

# Koro the Treasure of Wonogiri

By Asti Pramudiani





"Velvet-bean tempeh, ma'am.. traditional food from Wonogiri", Surati was trying to sell her *bacem* (marinated) velvet-bean tempeh by offering a plate of it during a meeting in Jatirejo, Wonogiri.



The names of those groups are Harjaning Bumi, Dewi Sri and Sidomulyo, which are all located in Sendang Mulyo Village. At least 3 to 4 times a month, she sets a side time to visit the groups that she assists, but sometimes more. If the groups need her, then Surati must come, not to mention if she is asked to assist other groups.



Velvet beans (*Koro Benguk*) are widely used by the people of Wonogiri to make tempeh. If you enter Wonogiri in Central Java, you can find velvet-bean tempeh in the markets, food stall and itinerant vegetable vendors. The chips are also sold in stalls and even souvenir shops.

"Velvet-bean chips are actually a traditional food from Wonogiri as well, but they are not as well known as *Gaplek* or *Tiwul* which have become the hall marks of Wonogiri City", Surati explained during the break of the meeting. *Gaplek* is sliced and dried cassava, while *Tiwul* is a food made from *Gaplek* flour, usually cooked with brown sugar mixture.

In between her busy life as a farmer and mother of two children, Surati still has to make the time to assist groups of women farmers.

Fortunately, Katimo, her husband is very understanding when it comes to her wife's activities. It is not just this time that his wife has outside activities. In the beginning it was difficult for him to understand his wife's activities. In 1997, Surati was invited to take part in an integrated agricultural field school training which was held by Gita Pertiwi Foundation, a non-governmental organization that is based in Yogyakarta which focuses on environmental conservation and community development. Since then, she became active in Harjaning Bumi farmers group.

Later, Gita Pertiwi developed the idea of farming consultants. The idea is simple, by developing the capacity of one farmer, the farmer is expected to pass his/her capacity to other farmers. Surati was selected as one of the consultants who would assist women farmers groups in preserving *Koro* (large pulse) plants.



Planting *Koro* is not new to Surati family or Wonogiri people in general. In their paddy fields, they plant these climbing plants on the bunds or edges of the fields. In one year, the rice field is cultivated twice. In the second planting season, the land is intercropped with *Koro* as the second crop. "There are six species of *Koro* grown in our fields, namely *Glinding*, *Benguk Ompleh* (pole beans), *Benguk Taun* (velvet beans), *Benguk Rase* (pigeon peas), *Begog* (common jack beans), and *Kecipir* (winged beans)," explained Mrs. Surati.

The agricultural land in Wonogiri is a rain-fed land which can only be planted with rice once a year. In the first season, farmers plant rice and other subsidiary crops such as corn and soybeans. On the next planting season, most farmers grow subsidiary (*Palawija*) crops as the main crops. In the third planting season, farmers rely on perennial crops such as cassava and *Koro*.

During the third planting season, after the second crops is harvested, *Koro* can still survive even without water or any special care. "During a long dry season, *Koro* crops become more plentiful", she added.

This harsh condition is the reason why most people in Wonogiri leave the area, which is called *Boro* meaning go out of the area. In other places, most of them become construction workers or vendors. They usually go back when the harvesting season comes. Practically all the crops management is left to the women, including planting and tending of *Koro*.

Most *Koros* are climbing plants. Therefore if they are to be planted in the bunds, bamboo supports or trellis must be provided. *Koro* can even flourish by climbing woody plants or rocks that exist in the surrounding area. The cultivation method is also very simple, but it must be tailored to the specific species of *Koro*.



