield loss to 20%. If farmers bought one bag of urea and one bag of DAP, the additional cost would be USD 65, giving a total financial loss of about USD 350 per household.

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