
Spatial distribution of roadside stalls selling agricultural products in northeast Thailand

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Abstract In the northeast Thailand, the number of roadside stalls carrying mainly agricultural products has been increasing. The stall sellers are rice-based farmers. However, only a limited number of studies have been carried out to cover stall distribution and its implications on the local agricultural product market. The research finding presented the spatial distribution of roadside stalls and identifies the types of products being sold in different parts of northeast Thailand. It is expected that stall distribution may be related to more or less direct marketing of local agricultural products. There were 47 clusters with a total of approximately 1,100 stalls along the surveyed routes. The density of the roadside stalls was highest on roads in the mountainous zones, which lead to popular tourist attraction sites, and on heavily traveled roads that connected to most of the provinces. Almost all of the products sold in each roadside stall cluster are locally produced. Farmers in the mountainous zone have potential to produce a variety of high-value products. In the lowland zone where there were many stalls, most carried only a few primary agricultural products. However, it was found that roadside stalls had the potential to help farmers to sell their products in direct and indirect market systems. It can be served as a strategy for smallholders to gain access to agricultural direct markets.

Keywords: roadside stalls, spatial distribution, agricultural products

Introduction

Roadside stalls are found in many countries, including the United States, Kenya, Japan, Australia, and Thailand (Aldous, 1983; Cottingham *et al.*, 2000; Morgan and Alipoe, 2001; Yokata, 2004). Roadside stalls are temporary structures built by farmers to sell their products directly to consumers (Govindasamy and Nayga, 1996). These can be in different forms: portable wagons, small tables displaying produce, and stalls inside large markets that offer many agricultural goods or non-food products, live in the locality and operate only during the growing season (Cottingham *et al.*, 2000).

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In the past, farmers in northeast Thailand have depended on middlemen to market their crops as they were then unable to bargain for better prices (Falvey, 2000; Leturque and Wiggins, 2011). In recent years, however, it has been observed that the number of roadside stalls where farmers sell their produce directly to consumers has increased in many routes. The roadside stalls carry mainly agricultural products such as fresh fruits, vegetables, and food products. Most of the roadside stall sellers are rice-based farmers. This is also reported by Jintrawet (1994) and Haefele *et al.* (2005). Despite the growing number, little information is available about roadside stalls selling locally produced agricultural products in the region. Therefore, this research aimed to describe the spatial distribution of roadside stalls and identify the types of products they sell in different parts of the northeast.

Materials and Methods

For purposes of this survey, roadside stalls were defined as small temporary or semi-temporary structures that sell produce or products from agriculture that are located along the roadside (not including stalls that function as restaurants). Most such stalls are grouped into clusters of several stalls and only stalls making up clusters consisting of at least four roadside stalls were included in this study.

The survey was conducted along almost all of the main roads within the region. These included three types of roads classified by the Department of Highways as national highways, provincial roads, and secondary roads. All of the national highways and the provincial roads in the northeast were surveyed along with those frequently travelled secondary roads connecting provincial cities to each other.

The field survey was carried out between November 2014 and January 2015. The first author drove along each selected route in a private vehicle and stopped at every cluster of stalls encountered along the way. The location of each cluster was determined using a handheld global positioning system (GPS) device and photographs of the stalls were taken. At each cluster of stalls, several stall operators were taken in as key informants (KIs). The selection of KIs was based on these criteria: that they had been among the first persons to establish stalls in their clusters, they lived in the neighboring communities, they had good knowledge about stalls and cluster development and knew about all the other cluster members. Three to five KIs from each cluster were selected for the semi-structured interviews. Subtopics for these interviews were developed and adjusted to fit each specific cluster. A total of 148 KIs were interviewed from 47 clusters on five routes.

