

# Changes in Society Require Changes in Agricultural Extension: Some Observations

By A.W. van den Ban<sup>1</sup>

Our society is changing rapidly, especially in many Asian countries with their fast growth in productivity. This is partly caused by changes in agriculture, but changes in society are also a reason why agriculture is changing. These changes make it necessary to change agricultural extension. This article discusses these processes of change. The objective of this article is to help the readers to think in a systematic way about the changes which are desirable in agricultural extension in their country.

## Increase in income

In several Asian countries income per capita increases more rapidly than it has ever done in Europe. This has important consequences for the development of agriculture. Incomes can increase because of increase in labour productivity, also in agriculture, but the demand for agricultural products will increase less than the demand for e.g. electronic products or tourism. Hence, the employment in agriculture decreases. For young and well educated it is easier to find employment elsewhere than for older people. Therefore the age distribution among farmers changes. In South Korea, a country with a rapid economic growth during the last 40 years, in 2000 51% of the farm operators were over 60 years and only 6% less than 40 years. That means that in the next 10 years about half of the farmers will stop farming and very few of them have a successor. A lot of land and market share

becomes available for those farmers under 40 years who can raise the capital and are willing to take the risk to make the investment needed to expand their farm. We can expect a large increase in farm size, but fields with a size and shape that are difficult to mechanise may no longer be used for agricultural production. In this situation management decisions are crucial for the success in farming.

In countries which started later than South Korea with a rapid economic growth as China, India and Vietnam, we may expect a similar development in the years to come. With the one child policy even less youngsters may enter agriculture in China than in Korea.

Another consequence of the increase in income is a growth in the demand for high value agricultural products as vegetables, flowers and animal products. Competing for these products requires a high level of competence of the producers.

In agriculture product prices decrease, because production efficiency increases as farmers now use more knowledge than they did in the past. The World Bank estimates that between 1980 and 2000 the prices of agricultural products decreased with about 50% (FAO, 2002:12). Therefore farmers could only maintain their level of income if their productivity increased. It is not known what will happen with these prices in the coming years. On the one hand one can expect that productivity in agriculture will continue to increase, because more knowledge from research and experience becomes available and farmers get more access to farm machinery, new varieties and chemicals. On the other hand in some countries with the migration out of agriculture the production may increase less than the demand which grows as a result of population growth and increased prosperity. I am convinced that some good entrepreneurs will be able to earn a good income from farming.

---

<sup>1</sup> Consultant on agricultural extension, Gen. Foulkesweg 82A, 6703 BX Wageningen, Netherlands. E-mail: [avandenban@planet.nl](mailto:avandenban@planet.nl)

*This article is based on many discussions with farmers, extension agents and extension scientists. I am grateful for what they have taught me.*

## Globalisation and farmers organisation's

Through globalisation farmers have to compete increasingly with farmers all over the world. In many countries government protected their farmers by restricting imports from other countries, but the WTO treaty makes it necessary to change these policies. Also the costs of transport decrease and Information and Communication Technology makes it easier for a trader to get information where good quality products are available for a low price.

In the past many farmers sold their products directly to consumers or to small traders, who sold it to consumers in nearby towns. Now, they often sell to multi-national companies as Cargill and to supermarket chains. These supermarkets like to advertise nationally which products they offer for sale at which price. Therefore they need large quantities of products of a standardised quality. Often they decide which variety the farmer should grow, which cultivation practices he should follow and which quantity he can sell at which time. It is easier for large farmers than for small farmers to meet these conditions, but local traders or farmers groups can also sell the quality and quantity of products the supermarket needs. This can be done through contract farming, but it is no exception that the conditions in the contract are more profitable for the trading company than for small farmers. What farmers organizations can do to prevent this is well discussed by Stessens and Gouet (2004).

Often large trading companies have their own agricultural research and extension staff. As a result the field worker of e.g. a canning factory may know better how to produce the kind of pineapples for which there is a good demand in the (export) market than the government village extension agent, who has to give advice on the production of a large number of different crops.

