

Development of Thai Native Chicken (Pradu-Hangdum Chiangmai): From the Community to the Hi-end Market

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1. The problem

A major cause of poverty in the agricultural sector of Thailand was that many farmers had no secondary professions or career options in the community. The livestock, especially Thai native chickens was one option that would be a way to build a career in agricultural communities. Because it could be raised by using less land and no problem with drought, and could use women and the elderly in the family.

Chiangmai Livestock Breeding and Research Center (C-LBRC) is a government agency dependent on Department of Livestock Development (DLD), responsible for livestock in upper northern region of Thailand. Farming of native chickens of C-LBRC had been operating for over 30 years. Production of purebred and crossbred native chickens were 40,000 and 120,000 birds/year, respectively. This service was operational by goals and budgets, that were limited each year. The service to the public, including chicken production was not enough to meet demand (only 10% of demand) and low potential production chicken (≤ 4 times of broiler growth). Making use of land and house for poultry farming was not worth it, and could not be a good career. Both native chickens were good in terms of sustainability and self without bringing in breeds from overseas, and meat was also of a higher quality than broiler chickens. Thai people preferred in odor, favor and firmness of native chicken meat.

DLD research data found that the income of farmers in villages that raised native chickens was 30-40 dollars/dam/year. If there was an improvement in the native chicken to purebred and high performance, together with increased number of production, there could be an increase in the income of farmers, opportunities and career choices for communities to be self-sustaining. Another priority was to create food security for Thailand and strengthen the community in the future.

2. The solution

The main aim of the initiative is to change native chicken production and improve the chances of community careers by creating innovation in the Thai native chicken industry and implementing innovative solutions to users, such as increased performance of chicken to solve low potential and expansion of native chickens from only in backyard farms to build up to use in commercial farms for increased chicken production. This new method could be viewed as an alternative to solving problems in agriculture and the helping alleviate the country's poverty.

There are 12-16 breeds/varieties of Thai native chickens. In the past, native chickens had many limitations to the development as a career of agriculture. Problems started from non-purebred chickens, in which mating systems in villages did not separate breeds which produced non-true bred chickens (genetic

contamination with many breeds). Therefore, changes needed to be done to complete the production chain. From the development of purebred chickens that had commercial potential, but still survived in the village. The initiative planned to increase the production of native chickens by building up an integrated production system, generate more knowledge about native chickens and provide a better understanding of modern agriculture farming, and improve perception among the people and consumers to create market opportunities.

In 2007, DLD and Thailand Research Fund (TRF) had developed four breeds of native chickens. Pradu-Hangdum Chiangmai chicken (PDCM) was one breed that has been developed at C-LBRC for purebred chicken that had productive performance about 30% higher than the general native chickens. Its meat had good firmness, low fat and cholesterol lower than the broiler chicken (75 and 60 %, respectively).

After the development of high performance purebred chicken, there followed the implementation process and development of PDCM genetic, creative knowledge, perception PDCM breed, establishing farmers / farms network include chicken production feedlots, slaughterhouses, retail stores, restaurants, chicken identity creation, useful evaluation of PDCM, production system development of PDCM to food safety (GAP) for consumers, production of fresh chicken and canned chicken in supermarket.

All stakeholders made the opportunities to develop the native chicken, farmers and business sector to change the Thai native chicken system.

Farmers and farms network could solve the amount of chicken production. In the past, C-LBRC was the only government agency in upper north of Thailand to produce purebred native chickens. The operation was provided by the service-oriented goals and budget that are limited each year. The PDCM farmer network, raised less than 100 dams, hatched eggs and raised chickens naturally. The farm network produced chicken by a farm system, using incubators and had 300 or more dams.

3. Who proposed the solution, who implemented it and who were the stakeholders?

Government agencies

From the standpoint of corresponding government agencies were DLD (responsible for the country's native chickens) and TRF (research funding and academic). The intended solutions were to increase the capacity of Thai native chickens to improve opportunities and career choices. Research began in order to improve a breed of native chicken, and perception of the breed was to be widespread. Other research projects had to build consumers and other stakeholders.

Farmers and entrepreneurs

Farmers and entrepreneurs see the potential of chicken breeds and many of them would like to join the network and, use genetically developed chickens. Started from farmers network followed by farms network. As a result, the sub networks continue to support as well, throughout the production chain that including feedlots, slaughterhouses, fresh chicken retail stores, restaurants, manufacturing and packaging products. Network operations took the native chicken production of farmers, from production by individual facilities into commercial production.

