

Climate Smart Agriculture: Models for Empowering Women Livestock Producers

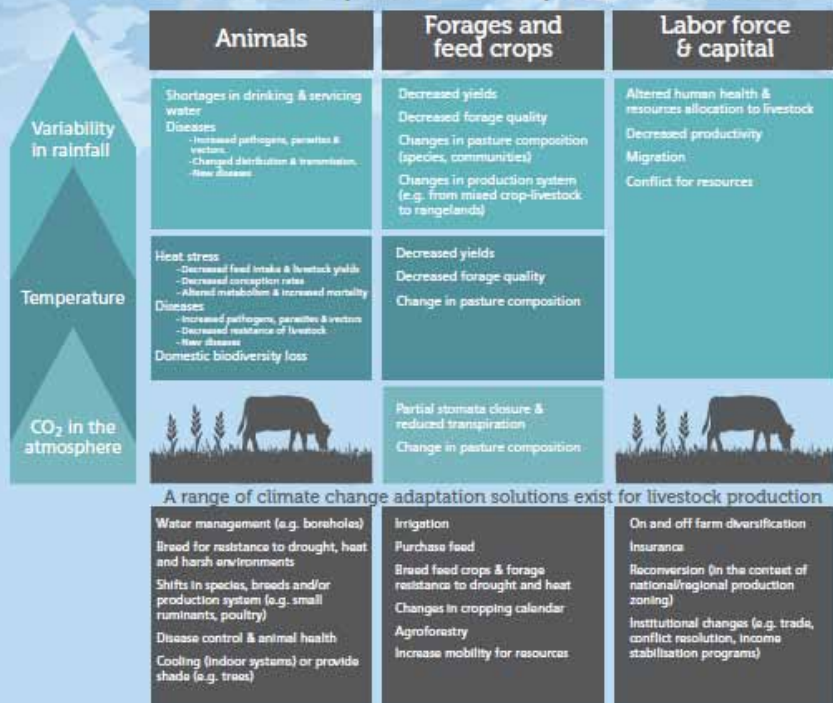
2015-2018 OUTCOMES



BRIEF

Climate Smart Agriculture (CSA) interventions in Asia have a bias toward crop-based agriculture. The sector of livestock production deserves more attention from the CSA community. Livestock are a major contributor of greenhouse gases and livestock production systems in Asia rely heavily on commercial feeds, antibiotics, and hormones. CSA provides us with a new opportunity to introduce smallholder livestock production systems with a smaller carbon footprint. Alternative livestock production systems can also help farmers cope with the adverse impacts of climate change.

How does climate change affect livestock keepers and production?



Global emission intensities by commodity



Native Pigs Initiative in Guinayangan Quezon



Area Profile

In the Municipality of Guinayangan, Quezon, agriculture and marine produce provide income for most of its residents. With a land area of 22,800 hectares, this third-class municipality has a population of 41,669. It is bound by the Ragay Gulf in the east and lies 255 kms away from Metro Manila. The area is composed of hills, mountains, and seas. Fifteen of its 54 barangays are located along the coastal shore (Municipality of Guinayangan, 2002). The tropical climate sees a temperature of 23°C to 33°C, with the hottest months being March to May and coolest months being December and January. The highest precipitation is received between September and January. The wettest month is October, which averages at 405mm whilst the driest month is April, which averages at 78mm (Climate Data, 2012). Agriculture is the primary land use and covers almost 74% of the total area, 85% of which is devoted to coconut production. However, fish production holds a significant role within the coastal barangays (Municipality of Guinayangan, 2002). The diverse topography of the area presents a variety of challenges across the municipality and unique interventions are required for each individual farm.



Climatic Threats

Climate change poses risks across the globe for those reliant upon agriculture, with developing nations suffering the consequences on a greater level (Morton, 2007). In recent years, the dry seasons have increased in length, with rice production being limited to only one season in Guinayangan. Increasing and varied temperatures have made crops more vulnerable to failure; production levels have decreased resulting in food security being threatened (IIRR, 2016).