Results

Locations of clusters of roadside stalls and types of products sold in different clusters

There were 47 clusters with a total of approximately 1,100 stalls along the surveyed routes (Fig. 1). The number of stalls fluctuates from day to day and from season to season. It was the highest on national holidays, followed by weekend days (Friday-Sunday). Meanwhile, work days (Monday-Thursday) had the lowest number of operating stalls. Variation in the number of operating stalls reflected the market demand as a result of the volume of travelling customers. There were regular sellers and non-regular sellers operating the stalls. Most of the products sold were fresh agricultural products, including jujubes, pineapples, yam beans, coconuts, oranges, bananas, watermelons, and cantaloupes. Processed agricultural products, including boiled sticky corn, sticky rice roasted in bamboo sections, Isaan sausage, boiled sweet potatoes, and pineapple jam were found. Almost all of the products sold in each roadside stall cluster were locally produced. Stalls can be divided into two different geographical zones: the mountainous zone (altitude > 300 m) and the lowland zone (Fig.1). The stalls in these zones sell different kinds of agricultural products.

The stalls in the mountainous zone carried a greater variety of products than those in the lowland zone (Table 1). Bananas, bamboo shoots, mushrooms, torch, pumpkins, local and temperate fruits and vegetables, and non-timber forest products were found in the mountainous zone, an area with climatic and ecological advantages. Jujubes, tamarinds, a variety of melons, sticky corn, and jicama were sold in lowland stalls. Agricultural products in the lowland zone a wee distributed in a wider area than those in the mountainous zone.

Time of establishment of clusters of stalls

The roadside stalls were first established by a few pioneer farmers who sold their non-timber forest products (NTFP) or products from their own farms without support from local or national government organizations. The times of the different clusters of stalls were established (Figure 2). It was established 17.23 years ago (S.D. = 10.30). Stalls on national highways existed for the longest time, with a mean age of 27.50 years (S.D. = 5.00). Stalls on provincial and secondary roads were the ages of 15.95 (S.D. = 9.88) and 16.61 (S.D. = 10.69) years, respectively. The time of stall establishment related to the period of road building. Most of the stall clusters that were established more than 25 years ago which located in the old roads that people have used to travel to many

provinces in the northeast. These roads were built more than 60 years ago and carried the heavier traffic than the other roads (DOH, 2009).