This process of globalisation causes threats and opportunities for farmers. Threats because local consumers of their products may switch to imported products if these are cheaper or of better quality. Opportunities because it may enable farmers to produce for export markets. In the Netherlands less farmers left agriculture than in many other industrial countries, because of the ability of farmers and their organisations to compete with farmers from many other countries. In this way this small

country became one of the largest exporters of agricultural products in the world, but at the same time a large importer of cereals and other bulk products in which the Dutch farmers can not compete well. Today only 8% of agricultural production comes from crops and 40% from horticulture, mainly flowers and vegetables. Vocational agricultural schools, farmers' cooperatives and other farmers' organisations played an important role in developing the ability of Dutch farmers to compete in the world market.

With the increasing power of multi-national companies in the markets it becomes important that farmers do not deal with them as individuals, but through their own organisations (Koopmans, 2004). This can help them to earn a fair share of the price consumers pay for their product. Crucial for the success of these organisations is that they are managed by farmers and not by government officers and that the leaders among the farmers are well educated and motivated to work in the common interests of all members. Through these organisations farmers can also influence government policies. In many developing countries urban people have more political power than rural people, because they are better educated and organised.

Farmers' organisations can also play a useful role by increasing the competence of their members through education and exchange of experiences. This can be education about production technologies, but also about farm management and marketing. These organisations may run agricultural schools where youngsters are prepared to become competent farmers and courses which support lifelong learning. Informal learning is also quite important. That means learning from observations of the changes in farming systems of successful entrepreneurs and discussing with them why they made these changes and whether or not this had the expected consequences. In India there is now fortunately a lot of attention to developing entrepreneurship in farm families. The 500 000 women Self Help Groups, which were established in the last 10 years time, offer them an opportunity to exchange experiences about how to become better entrepreneurs (Samanta, 2005: 139).

Study clubs can play a useful role too. This are clubs of 10 to 20 farmers, who visit each others' farm regularly, observe how crops and animals are growing, discuss which

practices the farmer has used and learn from their observations. Often the village extension agent participates in these discussions, because this is also for him/her a way to learn from farmers' experience and he can reach in this way more farmers than through individual farm visits. In Asia this kind of training is widely used in the Farmer Field Schools for Integrated Pest Management (van de Fliert et al., 2002, van den Berg, 2004). Initially farmers learned in these schools about pest management, but many groups experienced that it is useful to learn also about other cultivation practices.

Discussion groups can also play an important role in farm management extension (Faure and Kleene, 2004). After the group received the basic accounts of one member, they discuss how he can increase his/her income or reduce risk, e.g. by changing the cropping pattern. They learn how to make better decisions by analysing a situation similar to their own, calculating the consequences of alternatives and listening to the ideas of their colleagues and the extension agent about these changes.

There are large differences between countries in the opportunities farm families have to send their children to a vocational agricultural school. In India a small proportion of these youngsters can get a course of one week on a Farm Science Center (KVK). When walking through farmers' fields in the Philippines, I am not astonished to meet a young farm lady who after four years high school has visited a two years vocational agricultural school. Insufficient vocational agricultural education makes it difficult for Indian farmers to compete in the world market with farmers from other countries. For a trader in agro-chemicals it is easier to cheat Indian farmers than Filipino farmers. In Indian Agricultural Universities a large number of students obtain a Bachelors Degree in order to prepare them for a government job, but only for a small proportion of them such a job is available. I am convinced that if some of the budget which is now used to finance agricultural universities, would be used for vocational agricultural education, Indian farmers would be better off.

The quality of education determines the ability of farmers in different countries to compete in the market. The availability of entrepreneurs in a country is related to the educational system. On some agricultural schools and

even universities in Asia the emphasis is on memorising good solutions for present problems. In our era of rapid change this is of limited value, because the nature of the problems is changing and many new solutions become available. The rapid change in farming systems and markets makes it also for farmers necessary to continue to learn. They have to become entrepreneurs. Fortunately the interest is increasing in learning how to think in order to develop new solutions and new research methodologies.

## Changes in agricultural extension in India

When I first came to India in 1966 the production of High Yielding Varieties of wheat and rice just started. With these varieties, the right use of fertilisers, irrigation and other cultivation practices, a large increase in yield could be realised. Farmers in the irrigated areas were happy, because they realised a large increase in income. The extension agents provided clear recommendations how to grow these new varieties successfully. Also policy makers were happy, as they had been afraid that of the 500 million Indians soon many millions would die from hunger. Now there are over a billion Indians and the country produces surpluses of cereals. Some people died from hunger, but not because no food was available, but because they did not have the money to buy enough food. Farmers in the rainfed areas were less happy, because the prices of the grains decreased and they were not in the position to grow the High Yielding Varieties.