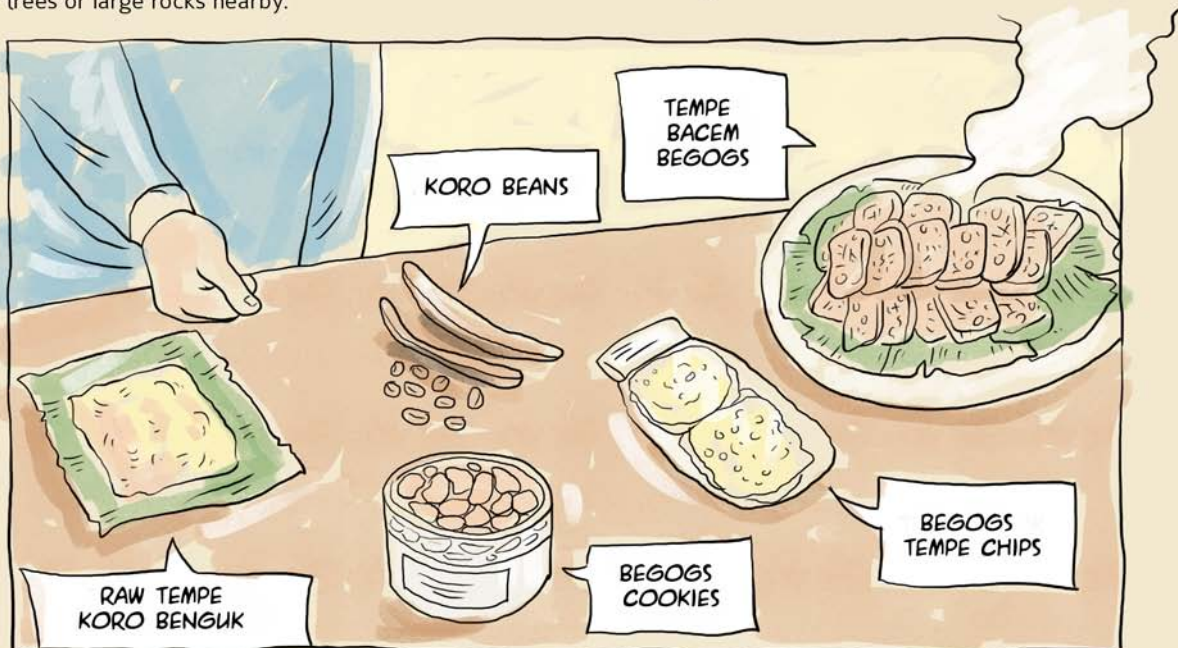
*Glinding Koro* is planted in the dikes of rice field a head of the first planting season, in the same time as farmers prepare the soil for planting rice. The field is plowed with a hoe, and then holes for the seeds are made with a 2-meter spacing. Next the *Koro* seeds are inserted in to the holes, 2 seeds per hole. The planting of *glinding* is done during "Ngawu-awu" or while waiting for the rain to fall, before planting the staple crops. When the plants are ready climbing at the age of one month, the supports are provided so plants can climb. The direction where *Glinding* climbs should be adjusted in such a way so as not to interfere with the main crop. This *Koro* species is resist an to dry conditions so it can be planted on dry lands or rocky fields. It can reach an age of one year. Therefore when the staple crop is harvested, *glinding* can continue to produce. Even when other *Koro* plants have stopped producing, *Glinding* continues to bear fruits.

Other species of Koros are *Benguk Ompleh* (pole beans) and *Benguk Rase* (pigeon peas) are widely planted on the dikes of paddy fields. They can also be planted in between *Glinding Koro* or along side cassava plants on the dikes. *Benguk's* are also resistant to dry conditions so they can be planted on dry or rocky lands. The planting method is similar to *Glinding*. The supports can be made from bamboo, they can simply be left to climb woody trees or large rocks nearby.

*Benguk Ompleh* can be harvested in the third month. The young pods are harvested and can be sold as vegetables. In one planting season, *Ompleh* can be harvested 7 to 10 times. The young pods can be harvested every 4 days, while the old pods are harvested when they are 4 months old, after which the plant dies. *Benguk Rase* is the same. In one year, they both can be planted 2 times, during the first two planting seasons. Actually, this *Koro* species can still be planted in the third season, but they are not resistant to drought. However the plants can grow better if in the third season they are planted close to the river.