The Philippines experiences 20 – 25 typhoons annually, with 283 events hosted between 1996 and 2015, has been listed in the top 5 of the Climatic Risk Index (Kreft, Exkstein and Melchoir, 2017). In November 2013, the Philippines experienced one of the most powerful and destructive events to date, Typhoon Haiyan (Yolanda). The category 5 typhoon made landfall six times, resulting in over 6,000 deaths and USD \$3 billion of total losses (IIRR, 2015).

Developing Scalable Approaches for Community-based Adaption – The Wider Project

With the threat of climate change, IIRR's program increases the adaptive capacities of small farmers, with the most vulnerable – women and youth farmers – being targeted. This involves applying approaches that build farm resilience and embody climate smart agricultural methods that address food security in a sustainable, environmentally friendly manner. The main objective of the project looks at developing an evidence-base for sustainable outscaling of climate resilient agricultural practices to enhance livelihood, resilience, and adaptive capacities. CCAFS and the Department of Agriculture (DA), through its Bureau of Agricultural Research (BAR), supported this initiative to demonstrate that small livestock are a socially relevant and economically profitable project for the poor, especially women. Key aims within this include:

- Increasing productivity and income sustainability with consideration for the environment.
- Building capacities of households, food systems, and value chains to adapt and reduce the associated climate risks.
- Reducing greenhouse gas emissions.
- Increasing carbon sequestration of agricultural systems.
- Leveraging the value of nutrition in agriculture.

The Learning Community approach developed by IIRR brings together a group of individuals who share common values, goals, geography, interests, and beliefs, to engage with one another and find innovative solutions to their common problems. This has been applied throughout Guinayangan and involves methods that work towards attaining the objectives being tested and developed by the farmers themselves. Through these platforms, participatory technology development projects (PTD) are initiated, nurtured, and monitored.

Relevance of Native Pig Production

The widespread destruction within Guinayangan highlighted the vulnerability of the farmers to the climatic conditions that deeply affect the crops they rely on for basic needs. The crops they produced prior to Typhoon Rammasun (coconut, banana, corn, and vegetables) were unable to survive and sustain their livelihoods; the coconut trees took 1-2 years to recover before being able to produce nuts again (Dalusag, 2014). Livestock production emerged as a relatively resilient form of agriculture.

Livestock production not only provides households with a reliable food source but it enables an easy and productive source of income. Livestock have particular benefits for women, providing them with a low labour and easily manageable economic asset. The tolerance of native pigs to differing environments is known to be considerably higher than that of commercial or imported breeds of pigs. Reproduction and growth of native breeds are consistent even when experiencing adverse conditions. Compared to the other breeds, native pigs are more resistant to common parasites, pests, and diseases, making them an asset of high value and reliability. With the prospects of future climatic events and challenges, the value of livestock is emphasised as climate smart. The capital investment required to begin raising native pigs is small, as are the required inputs in terms of housing and feeding.

The native pig is favoured for the popular Filipino roasted pig dish 'Lechon'. The meat of native pigs is considered tastier, crispier, and leaner than imported and commercialized breeds. More nutritional value is held, with higher protein content but lower fat and cholesterol (D.O.A, 2015). This means the market demand and value of the native pig promotes their production and benefits to smallholder farms. They are able to generate a steady income, provide insurance through diversification for when other crops may fail, increase household food security while providing an option for consumption when necessary.



Low External Input Pig Production Systems

The introduction of native pigs combined with environmentally friendly methods of production and maintenance works towards a number of the objectives. One of the main advantages of raising native pigs is the lack of external inputs required, which lowers production costs while equally contributing to mitigation by utilising locally produced materials and therefore lowering carbon footprints.

