Plant clinics act to bolster extension delivery in smallholder farming in China

Gu Rui and Rob Reeder

Summary

The Chinese government has increasingly opened up its agricultural extension sector over the last three decades in response to growing service demand, bringing many actors into the scene. One outcome has been the diversification of information sources for farmers, which now include agricultural input suppliers, farmers' associations, the mass media, nongovernmental organisations etc. Information is an essential input in farming decision-making and the lack of it, the wrongful use of it or the use of an inaccurate form of it could produce catastrophic consequences for farmers. For information to generate the greatest benefit for farmers it must be credible, timely, specific to farmers' concerns, packaged based on their circumstances and delivered by an authority they regard as credible. In a pluralistic extension delivery system farmers face the difficulty of determining which source of information is dependable. And since farmers' information-seeking behaviour is dependent on their intrinsic and socioeconomic qualities, ensuring access by all farmers to reliable information is difficult to guarantee. The Chinese Academy of Agricultural Sciences and Plantwise undertook a study October 2013 to April 2014 in Peng Shan county, Si Chuan province of China among 144 households to learn about how farmers interacted with the providers of agricultural advice, including the newly introduced plant clinics, and if lessons existed that could help in refining and enhancing the extension services.

Key highlights

- Farmers use a blend of information providers, but the government's agricultural extension is the most trusted and only about 4% of its information is not adopted compared with 20% for information from other farmers.
- The government extension system does not extend to the village level or have enough workers to reach all farmers when they need services. Private sector players are filling this gap as well as providing more diversified services.
- Plant clinics are run by or in collaboration with government extension staff, benefiting from the trust that government services have and bringing in their own unique qualities.
- Plant clinics are expected to help deal with the overuse of agrochemicals through training plant doctors to recommend cultural practices as the preferred solutions to crop problems.
- The government has been testing mobile technology to deliver agricultural information to farmers. In future plant clinics can use that technology to provide individualised extension services at a wide scale and low cost, while at the same time making the best use of the limited extension resources.

Proliferation of extension providers

Even with its large agricultural extension force estimated at 912,900 in 2007, it is difficult for the Chinese government to meet farmers' demand for extension services. Consequently, the last three decades have witnessed progressive liberalisation of the sector. The government still has a strong presence in the sector but private actors such as agricultural input suppliers, nongovernmental organisations, research institutions and the mass media have assumed important roles. The proliferation of extension providers means that the variety of the advice for farmers also has widened it terms of its content, currency, depth, packaging, etc., bringing with it credibility concerns and the challenge for farmers in choosing the information to trust.

Farmers in Peng Shan county of Si Chuan province in China, like farmers elsewhere, understand that relevant, reliable and practical information is essential for intelligent decision-making on agricultural activities, and that poor information could have disastrous consequences. To obtain what they believe to be a satisfactory answer to their crop problem, they interrogate several information sources beginning with other farmers, followed by village elders and then input suppliers or extension workers. Although farmers use a blend of advice sources, the study found the top three to be input suppliers, used by 54.8% of the farmers; the government extension system, preferred by 37.8% of the farmers; and other farmers, used by 29.6% of the farmers (Table 1).

The popularity of input suppliers is associated with their long establishment in the communities and their ease of access. The fact that they act as a one-stop shop for advice and remedies for crop problems makes them a convenient location for farmers. Some input suppliers are introducing innovative services to retain customers, such as crop hospitals. Input suppliers are businesses, though, driven by the profit motive, and most likely will recommend to farmers the products they sell. This brings into question the credibility of their advice. Input suppliers also prefer agrochemicals as solutions to crop problems, which could contribute to agrochemical misuse particularly of pesticides, an issue that China is grappling with.

Government extension services come second as the choice for crop health advice but they are considered as the most reliable (Table 1) and only about 4% of their advice is not adopted. But the government extension system does not have adequate resources to reach all farmers and often is not accessible to farmers when they need it.

Nearly 30% of the farmers use other farmers, who mostly are relatives, neighbours and elderly farmers, as an important source of advice, particularly for questions on the most common crop problems. But this is the least trusted of the top three advice sources and about 20% of the advice is not adopted. Since these farmers used as a resource rely on their own knowledge, it is likely that their advice is outdated.

Table 1: Credibility and decision-making role of the top three agricultural information sources

Source (% farmers using source)	Credibility		Role	
	Attribute	%	Attribute	%
Input suppliers (54.8%)	Reliable	31.1	Decisive	50.0
	Fairly reliable	51.4	Leading	29.7
	Sometimes reliable	16.2	Supporting	16.2
	Unreliable	1.3	Reference	4.1
Government (37.8%)	Reliable	60.8	Decisive	43.2
	Fairly reliable	35.3	Leading	33.3
	Sometimes reliable	3.9	Supporting	13.7
	Unreliable	0	Reference	9.8
Other farmers (29.6%)	Reliable	47.5	Decisive	22.5
	Fairly reliable	30.0	Leading	15.0
	Sometimes reliable	22.5	Supporting	37.5
	Unreliable	0	Reference	25.0

Source: Adapted from Rui (2014).