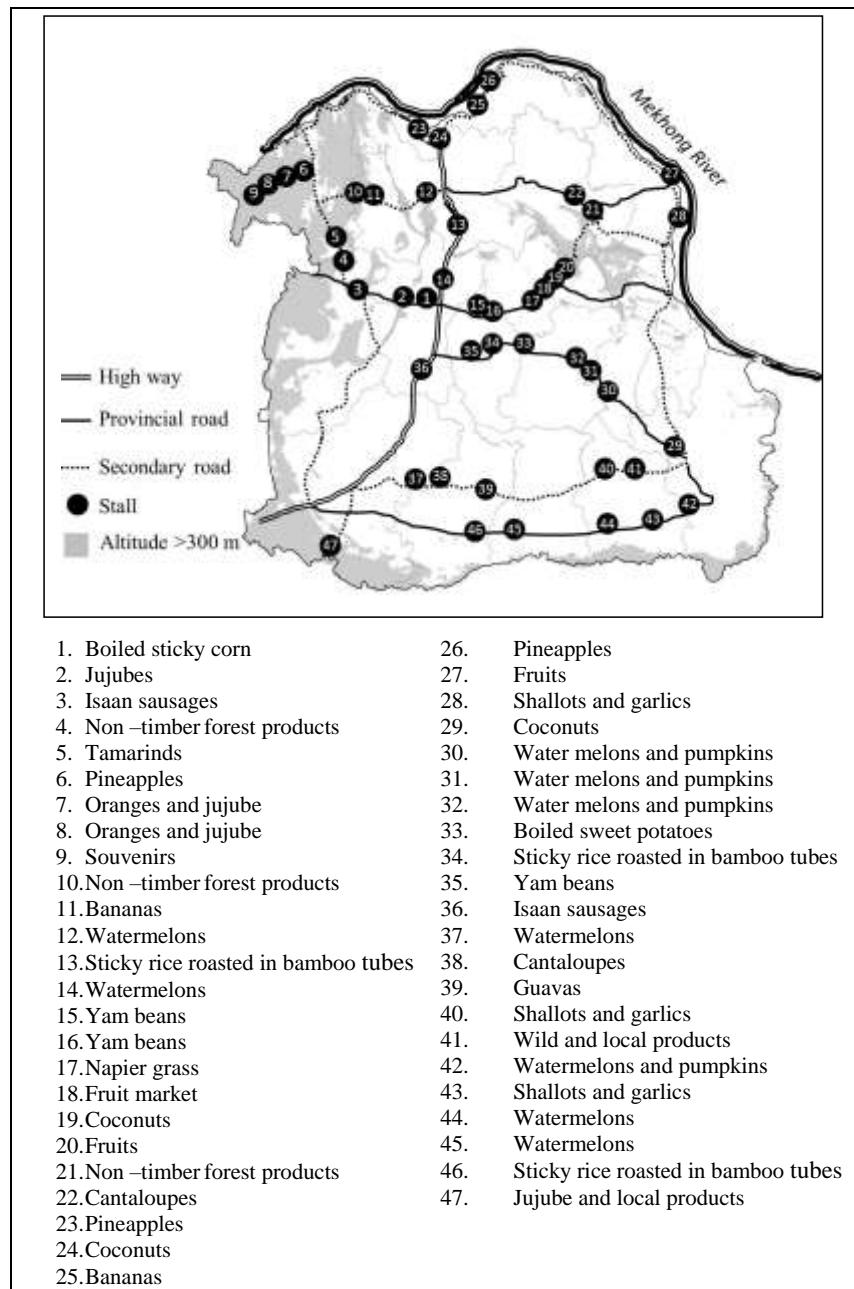
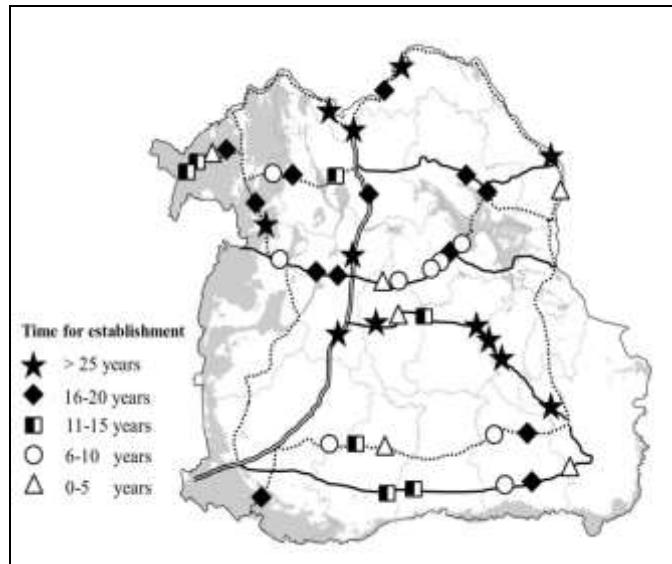


Figure 1. Location of roadside stall clusters and list of main products sold in northeast Thailand

Table 1. Variety of products, by by zone

Type of zone	n	Mean	S.D.	t-value	Sig
Mountainous	10	7.80	5.94		
Lowland	37	2.57	2.82	2.70*	0.02

*Significant value $p \leq 0.05$.