Before the assets in the form of a starter stock of live animals can be received, beneficiaries must prove their interest by constructing housing or pens for the pig at their own cost. This doesn't have to involve any costs if local sources and readily available materials from their farms are utilized. An intensive garden must be established first if appropriate crops are not already being grown.

Native pig production increases productivity of farms by presenting an extra commodity that adds to the income sustainability of the beneficiaries. The methods implemented promote environmental concern through mitigating elements. Through this, sustainability is emphasised as carbon footprints are reduced, decreasing their addition with the oncoming climatic changes. Farmer knowledge and capacities are developed not only in terms of practices but equally for value addition, market structures, and food systems. This will allow for adaptations in anticipation of future alterations and changes. Nutritional aspects of native pig production are also highlighted, promoting the use of meat and feed crops within household diets.

Key Components of Alternative Systems

The pig production project promotes the use of climate smart methods which require minimal economic input yet produce significant returns when converted to cash. Sourcing all inputs locally or from their own farms includes regenerative aspects, promoting the health and productivity of other areas of the farm.



Intensive feed garden (regenerative)

Many consider keeping pigs as an expensive practice because commercial feeds are costly, are subject to availability, and produce lower quality meat. In contrast, farms with small capital and minimal knowledge on appropriate and beneficial methods grow their pigs on scavenging and kitchen waste. Through developing an intensive feed garden, the risks associated with reliance upon commercial feeds are reduced along with expenditures.



Native Pigs: A low emission livestock production option

Compared to other livestock production options, pigs, chickens, and ducks are low-emission (greenhouse gases, especially methane) options. With alternative feeds, these emission levels can be further reduced. Menus of feed options are prepared using totally available materials. This includes grains, root crops, oil cake or copra, and legumes.

Livestock housing

Farmers who provide housing structures for their livestock tend to accumulate higher capitals than those who let their pigs roam freely. Housing provides an element of protection from weather conditions and the risk of the pigs contracting diseases is lowered (D.O.A, 2015). Cement and hollow blocks used for walls and floor are common. However, utilizing local, readily available construction materials, such as bamboo, reduces expenditures while providing an appropriate housing structure that ensure cooler temperature due to improved ventilation.

Flooring and bedding

Organic methods of bedding are promoted due to a number of benefits. Through utilizing low cost and easily accessible materials such as coconut husks, soils, rice hull, dried leaves, and saw dust, a deep bed flooring system can be developed. These heavily reduce the smell and consequently the flies, promote the health of the pigs, and provide farms with a source of natural compost whilst providing the pigs with a comfortable and stimulating



environment. This is particularly effective in areas of higher elevation with good drainage (D.O.A, 2015). Other methods utilising similar materials also have positive effects however the deep beds are thought to be the most effective with the highest amount of benefits.

Native Pigs: A low animal health care

Vaccination and antibiotic use on native pigs are considerably less than that of commercial breeds. Initially, all piglets require vaccinations. After this, minimal input is required for native breeds due to their resistance to common diseases, pests, and parasites. Some farmers purchase herbal supplements for their pigs, which cost lower. There are eight veterinarians across the 54 barangays in Guinayangan who provide the vaccinations and medical help for swine. These veterinarians also partake in their own native pig production effort.

Asset Creation

The native pig production element of the wider project ran through a course of different phases of exposure for the farmers. The initial intervention took place in 2013 in Barangay Arbismen whereby alternative feeds were introduced initially with commercial white breed pigs. This was done so in order to enable farmers to adjust to the new methods and encourage them to make the switch to native breeds with alternative feeds.

Initially, only six farmers were involved and each were provided with 1 white pig each. A production and propagation center was also developed by one household who was already raising pigs in Barangay Arbismen. Testing began on feeding methods. The pass on scheme was also required from those receiving white pigs. By 2015, 14 new farmers had benefitted from this and were also practicing the low input methods.