In 2004 I was shown a very different successful extension programme in a rainfed area in Karnataka in India. Farmers there used to grow mainly millets and sorghum. But to cope with decreased cereal prices and increased income aspirations they went to the city to look for unskilled, low-paid jobs during the dry season. Extension agents from a NGO, BAIF, and the Indian Grassland and Fodder Research Institute offered them another option to increase their income: to collect rain water in pits in their fields, use this for growing fodder crops and different kinds of trees (fruits, fodder, firewood, etc.). The demand for fruits and milk was growing in a nearby city. Extension did not give recommendations to farmers what to grow, but discussed with them which consequences they could expect from the different options. Each farmer selected the option which suited his family best, e.g. one

farmer was proud that he had well producing dairy cows, whereas his neighbour bought cheap cows, which were in a poor condition, fed them well and sold them at a much higher price. Farmers were quite happy with this extension programme, because it enabled them to earn on their own farm more than they could earn in the city. They preferred this way of life. It is a good example on how to integrate the knowledge from researchers and extension agents, e.g. on fodder crops which the farmers didn't know, with the knowledge of these farmers about their local situation and their goals. Also for the development of a successful marketing system the knowledge from outsiders and insiders had to be combined.

Next day I had a discussion with the very capable regional supervisor of this NGO and I said: «I was happy to see the successful extension programme you are conducting in 10 villages. Suppose that you would extent this programme to all 10 000 villages for which your NGO has a responsibility, could it also be successful?» He was convinced that this would result in a major drop in the product prices and the new farming system would no longer be profitable for most farmers. A next point of discussion was that many farmers in this area migrate to cities or educate their children to look for an urban job. These decisions are very important for the welfare of the farm family, much more than decisions on production technologies. So I asked the NGO supervisor from whom farmers get help in decisions concerning migration, but he didn't know. I agree with Hoffmann and Thomas (2003) that an extension organisation should concentrate its limited resources on supporting those decisions, which are most important for the welfare of the farm family.

This was also a problem in the Netherlands when farm management decisions became more important for farmers, because wages were raising. Extension agents continued to give recommendations as they did in the past when they advised farmers in use of fertilisers, pest control, etc. Many Dutch farmers did not following these recommendations. In this situation it would have been better to increase the capability of farmers to make management decisions through counselling and group discussion methods. Extension specialists and social psychologists started to teach extension agents these methods (van den Ban and Hawkins, 1996).

## Alleviating poverty among farm families

The World Bank (2000/2001) estimates that 1.2 billion persons have to survive of less than one dollar a day and 900 million of them live in families of small farmers and farm labourers. A major goal of rural development policies of most governments and donors is to decrease poverty among these families. This goal can be realised through:

1. Increasing the yield of crops and/or yields animals. This works well if yields increase in one village, but if many farmers increase their yields the price of the farm products may decrease. Candler and Kumar (1998) report that between 1975 and 1993 milk production in India increased about 150%, but the real milk price for the producer decreased by 32%. Increasing yields helps to reduce poverty only if poor farmers increase their yields more than rich farmers. In India milk yields have increased by crossbreeding the local low producing cows. Realising this potential requires good management, e.g. better nutrition. On small farms this management is usually the responsibility of the farmers' wife, on large farms of labourers. Therefore poor farmers are often more successful in increasing yields through crossbreeding than rich farmers. It is important to study with which new technologies and farming systems small farmers can be successful.
2. Changing the farming system by switching from cereals and other bulk products to horticultural or animal products with a higher value. This is possible if the demand for high value products increases as a result of economic growth in the country or in export markets. It is not unusual that small farmers make better use of these opportunities than large. The production of these high value products often requires more labour than the production of bulk products and many small farmers have a surplus of labour. It can also be related to social status of different farming systems; initially these labour intensive products often give a low social status. For the production of bulk products the farmers' role may be to supervise the labourers, who do the work. But the production of these high value products can only be successful if there is a well organised marketing system.