University / Research Institute

Chiangmai University, Khonkaen University, Maejo University, Chiangrai Rajabhat University had further studies such as “Meat quality, odor and flavor of PDCM”, “Development of molecular markers to identify characteristics of PDCM”, “The supply chain development of PDCM”, “Recipes for chicken cooked by PDCM”, “Creating career communities using native chicken (PDCM) in Thailand”. The results created many opportunities for the networks.

The operation results found that, DLD could contribute to the duties and responsibilities in line with government policy, TRF has established a broad research which has impacted the profession and improved sustainability in rural areas, farmers and entrepreneurs now have a sustainable career choice. Consumers have more choice in accessing high quality products (chicken) for consumption with increased convenience.

4. Describe how and when the initiative was implemented by answering these questions

a. What were the strategies used to implement the initiative?

In 2001, the Ministry of Agriculture prepared a strategic plan for native chickens. To meet the vision requirements for "Thailand is the world's kitchen and helping farmers out of poverty".

The strategy has been successful from transfer of technology and knowledge to the user, systematically, throughout the production chain, and is fully integrated between government agencies, farmers and entrepreneurs.

Development of breed

The development of PDCM to potential breed has a period of 5 years, with the selection process and technical basis, characteristics of breed with qualitative and quantitative traits. There were higher (30 – 40%) productive performance in farm systems and village conditions than the general native chickens. The development could serve the community and industry. During this period the breed developed, each year and created 30 – 50 PDCM farmers families network that raised 10 dams / family.

Perceptions of PDCM

Perceptions of PDCM were created after the development of the chicken. The breed was registered at DLD and, published on the DLD website, information and certificates for the network, documents of breed and guide to raising PDCM were also published on website and in book form. The other strategies were the presentation / publication in journals, and conferences. There are also press releases by the DLD, who also participated in academic / national exhibitions. This resulted in wide publicity by the media via television, radio, newspapers and magazines.

Development of knowledge and technology

The development of knowledge and technology were creation knowledge management, document information, training and monitoring the use of PDCM of farmers in the farm and village.

Creating Farm Networks

Creating Farm Networks was increasing chicken production. Farm networks used PDCM genetics for commercial means, by raising, breeding and hatching eggs using incubators that were built using teaching and technology of DLD. At present,

the farm network in the Upper Northern Region has 18 farms that produce more than 1.5 million chicks per year for purebred and crossbred PDCM.

Sub network (feedlots to restaurants) development from the farmers / farms were available resources to make full use of the manufacturer to the consumer.

Evaluation of useful of PDCM

Evaluation and analysis of the use of PDCM purposed for planning and breed development to meet the needs of the community and data of raising native chickens and economic returns of both main occupation and career options.

Identity Creation of PDCM

The identity of PDCM for cooking was achieved by providing competition at the famous festivals of Chiang Mai province. These will cover the cycle from breed to table.

Production System Development of PDCM to Food Safety

Development of the production, throughout the production chain to security standards. To enhance the hi-end market.

Market development

Market development aimed for distribution of native chicken (PDCM) in the community market and the city by using information sign for retail store and packaging of fresh chicken, and the newly supported amount of chicken that increased productivity.

In addition, TRF also supported the ongoing research projects by the University / Research Institute for confidence of products.

b. What were the key development and implementation steps and the chronology?

DLD was the agency responsible for the country's livestock. They were the core operation and integration stakeholder with various partners such as TRF (supported research and feedback academic), Research Institutes / Universities (support the research activities that DLD can not do its) and the networks were used and reaction to the results obtained.

AD 2001 - 2002, DLD and TRF arranged meetings to discuss, with groups of scholars from other institutions, livestock in Thailand, including universities and the private sector. An agreement (MOU) with TRF was signed and a joint venture with DLD to develop Thai native chicken breeds was initiated.

AD 2002 – 2007, establish foundation stock of PDCM at C-LBRC, in collaboration with the farmers and communities.

AD 2008 – 2010, Results of research was put into use and transferred to stakeholders. This started by creating farmers and consumer perception of breed, creating farmer / farm networks with sub network support, such as feedlots, slaughterhouses, fresh chicken retail stores and, restaurants. In order to avoid the problems of price and marketing of chickens, evaluation of useful of PDCM, including acceptance by interviewing and a small group meeting, the value added in each stage of production or output. This was done in order to ensure the implementation of the model for expansion into other communities. The aim was to expand the knowledge about PDCM from community to region and country, developed market to complete production chain.