Throughout 2015, native pigs began to be introduced to three barangays. These were distributed to seven farmers in Barangay Arbismen, five in Barangay Capuluon Tulon and five in Barangay Ermita. Contact was made with the National Swine and Poultry Research Center where technical expertise and breeding stocks were secured. Two native breeds were



provided, **Kalinga** and **BT Black**. It was hoped that through introducing alternative practices in various stages, the farmers would be able to adapt and sustainably gain their own knowledge on the most effective ways of feeding and producing the pigs. A new breeding centre was developed in Barangay Capuluan Tulon. A third native breed was introduced in 2017, the **Macalelon**, into this second breeding center, meaning three species are now available in the area.

Outcomes

A number of benefits have been accessed by the beneficiaries through introducing low input methods of pig production. Income generation has been secured as a result of the climate resilience of native pigs, which in turn has resulted in food security. Economic hindrance to food access is reduced. Health, nutrition, and general improvements to standards of living are noted.

Income Security

It is now widely accepted that native pigs are a reliable, climate smart method of ensuring that a source of income is always available. The tolerance of these pig breeds to the climatic conditions and variations in the area means their survival rates are higher than that of the commercial pig. In order to avoid stunting, commercial feed is advised for the first month. This costs between Php 1,000 and 1,300. However, through utilising an intensive feed garden after this period, inputs remain low and can result in savings of up to Php 6,500 over five months until the pig is ready to be sold. Due to the pass on scheme, the dates the beneficiaries began producing native pigs varies greatly, however, even the more recent farmers have grown their single sow asset into a commercial base of an average of eight sows, with some now housing up to 12.



After 45 days, whole pigs can be sold. Commercial pigs are usually worth between Php 90 to Php 120 per kilogram, but native pigs can be sold at Php 120 per kilogram and can weigh up to 50 kg. Additional market value can be added through the processing of the commodity. If butchered, the meat is worth at least Php180 per kg and Php 250 per kg if processed into lechon. Comparing the income generated through native pig production to that of other commodities, beneficiaries found this to be the most worthwhile, generating the most income for the least cost and investment of time.

Food Security

Aside from the increase in food security due to the ability to generate a reliable income from native pigs, the protein rich commodity can be utilized by the farming families providing them with extra nutritional value. In times of climatic stress, the high survival rates of native pigs means there is always a source of food that can also be sold when necessary.

Climate Security

Whilst other crops may fail during extreme weather events (typhoons, strong winds, droughts), the resilience of the native pig means its survival rates are high, especially compared to the commercial pig, and will provide a reliable source of both food and income. The use of natural resources such as coconut husks as bedding and an intensive feed garden, are not only adaptations to climate change but also work towards mitigating the effects. Other rice-based and alternative feed crops are continuously being tested for both resilience and meat quality. This ensures that a source of food will be available not only for the livestock but equally for farmer consumption despite the changing climatic conditions.



Livelihoods

Through building an asset base and generating additional income, beneficiaries have seen an increase in their resilience. They are now able to bounce back quickly from severe weather events and maintain an income. Income now goes further than providing everyday essentials for the families by covering constructions costs, medical expenses, and school expenses. Many of them now have disposable income available to purchase non-essential household products, such as household furniture.

Farmer Learning Groups and Participatory Technology Development

Farmer Learning Groups (FLGs) provide the beneficiaries with a platform of knowledge exchange and allow for any breakthroughs in the action research to be shared, distributed and implemented by others in the community. Of the 13 FLGs in Guinayangan, two are focussed on low external input pig production. In Barangay Arbismen, the group has 36 members while the group in Barangay Ermita has 24 members. These groups are predominantly comprised of women, who mostly tend to the livestock (pigs, ducks, and chickens).

The Participatory Technology Development (PTD) taking place within these FLGs are centred around learning how to use locally produced feeds and growing of high quality forage and feed gardens. Combinations of feed varieties are tested in order to gain knowledge regarding production of the best meat quality. Variations of rice brands and taro are currently being tested to see which produces healthy pigs with the leanest meat and least fat content.