**Table 1**  
**Agriculture value added per worker in 1999- 2001 and change**  
**in this value between 1979- 82 and 1999- 2001**

	Value	Change
Bangladesh	311 \$	43 %
China	334 \$	107 %
India	402 \$	49 %
Indonesia	744 \$	23 %
South Korea	13'782 \$	266 %
Pakistan	712 \$	71 %
Philippines	1'482 \$	3 %
Thailand	904 \$	44 %
Kenya	216 \$	-18%
Germany	32'814 \$	262 %
France	58'177 \$	201 %
Netherlands	58'280 \$	139 %
Japan	30'828 \$	77 %
USA	50'777 \$	146 %

Source: *World Development Indicators 2003, Table 3.3, World Bank.*

3. Increasing labour productivity. Table 1 shows that there are very large differences between countries in added value per worker in agriculture as well as in the rate of change in this value. That means that there is a large potential to increase labour productivity. The World Bank estimates that nearly half of the world population lives in countries where the added value per worker in agriculture is less than 1% of what it is in the countries with the highest labour productivity. A higher added value per worker can be realised by increasing the value of agricultural production, but also by decreasing the number of workers. The demand for food and other agricultural products limits the possibility to increase the value of agricultural production. Much of the increase in labour productivity will therefore have to be realised by decreasing the number of people working in agriculture. This can be realised if farm families combine agricultural and non-agricultural sources of income. This is relatively easy in a country as South Korea with a high rate of growth in industries and in all kinds of services, but this is rather difficult in all other Asian. A conclusion of an ODI study on the role of extension in reducing rural poverty is: «It is

important to look beyond agricultural extension to a more inclusive livelihoods extension» (Farrington et al., 2002).

4. Increasing the price of agricultural products by improved marketing or by a change in price policies. A change in price policies requires an increase in the political power of farmers and a decrease in the power of urban consumers.

Most agricultural extension services concentrate on transfer of technologies which can increase yields, but pay little attention to the options 2 and 3, whereas these options have more potential for poverty alleviation. One reason is that the agricultural extension staff is well trained in the technologies which are needed to realise option one, but do not have the knowledge of markets and marketing which is crucial for option 2, nor of employment opportunities outside agriculture and of the social consequences of migration to the cities which are important for option 3. A few years ago, I visited a NGO South of Chennai (=Madras) in India, an area with a rapid growth of industries. Many small farmers worked in the factories and left their wife and children behind in the village to take care for their small farm. Through their wages these workers earned more cash than they ever got in the village from selling a part of their products. They felt lonely in the city, but when the wages were paid some women were available to help them to overcome this loneliness at a party. As a result they could send very little money back to their family. The NGO helped them to find ways to overcome these social problems. I got the impression that the NGO staff did much more useful work for the welfare of these poor families than agricultural extension agents, who saw it as their main task to transfer modern production technologies.

One often thinks that capital investments are needed to alleviate poverty. Wolfensohn, the President of the World Bank, does not agree with this point of view. He said: «We used to think of capital as the scarce factor in production and of transfer of capital as the key instrument of growth. Knowledge is now as, if not more, important a factor in development. In the next century, knowledge accumulation and application will drive development processes and will create unprecedented opportunities for growth and poverty reduction. But there are significant risks of increasing inequality between and within nations».

## Support for decision making that farmers need

It is indeed important that farmers are well informed about new production technologies, which may be profitable in their situation. These technologies are not only developed in government research institutions, but increasingly also in commercial companies selling inputs to farmers or marketing their products and by innovative farmers. The development of useful new production technologies requires partnerships between research institutes, companies selling inputs or marketing products and farmers (Hall, et al. 2004, Leeuwis with van den Ban, 2004). Unfortunately in many developing countries these partnerships do not exist or are weak. In a few Indian districts these partnerships are promoted in a World Bank project by the Agricultural Technology Management Agency. This Agency brings its Board representatives together with the different actors involved in the agricultural development of the district (MANAGE, 1999). In some districts this works well.

In the past a major management task for farmers was how to sell what he had produced, but in the present era it is more important to learn how to produce the kind and quality of products for which there is a demand in the market. The rapid development of information and communication technologies (ICTs) offers new opportunities to provide farmers and extension agents with the information they need to make good decisions. This requires that they can find the relevant information in the overload of information on the Internet, can evaluate which information is reliable and can integrate this information from different sources in their own experience and the experience of other farmers. These ICTs do not replace the extension methods used in the past, but supplements them. Hoffmann and Thomas (2003) have shown clearly that although information can play an important role in problem solving, more is needed to develop good solutions. One reason is that the situation which causes problems, changes continuously. It looks like a rather simple problem to select a new variety with support from a data base. However, the variety which gave the highest yield last year, may not be very resistant to drought and hence risky. Selecting the best variety requires balancing two goals: high average yield and low

risk. A role of extension is to increase this problem solving ability. This can be done in a discussion group, but not only through ICT.