AD 2011, development of PDCM production to food safety for consumers, throughout the production chain. To improve raising and production of native chickens into compliance with the standard GAP (Good Agricultural Practice).

AD 2012, develop community careers using PDCM, by sustainable method.

AD 2013, establish a PDCM club. This will strengthen the advantage of networks, prepare for registration and certification of PDCM breed and support members of PDCM club. This year the networks started to sale frozen chicken meat in the hypermarkets as Tesco Lotus, Makro.

AD 2014, started to sale fresh chicken meat (cut up and whole chicken) to hi-end supermarket of Thailand (Tops market, Chiangmai branch)

Results of all operation, had 18 network farms, 400 network farmers, 50 network feedlot farms, 20 network slaughterhouses, 70 network fresh chicken retail stores and 3 network restaurants.

The road map for the next operation is in the next 2 years produced native chicken (PDCM) will be distributed to all regions of Thailand, and extend fresh chicken meat to the other branches of tops market. Develop the product cycle to a comprehensive range of “ Chicken of Thailand, adopted by Thailand knowledge, raising Thais as a product of Thailand ”.

c. What were the main obstacles encountered? How were they overcome?

The main problem in the implementation stage was the collection of chickens from all over the country. This takes time, labor and budget. Very difficult for selection and improvement produced purebred and high potential chicken, without loss of genetic diversity and still remain the property of maternal ability for raising in the village.

This is the first time in Thailand, for produced purebred native chicken in commercial scale to market continuously by farmers. The farmers must have technology and know-how to build the farm. The use of new knowledge in the production of native chicken breeds using incubators to develop their own chickens. The first pilot study made it difficult to manage and resolve any issues that arose. There is no model to emulate success. Then, create perception of native chicken to people, and used for commercial purposes, and operations to be an integrated supply chain from production to the table.

Farmers need planning, research, time, personnel, analysis, improvement, and budget to achieve their goals and must be supported by the agency with the cooperation and mutual consent of the government. (DLD and TRF). Supervisor cooperation must have complete knowledge of chickens, in the RD & E (Research, Development & Extension), because networks creation needs to promote public relations and marketing.

Over a period of 10 years, from development of chicken breed, followed by creating perception, networks, etc., until the chain of production and utilization, the research must have been carried out both in the village and the people involved in the community and use numerous tasks.

Operators required determination, dedication, knowledge, accuracy and completeness to overcome obstacles in the RD & E, to create an efficient market mechanism, value added and distributed to the community. This provided satisfaction of stakeholders and various sectors to participate in the operation. Also, the products can meet the market demand and consumer needs.

The future of Thai native chicken, stands a strong chance because the government can work together to support and carry out comprehensive research. The native chickens are preferred, affected to production were not sufficient to meet the requirements for applying to the breed chicken and consumption. Which in the long run had the chance to develop into a product of village, district, and province,

such as the famous chicken breeds of other countries. In addition, native chickens raised by farmers in the village ate local materials such as grass, bamboo, worms, vegetables, fruits, etc. It is also a selling point as organic chicken.

d. What resources were used for the initiative and what were its key benefits?

The resources were personnel in accordance with the underlying research that have accumulated knowledge / continuous improvement, knowledge development and review for improvement working, time, and budget.

Budget

All funds used in operations during 2002 - 2012 totaled 610,000 dollars.

- The cost of developing of breeding chickens (250,000 dollars) was shared by DLD (130,000 dollars) and TRF (120,000 dollars).

- The system of using chicken genetics was 160,000 dollars, with support from the TRF.

- Research support from TRF and universities / research institutions for steps to build confidence of PDCM was 200,000 dollars.

Technology and knowledge

Technology and new knowledge were applied in practice, including the development of chicken breeds, which requires scientific / scholarly input to improve breeds of Thai native chicken.

Creating perception and brand variants in a systematic and widespread manner at all levels, from community to national level. It was new strategy of implementing agricultural projects to accomplish this, such as promoting products as an important marketing strategy.

Farm network and sub network creation had an undisputed price and market.

The big problem of native chicken rearing was egg incubators. Incubators have the potential to be very expensive and cheap incubators have limited potential. Implementation of this project developed the complete knowledge for the networks to build incubators with a capacity of 6,000 – 8,000 eggs. Their efficiency was similar to standard incubators but were four times cheaper. So, they could build 40 incubators which saved more than 500,000 dollars. This incubator was the new innovation, because it was an incubator for native chickens that differed from commercial incubators, most of which were imported from abroad and good for commercial broiler or layer chickens.