Community Cohesion

The pass on scheme requires individual farmers to have contact with one another and spread their assets throughout the community. The beneficiaries are proud of their progress and are eager to share this not only with family members and neighbors, but to other barangays as well. Many are going out to recruit new members themselves and are approaching potential farmers in the hopes of expanding their FLGs.

Seven farmers in Barangay Arbismen were originally involved in PTD for alternative feeds and proved the viability of the methods in question.

Scaling Out

If IIRR's aim of relieving thousands of households from poverty is to be achieved, the solutions need to be spread to a greater number of households across a wider geographical area. With reference to the requirements of the native pig beneficiaries, IIRR has ensured that this is done to some extent by the farmers themselves, promoting sharing and exchanges of commodities for the benefit of the wider community.



As of December 2018, 172 farmers have received a native pig through the 'pass on' gift scheme. All recipients are from 22 barangays: Arbismen, Sta. Cruz, Magsaysay, Ermita, CapuluanTulon, Capuluan Central, Sintones, Himbubulo Weste, San Pedro I, Dancalan Caimawan, Danlagan Central, San luis I, San luis II, Triumpo, Cabibihan, Bukal Maligaya, Manggalang, Lubigan, San Roque, Tikay, Villa Hiwasayan, and San Miguel. The number of farmers benefitting from the original beneficiaries vary with the highest addition coming from one individual who recruited six new farmers.

The breeding center in Barangay Arbismen assisted 17 farmers in breeding their Kalinga and BT Black breed boards in 2015. Twelve were bred in 2016 and 17 in 2018. Forty-five farmers benefitted from the breeding center in Barangay Capuluan Tulon for Kalinga production.

For commercial pigs, the pass on scheme of the original farmers in Barangay Arbismen reached four different barangays already. Forty-seven additional farmers have benefitted from receiving a commercial pig to produce. All of the original beneficiaries have shared their assets with at least 2 other farmers, many of whom have then gone on to also share the assets they accumulated from the pig to at least one additional farmer.

After realising and experiencing the benefits of rearing native pigs through the use of low input methods, the farmers are keen and eager to share these with others and expand their learning group.



Empowerment

The households became empowered through their increased income yet was the women who were impacted the most. As native pig production is primarily the responsibility of the women within the households, they are the ones earning the extra income and consequently gained power and control over where to spend it. They are more inclined to invest it on childhood development, specifically on child education, medical expenses, and food. For some women, it was their native pig production that allowed the family to be able to afford treatment for their husbands, of which they were both extremely proud and grateful.

Lechon was previously thought of by the farmers as an expensive food and unaffordable for them. Now, lechon is prepared for special occasions and festivities, empowering the community through the increase of their social status.

Another one of the main benefits highlighted by the beneficiaries was their ability to send their children to school. Through this, the children are able to increase their future potential and be able to provide and contribute to their family income and not fall into the hardships experienced by their parents.


With the recent creation of a federation of native pig growers, market linkages will be strengthened whilst abilities of the beneficiaries to identify and form Beneficial structures and partnerships within the market need to be developed and increased. This will allow for demand to be sustained and once action has been taken to train the farmers in processing, this wider market base will reduce the reliance upon demand for piglets only and the threat of the lack of such.

Native pigs turn into business enterprise

The number of native pig raisers increased to 192 households. It gained much attention prompting the LGU through the municipal agriculture office to promote native pigs as an additional livelihood for every family.

Selling their product on time at a higher price is one of the challenges faced by the farmers. In response, the Guinayangan native pig raisers created an association group named “GUINAPIG” (Guinayangan Native Pig Association) to guide the members on the business end.