Another species is *Koro Begog* (common jack beans) which is usually planted in the second planting season, inter cropped with subsidiary crops, usually soy beans or peanuts. *Begog* is planted when the subsidiary crops are about to be harvested. Therefore when the main subsidiary crops are harvested, the *Koro* can start to produce. The planting method is also similar to other *Koro* species. The difference is that *Begog* plants are not vines, so they do not require trellis. The old pods of *Begog* are harvested once when they are 7 to 8 months old.

Another *Koro* species with similar age to *Begog* is *Benguk Taun* (velvet beans). But it needs a support for climbing.



*Koros* are certain varieties of pulses or legumes which can improve calcareous soil structure due to its ability to fix Nitrogen (N) in the air. Generally farmers give urea to plants to provide nitrogen which is needed for the formation or growth of vegetative parts, such as leaves, stems and roots. That is why the cultivation of *Koros* do not require chemical fertilizers containing the element nitrogen. *Koro* is able to provide the nitrogen on the soil in which it grows, so the main crops around *koro* become fertile as well.

The maintenance of *Koro* is also easy. The only requirement is to keep the land from being flooded. If the rainfall is high, *Koro* plants will flourish with lush leaves, but produce no pods. When the dry season is long, the growth stage that produces flowers and fruit, otherwise known as the generative stage is better, so they produce more beans.

Usually the care of *Koro* is done by women, while men usually pay more attention to the main crop. More over *Koro* does not require special a care.

It only needs to be weeded out, or when the plant is climbing uncontrollably it needs to be tended so that it won't disrupt the main crop.

The crop yield of *Koro* is also more widely used by women for family food, and sold to help the family's economy. *Koro* is commonly sold in the form of beans or processed into food such as tempeh.

"Farmers sell their *Koro* crop yield to supplement the family income. Although the toxicity, namely hydrogen cyanide in *Koro* beans is high, they also have high levels of protein.

Farmers plant *Koro* because they have a nutritional value as a source of vegetable protein. The plant is also easy to grow and well-suited to the various types of dry land, "said Surati



According to Ch.Retnaningsih a lecturer at the Faculty of Food Technology, Soegijapranoto University in Semarang, the nutrient composition of velvet beans (*Koro Benguk*) is relatively ideal, comparable to soy beans. She proved that *Koro* has a lower fat and protein content than soy beans, but it contains more carbohydrates and fibers. Each 100 grams of soy beans, contains 40.4 grams of protein, 16.7 grams fat, 24.9 grams carbohydrates, and 3.7 grams fiber, while the rest is micromineral elements in milligrams. Meanwhile velvet beans of the same weight contain 31.0 grams of protein, 5.1 grams fat, 63.3 grams of carbohydrates, and 16.6 grams of fiber.



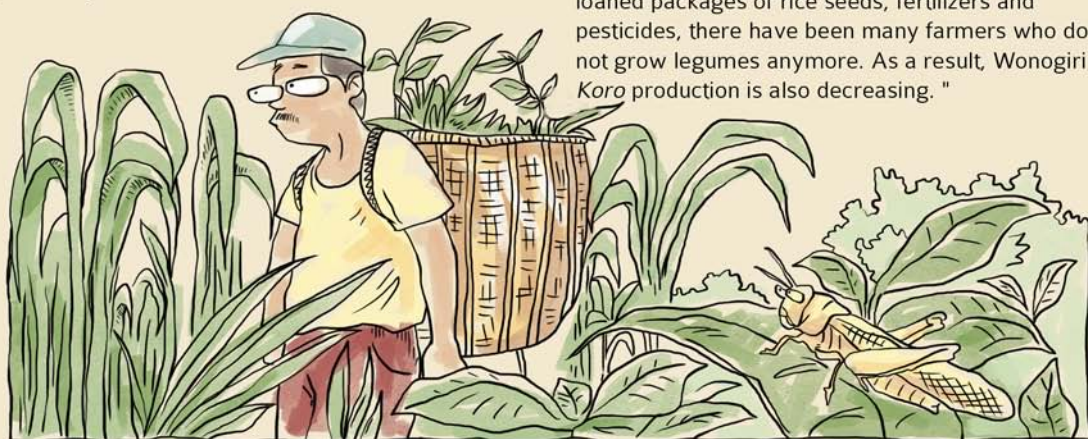
Unfortunately, the *Koros* which are rich in fiber is more and more difficult to find, the diversity of their species is also shrinking.