Often farmers are more in need of market information than in information about production technology. Market information is very important for farmers who specialise in high value products. They have to decide which product to choose, when and where to market it, and where to obtain the necessary inputs. A lot of valuable information can be found on the Internet. This can also be used to establish new contacts with buyers and suppliers. However, most farmers do not have access to the Internet, because they do not have a computer and a telephone connection. This problem can be reduced through an Internet booth in their village or a nearby town, where somebody who is specialised in the use of computers and in agriculture helps them to find the information they need. In India thousands of young agricultural graduates are trained for this job. They can get subsidy from the government for the necessary investments in ICT and make a living from selling information for which farmers feel a need. In China often government offices provide this service, but it can also be done by farmers associations or companies selling inputs or marketing products.

Agricultural Development does not only depend on decisions of individual farmers, but also on collective decisions regarding natural resource management, watershed development, soil erosion control, Integrated Pest Management, input supply and marketing. In collective decision making farmer's organisations can play an important role. These organisations can also help to increase the power of farmers in the society, e.g. to ensure that the government takes decisions which are in the interest of most farmers. In several European countries, e.g. Denmark and the Netherlands, these organisations have played a crucial role in agricultural development (Van den Ban, 1997). Therefore it is important that farmers learn how to establish successful farmers organisations. NGO staff members are usually more competent to teach this than government officers (Farrington, 1997).

## Extension on environmental problems and sustainability

The present farming systems cause serious environmental problems. In India e.g. so much irrigation water is used that the ground water table is decreasing rapidly in many parts of the country and there are serious problems with soil salinity. In other areas soil mining is a serious problem; crops take there more minerals off the land than are replenished by fertilisers. In many countries, soil erosion and chemical pollution endanger the future of agriculture. Pollution of agricultural products limits the marketability of these products. These problems can only be tackled by collective decision making by farmers and other stakeholders. Most governments develop rules on environmental issues, but it is not always easy to enforce these rules. In short run, these rules may reduce farm income and may not allow farmers to intensify the use of their land. Hence, it is difficult to convince people that these rules are important for the country and in long run also for their family. In recent years extension scientists have given much attention to the role agricultural extension can and should play in reducing these environmental problems and in solving conflicts of interests regarding land use.

## Realising changes in extension

In Asia, societal changes require new agricultural extension approaches. Agricultural extension organisations can not make the necessary contributions to agricultural development by only transferring improved technologies from government research institutes to farmers. With regard to production technologies much attention has to be given to technologies for high value crops and animals. Teaching farmers to grow these crops and animals on specialised farms requires new knowledge for most extension agents, and may require specialisation in a few crops or animals, e.g. in the production of shrimps or of roses. This specialisation can better be realised in companies selling inputs or marketing products than in government extension services.

It is also important that the farmers get support on the management decisions they have to make on:

- investments,
- increasing labour productivity,
- choice of the most profitable farming system and
- marketing, that implies,
- producing the kind and quality of products for which there is a good demand in the market,
- finding or developing efficient marketing channels,
- increasing their power versus (multinational) commercial companies.

These decisions can be interrelated. To support their farmers with these management and marketing decisions the extension agents should be well trained in and have access to up-to-date knowledge on farm management and marketing. They also need training in extension methods which help to enhance the managerial and entrepreneurial abilities, such as counselling, group discussions, role playing and management games. This requires a change in teaching and research programmes at agricultural universities. In some countries university staff members do not have enough contacts with field reality to teach these courses well. Therefore a change in the reward system for university staff members may be needed. In European universities nowadays, the amount of money a staff member earns from research projects, training courses or consultancies financed by private enterprise is an important criterion for promotion. Staff members, who are able to earn money for their university in this way, can also teach courses which prepare students for successful field work.