In November 21, 2018, IIRR facilitated a business planning workshop for the group. The activity was attended by 14 male and 41 female members from 17 barangays. The farmers identified two products: selling live native pigs to traders and selling roasted pig (lechon). To do that, a holding facility was identified to raise piglets up to three months and sell it outside of town. The group will also sell roasted pigs every Saturday, which is the market day in Guinayangan. The group also elected a business management team (BMT) that will run the businesses. Tasking was identified among the functional posts such business manager, purchasing officer, arm manager, lechonero, marketing officer, bookkeeper, and cashier.

Conclusions

At its core, the native pig production element of the project was aiming to provide farming families with a secure source of income utilizing low input and climate smart methods of feeds, housing, and maintenance. Through establishing feed gardens and utilising local materials for housing, the commodity which was once seen as expensive to produce was proven to be viable and of benefit to farming communities. Income is secured due to the hardy nature of the native pigs, whose survival rates are much higher than other crops and breeds, meaning even during extreme events food will always be obtainable. This increased income has also allowed for health expenditures, children's education, and general livelihood improvements to occur within households and across barangays, bringing the beneficiaries together as a community. Few challenges remain that can be easily addressed, such as the promotion of the project to ensure further scaling out, maintaining the market linkages for the pigs being produced, and providing processing training, which will hopefully see the inclusion of the meat within the regular diets of the households. Low input native pig production meets the project aims as the productivity of the farms is increased, the sustainable methods consider environmental impacts, the capabilities of the farmers have increased dramatically, and the risks against climate threats and uncertainty have been reduced. The income being produced is sustainable since the pigs are able to continue production even in the face of extreme conditions, meaning households always have means of securing food, thus increasing their food security. Overall, the beneficiaries see their inclusion in the project as a blessing that helped them improve so many aspects of their lives that they are very proud of. They only hope that these benefits can also be felt throughout their community.

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IIRR and the LGU are now looking for investors and partners to support future work in the Agroforestry Program in Guinayangan Quezon, Philippines in 2019-2022.



stories from

Empowering women livestock producers



“Katulad ko na nasa bahay lang at walang trabaho, kung hindi ako didiskarte tulad ng pagaalaga ng baboy ay talagang maghihirap kami,” (I’m mostly at home without work, so if don’t find other means of earning, like raising pigs, our family will fall in poverty.) said Eustacia Sarabia, a 50 year old farmer who lives in the village of Arbismen in Guinayagan, Quezon. Her husband Ronel Sarabia, 47, is working in Laguna as a construction worker.

Eustacia, or Nanay Tacing as she is fondly called, looks after her differently-abled mother and three children who are in elementary and college. Her family’s main source of income is planting rice on a half hectare land owned by her mother and planting small coconut trees for copra. Nanay Tacing shares the land with her five siblings and they take turns every 45 days in harvesting coconut. However, the income they earn from selling crops is not enough to sustain the family’s daily needs, even with the money Ronel sends for the children’s school fees, boarding house rent, and others. Add to that, Guinayagan has been experiencing drought for the past four years. Farmers cannot plant rice, thus negatively affecting their income.

In January 2017, Nanay Tacing tried to raise native pigs through the pass on scheme of the Arbismen learning group. She received a piglet from a farmer and she raised the pig until it gave birth. She was very lucky to have 12 piglets on the first farrowing. She passed 2 piglets to other farmers and grew the remaining 10 piglets for about 4 months. In September 2018, she sold nine heads for Php3,300 each, with each pig averaging 30 kg. Her family and relatives consume done pig during the birthday of her child. She used 30% of her income from the pigs to buy materials for the repair of their house such as iron, gravel and cement and 70% was used for schooling fees. She now has another 12 new pigs from the second farrowing, which she plans to sell during the oncoming vacation and holidays.

the field

Nanay Tacing is very happy and thankful to have native pigs because of they are sturdy, resilient to changing climate, and are low cost compared to hybrids. Tacing is one of the 192 members of native pig raisers in Guinayangan, Quezon. She plans to extend her pig house and raise another sow.



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