**Figure 2.** Time of establishment of roadside stall clusters

Distribution of roadside stall clusters in the northeast

The density of roadside stalls per kilometer of roadway varied in the different zones and depended on traffic volume carried by different roads. In the mountainous zone, the surveyed roads were secondary roads with a total length of 200 km. Ten clusters with 223 stalls (cluster numbers 4, 5, 6, 7, 8, 9, 10, 11, 21, and 47) are located in this zone. In the lowland zone, the roads cover a distance of 2,808 km with 37 clusters and 838 stalls. The number of stalls per kilometer of the surveyed roads in the mountainous zone was much higher than that in the lowland zone (1.11 vs 0.29 stalls/km) (Table 2). This may be due to the roads in the mountains are traveled by many tourists who often buy local products for their families and friends back home. The density of stalls was lowest on secondary roads such as the road that extends along the Mekong River from Loei Province down to Ubon Ratchathani Province and the lower part of the secondary roads that parallel to the Mittraphap national highway from Khon Kaen Province to Nakhon Ratchasima Province.

Table 2. Number of stalls in each zone

Type of zone	Total distance (km)	Clusters (no.)	Stalls (no.)	Mean
Mountainous	200	10	223	1.11
Lowland	2808	37	838	0.29

Presence of roadside stalls on different types of road

On the national highway, there were only four roadside stall clusters, but it averaged the number of stalls per cluster that was the highest (66.25 stalls per cluster) as the number of stalls per kilometer (0.73 stalls/kilometer) of any type of road. On provincial roads, there were 22 roadside stall clusters with a total of 393 stalls, averaging 17.86 stalls per cluster and 0.43 stalls per kilometer of road. On secondary roads, there were 21 roadside stall clusters with a total of 403 stalls, averaging 19.19 stall per cluster and only 0.24 stalls per kilometer of road (Table 3). The distribution of roadside stall clusters was not clearly related to the number of traffic lanes (Table 4), although the two- and four-traffic lane roads have more stalls than six-traffic lane roads. This may reflect better law enforcement on major roads in terms of setting up roadside stalls.

Table 3. Distribution of roadside stall clusters, by type of road

Type of road	Total length of roads (km)	Stalls/km (mean no.)	Clusters (no.)	Stalls (no.)	Stalls (%)	Stalls/cluster (mean no.)
National	363	0.73	4	265	25	66.25
Provincial	974	0.43	22	393	37	17.86
Secondary	1,671	0.24	21	403	38	19.19
Total	3,008	0.35	47	1,061	100	22.57

Table 4. Number of traffic lanes and concentration of roadside stalls

Traffic lanes (no.)	Roadside stall clusters (no.)	Clusters (%)	Stalls (no.)	Stalls (%)
2	19	40.42	265	24.97
4	23	48.93	711	67.01
6	5	10.63	85	8.01
Total	47	100.00	1061	100.00

Discussion

The roadside stalls were initially established without support from local or national government organizations, there are no fixed rules regulating stall position, size, location, and distance between stalls on road shoulders. The

density of the roadside stall is highest on roads in mountainous zones that lead to more popular tourist attraction sites and on heavily travelled roads that connect to most of the provinces. In the mountainous zone, where there is favorable weather, good environmental conditions, and many tourist attractions, there is more potential for farmers to produce a variety of high-value products (Choenkwan *et al.*, 2014). These can be sold directly to consumers and to tourists. The lowlands have large numbers of stalls, most of them carrying only a few primary agricultural products, but they are accessible to a much larger number of consumers in the northeast and beyond.

Roadside stalls are a direct marketing channel, along with pick-your-own farmers' markets, subscription farming, and home delivery (Cottingham *et al.*, 2000). Farmers' direct marketing is a way by which farmers can sell their products directly to consumers (Henderson and Linstrom, 1982). By eliminating middlemen through selling directly to consumers, farmers are able to get better prices (Cottingham *et al.*, 2000). The expansion of agricultural roadside stalls in the northeast during the past 20 years has helped farmers sell their products in the more direct market system. Overall, it helps shorten the flow of fresh agricultural products to consumers. Concurrently, small farmers have changed from subsistence to semi-commercial farmers and roadside stalls can be a good income-generating strategy for smallholders. But more information is needed to justify the strategy.

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