In the past, people do not have to worry about the preservation of various types of local food such as *Koro*. Wonogiri area arguably had the richest varieties of *Koro* in Central Java province. According to the survey results of Gita Pertiwi in 1998 in four districts, namely Baturetno, Batuwarno, Giriwoyo and Giritontro, there were 32 local species of pulses found that we recultivated by the local farmers.

However, fourteen years later in the middle of this year when another survey was conducted, the results were shocking. There are only eight remaining varieties of *kKoros* which are still planted by the farmers.

They are the common jack beans (*Canavalia ensiformis*), pole beans (*Phaseolus coccineus*), velvet beans (*Mucuna pruriens*), Benguk Rase, *Koro Ucheng*, gude or pigeon peas (*Cajanus cajan*), Winged beans (*Psophocarpus tetragonolobus* (L) D.C.) and *Koro Glinding*. Of those eight varieties the ones that are most widely grown are common jack beans, pole beans and velvet beans which are the main ingredient for making *Koro* tempeh. Next is *Gude* and *Koro Glinding* which are widely used as vegetables.

Actually Surati is aware of the declining species of *Koros* in her area. "The people here have been planting *Koros* for generations. However the varieties of *Koros* planted are dwindling. In the past *Koros* were widely cultivated, and species were also diverse. However since the 1960's when the government started a program that provided loaned packages of rice seeds, fertilizers and pesticides, there have been many farmers who do not grow legumes anymore. As a result, Wonogiri *Koro* production is also decreasing."





"In fact *Koros* are actually very suitable to be planted in the dry soil of Wonogiri, and they do not require a special care. But the government program is making the farmers continue to pursue a target of crop production especially rice. The fact is *Koros* actually also support food crops, but the farmers only think of rice, maize, nuts and cassava as food crops," she added.

Although the most widely planted *Koro* now is velvet beans, many farmers do not want to grow them because the selling price is very low, Rp.1.500 per kilogram. "Velvet beans are becoming increasingly difficult to find," said Surati.

Recently however, the price of velvet beans soared to Rp. 7,000 -Rp. 12,000 per kilogram, due the scarcity. This situation resulted in the shortage of the main ingredient for velvet-bean tempeh home industry, so they stop producing velvet-bean tempeh.

The scarcity of velvet beans is becoming more evident because the farmers do not want to set aside some of the seeds from the crop yields for planting. They usually sell all of the crop yields. "Farmers only want to plant them, but they are not willing to save some of the seeds, let alone *"Nguri-uri"*, lamented Surati. *Nguri-uri* is a Javanese term which means to maintain or preserve.

The fact is velvet beans are the main ingredient for making the traditional food of Wonogiri, velvet-bean tempeh. Velvet-bean tempeh can be found in almost all areas in Wonogiri, such as in the market, stalls, and even the itinerant vegetable vendors sell velvet-bean tempeh. The people of Wonogiri who have moved to other areas, when they return to Wonogiri they will always ask for velvet-bean tempeh food in form of fried or marinated velvet-bean tempeh, or even its chips. When they leave Wonogiri to go back home, they are asked to bring velvet-bean tempeh as a gift. Velvet bean tempeh can be cooked in different ways. Marinated tempeh is often served as a side dish on a daily basis just like soy tempeh. The chips are usually served as snacks when guests arrive.