These changes in extension strategies require also a change in the management style in extension organisations. Transfer of technology approaches asked for a top-down style of leadership, e.g. in the T&V system. Developing extension strategies which are adjusted to the needs of a changing society and enhance the entrepreneurial and managerial abilities of farmers require a participatory style of leadership in the extension organisation. However, this change in management style has not yet been realised everywhere in Asia.

## Conclusions

Agricultural extension has to change, because:

1. There is an increase in the demand for agricultural products with a high value and in access to world markets,
2. Knowledge about production technologies for these products and about markets becomes crucial for the ability of farmers to compete,
3. This results in an increased productivity in agriculture and in many countries in a decrease in the prices of farm products. Farmers who increase their productivity less than their competitors will have to find a non-farm source of income,
4. Productivity in agriculture does not only depend on the decisions of individual farmers, but also on the support they get of input supply, marketing and credit companies and cooperatives,
5. Farm income does also depend on government policies and hence on the power of farmers' organisations to influence these policies.
6. The role of agricultural extension is not only to transfer technologies developed at research institutes, but also
  - technologies developed by commercial companies,
  - technologies and farming systems developed through experimentation by farmers,
  - finding non-farm sources of income,
  - increasing the managerial abilities of farmers.
7. Only experience can teach us which extension approach and system will be most successful in a given situation.

## References

FAO (2002) *World agriculture: towards 2015/2030*. Rome.  
 FAO and World Bank (2000) *Agricultural Knowledge and Information Systems for rural development (AKIS/RD) Strategic vision and guiding principles*. Rome and Washington, D.C.  
 Farrington, J. (1997) *The role of Non-Governmental Organisations in extension*, in: B.E. Swanson et al., eds. *Improving agricultural extension: A reference manual*. Rome, FAO.

Farrington, J., et al. (2002) *Can extension contribute to rural poverty reduction? Synthesis of a six-country study*, AgREN Network Paper No. 123. London, ODI.

Faure, G., and P. Kleene (2004) *Lessons from new experiences in extension in West Africa; Management advice for family farms and farmers' governance*. *Journal of Agricultural Education and Extension*, 10: 37-49.

Hall, A.J., et al., eds. (2004) *Innovations in innovation: reflections on partnership, institutions and learning*. Patancheru, ICRISAT.

Hoffmann, V., A. Thomas (2003) *Advisory work as assistance in problem-solving: Problem solving models as basic concepts for advisory work*. *The Journal of Agricultural Education and Extension*, 9: 61-73.

Koopmans, R. (2004) *Farmer-controlled economic initiatives: Starting a cooperative*, Agrodok No. 38. Wageningen, Agromisa.

Lans, T. et al. (2004) *Work-related lifelong learning for entrepreneurs in the agri-food sector*. *International Journal of Training and Development*, 8: 72-88.

Leeuwis, C., with A.W. van den Ban (2004) *Communication for rural innovation: Rethinking agricultural extension*. Oxford, Blackwell Science.

Meera, S.N., A. Jhamtani and D.U.M. Rao (2004) *Information and Communication Technology in rural development: A comparative analysis of three projects from India*. AgREN Network Paper No. 135, London, ODI.

Samanta, R.K., ed. (2005) *Empowering women*. New Delhi, The Women Press. Stessens, J., and C. Gouet (2004) *Efficient contract farming through strong farmers' organisations in partnership with agri-business*. Leuven, Catholic University and Hoger Instituut voor de Arbeid.

Sulaiman V. R., and A. Hall (2004) *Towards extension-plus: Opportunities and Research*, Policy Brief 17. New Delhi, National Centre for Agricultural Economics and Policy research.

Van den Ban, A.W., R.K. Samanta, M.J. Chandre Gowda (2002) *Strengthening agricultural extension through Krishi Vigyan Kendra*, in: R.K. Samanta and M.J. Chandre Gowda, eds., *Krishi Vigyan Kendra (KVK) - The capacity builder of farmers*. Delhi, B.R. Publishing.

Van de Fliert, E., R. Dilts, J. Pontius (2002) *Farmer researcher team, farmer field schools and community IPM*, in: C. Leeuwis and R. Pyburn, eds., *Wheelbarrows full of frogs: Social learning in rural resource management*.

World Bank, *World Development Report 2000/2001: Attacking poverty*. Washington, D.C.

Zhong Yongling (2004) *Information services in rural China: Field surveys and findings*. Bangkok, FAO Regional Office for Asia and the Pacific.