The farmers have at their disposal other sources of advice such as the mass media and online resources but these offer information that is of a more general nature rather than the targeted advice that the farmers need. The Chinese Ministry of Agriculture and Plantwise are working to introduce plant health clinics in Peng Shan county as a mechanism to address the gaps in the extension system.

Plant health clinics as an added value to extension

Plant health clinics were launched in China in 2012 when nine were opened in Beijing and South China's Guangxi Zhuang autonomous region. By the time of the study only one had been established in Peng Shan. The clinics are intended to supplement government extension efforts by offering farmers a community-based resource that they can turn to for credible, current and individualised information. Plant clinics are run by or in collaboration with government extension staff, benefiting from the trust that government services have and bringing in their own unique qualities.

Plant clinics operate like human clinics except that the doctors deal with samples from diseased plants. This means that they could help to address the shortage of agricultural extension staff because plant doctors can attend to many more farmers at the clinic than they could if they visited them in their fields. Data on farmers' visits to a clinic are entered into an electronic database that is shared with the other plant clinics countrywide, allowing the tracking of disease and pest trends and facilitating early warning on and response to major crop threats and disease or pest outbreaks.

The information that plant doctors rely on is updated consistently and is based on science and best practices. This means that credibility issues will not arise. For farmers, using the clinics will save time when they realise that they will not need to interrogate more than one source to get satisfactory advice for their crop problem. The plant doctors' training in communication skills, the use of the farmers' language and the individualised solutions to farmers' problems will ensure that the farmers' experience at the plant clinic will be pleasant. This is particularly important to attract and retain poor or poorly educated farmers, who tend to prefer to rely on self-knowledge than outside information sources.

The clinics are expected to help deal with the excessive use of agrochemicals, since plant doctors are trained to make recommendations that are environmentally friendly such as the use of cultural practices as the preferred interventions for crop problems.

Way forward

Plant clinics have made a successful entry into the Chinese agricultural sector and are already benefiting farmers in areas where they were introduced earlier. Besides expanding their coverage in Peng Shan, innovative actions are needed to strengthen their role in bolstering extension services.

> *"Unlike agrochemical sellers, who simply recommended four or five varieties of pesticides to curb one type of crop disease, the plant doctor lets me know what happened to my crops and how to prevent such problems."*
>
> (Zhang Fengquan, from Beijing's Shunyi district, for whom the plant clinic is the first choice for crop health advice. http://usa.chinadaily.com.cn/china/2012-12/29/content_16066841.htm)

Plant clinics will need to learn from the extension providers that are already using digital technologies to deliver information to farmers. Since almost all the households in the study area have mobile phones there is potential for the plant clinics to exploit the technology for farmers' benefit. Farmers could take pictures of their diseased plants and submit them electronically to the plant clinics for diagnosis and advice. This will scale up extension services while at the same time lowering costs, providing individualised services on demand and making the best use of the limited extension resources. The fact the government has been testing mobile technology to deliver agricultural information to farmers means that the groundwork has already be laid.

The government extension service, together with plant clinics, will need to find ways to work with other actors in the sector and especially agrochemical dealers, particularly because of their importance as a source of advice for farmers and because of the necessity of addressing the problem of agrochemical overuse.

Farmers and plant doctors discuss crop problems at a plant clinic in Si Chuan province.

Additional information and resources

Rui, G. (2014) Factors influencing the choice of agricultural information providers and the adoption of advice: a case study in China. Plantwise.

Rui, G., Nie and Reeder, R. (2014) Extension in China: where do farmers get their information? Poster. Plantwise.

Acknowledgements

CABI is an international intergovernmental organisation, and we gratefully acknowledge the core financial support from our member countries (and lead agencies) including the United Kingdom (Department for International Development), China (Chinese Ministry of Agriculture), Australia (Australian Centre for International Agricultural Research), Canada (Agriculture and Agri-Food Canada), Netherlands (Directorate-General for International Cooperation), and Switzerland (Swiss Agency for Development and Cooperation).

Project donors

Plantwise is supported by:

Project partners

Authors

Gu Rui and Rob Reeder

Plantwise Coordinator in China: Wan Min

Technical Writer: Kellen Kebaara

Editorial Coordinator: Solveig Danielsen

How to cite this paper

Rui, G., Reeder, R. 2016. Plant clinics act to bolster extension delivery in smallholder farming in China. CABI Study Brief 13. DOI: https://dx.doi.org/10.1079/CABICOMM-62-8110