Working partnership

There was a working partnership created throughout the production chain, from DLD to communities. This started from farm network, followed to the network of farmers, feedlots, slaughterhouses and retail stores. It could be seen that each of the functions were responsible for continuous production, and had the great benefit of mutual support. This development would create a strong network and support each other. The partnership changed the way of the party of farmer and marketing of native chicken, from dependence on others, to self-reliance, and rely on each other in the end.

5. Is the initiative sustainable and transferable?

The operating of the pilot study made the documents and was publicizing as International Animal Breed, including documents of PDCM, methods of raising

PDCM, PDCM networks, PDCM cooking, etc. All supply chains of production chickens to consumers had operations manuals for standard production. Then those could be made into working manuals and success models. DLD introduced these models that can be adapted to the other three native chicken breeds, to the rest of Thailand (Northeast, Central, South). The model was then used for other livestock of DLD, include cattle, goats, sheep, swine, dairy and beef.

The overall results had been used in the purebred and crossbred native chicken industries. Chickens were used by farm networks had a large capacity of over 300,000 birds / year and medium-sized farm (50,000 to 100,000 birds / year), such as Chiangmai, Lamphun, Lampang, Maehongson, Nan, Phayao, Chiangrai, Phetchabury, Nakornratchasima and Samutsakorn provinces. Also, there were twenty DLD farms nationwide, including more than 500,000 birds / year. At present, as a result of the initiative, chickens have now been sold to almost every province of the country. In 2012 the farm networks of Chiangmai, Chiangrai and Lampang had started to sell crossbred chicken and fresh chicken, to other ASEAN countries including Laos, Myanmar, Cambodia.

During the initial operation, the research was initiated by a single company (Chiangmai Livestock Breeding and Research Center). After development of the breed, Khonkaen University led some to develop a new strain for the bigger industry.

Various methods have been implemented in the development. The result was the work of various groups that provides learning of each other's communities and residents in the community. As one of the technology transfer from the government to farm, farmer group networks, and networks of farms and farmers to the farmers directly. As a result of the initiative, other farmers would like to join the network, this was an example of a successful mode, then made success easier. The results were extended to a wider use from regional to national and international border.

2013 - 2014, driven and knowledge transfer to networks, provided they were able to produce replacement chicken by themselves, for sustainability and did not depend on the breed of DLD in each year. Then, DLD supervised farm networks, and took the new development chicken breed every three years.

More than ten years ago of initiative, many farmers would like to be the networks.

Models and system could be extended to create other networks of other native chickens of DLD that were located in different regions. The pattern made Thai native chicken, that had economic benefits to the users which was one strategy to create economic value, and could be applied to other native livestock in Thailand.

6. What are the impact of your initiative and the lessons learned?

The impact

The impact of the initiative received one new pure breed of Thai native chicken that has production potential, farmer networks and sub networks that are commercial. This is a successful model of career development.

Economic, social and community value

Weight at age 12 weeks (1,244 g) was higher than 30 percent. So, chicken cost 3 dollars/kg that had a yield higher than 0.9 dollar / bird, and a total economic value was of 1.2 million dollars.

Economic value that occur in the network from farm to fresh chicken retail store, had increased accumulatively by 98 percent.

Increasing production steadily continued to lead to a career choice in the community, and there were purebred native chickens for government agencies and The Royal Project for promoting to poor farmers.

Conservative Thai native chicken

The farmer network creation preserved Pradu-Hangdum chickens back to their original habitats because there were the actual distribution of these chickens, back to the village. Each chicken produced chicks (29 birds / year) which was 32 percent higher than general native chicken.

Enhancing competitiveness

Eighteen farm networks creation (produced 1.5 million chicks / year) and eggs (147 eggs / year) which is 40 percent higher than traditional general native chicken. This enhanced competitiveness of native chickens with foreign broiler chickens that were imported every year.

The lessons learned

Full production of the operation could achieve market demand. Although, it was native chickens that many scholars agree that do not need to improve, but should be left to the farmers to rear in backyard.

Starting with the pilot study which differs from promoting the general agricultural services of Thailand. We would like to promote and support the farmers in order to make money and provide better opportunities for them.

The combination of products, networks and government agencies made the production system and marketing, produced a product that is needed by the people.

This workmanship had won five national awards from TRF, the National Research Council (NRCT), Kasetsart University and The Office of the Public Sector Development Commission. Farm networks have won two national awards from DLD and The Ministry of Agriculture and Cooperatives. All increased credibility to build the brand and the product.