The scarcity of velvet beans will affect women because the making and preparation of velvet-bean tempeh are done by women. The women farmers group which is assisted by Surati is one example. Not only they grow *Koros*, but also produce velvet-bean tempeh.

The process of making velvet-bean tempeh itself requires care and is time-consuming. The process requires a large amount of water while Wonogiri is a dry area with little water, so the tempeh makers have to buy water to make tempeh.



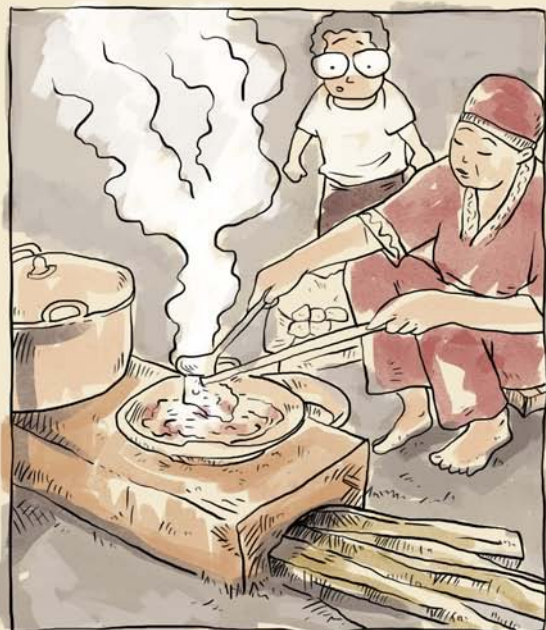
Surati said, "The members of our group have been producing velvet-bean tempeh for a long time. In Giriwoyo area for example, at one time one person could sell up to 10 kilograms of velvet-bean tempeh everyday. But the velvet beans were widely available and easy to get back

However, now their production have declined by 50 percent. One person now only produces 2 to 3 kilograms of tempeh per day, not only because velvet beans are harder to find, but also because the demand in velvet-bean tempeh is decreasing. People now prefer soybean tempeh.

"The scarcity of *Koro* can certainly threaten the sustainability of Wonogiri traditional food which is made by the home industries run by women's groups," added Surati.

In addition to the scarcity of beans, the process of making velvet-bean tempeh it self is a challenge for women because most of the velvet-bean tempeh home industries in Wonogiri are run by women.





The process also takes a long time, up to 5 days. First, the previously cleaned velvet beans are boiled, and then soaked for about 3 days to remove the cyanide toxins in the seeds. The soaking water must be mixed with ash to absorb the sap from the skin of the velvet beans so the sap won't be absorbed back by the beans. The sap is toxic. Ash also reduces the bitter taste of the seeds.

In addition to ash, during the process of soaking, the water must be changed every 6 hours. After the soaking process is complete, the beans are ready to be fermented. This stage uses *laru*. *Laru* or starter is *Rhizopus sp fungus* that has been cultured and is in granular form. This fermentation process is similar to making tempeh from soybeans. The starter is sprinkled on the beans, and stirred by hand so they are evenly mixed.

After that, the beans are wrapped in small pieces of the desired size using banana leaves or teak leaves. Finally, the pieces are then put on a tray which is then placed on the floor or a place that is not damp with good air circulation. The *Rhizopus* will multiply, grow, and its white mycelia will bind the beans together. After one to two days the velvet-bean tempeh is ready to be prepared. "



Surati and her group do not only sell velvet-bean tempeh but also its prepared food. Together with the Harjaning Bumi group of women farmers, she produces snacks from velvet-bean tempeh. Velvet bean tempeh chips are sold in plastic packaging with prices ranging from Rp.3,000,- to Rp.3.500, -. Velvet bean tempeh is sold for Rp.200 to Rp.500 per pack.

Another group, Dewi Sri is now developing *Begog* chips. "Members of our group make chips from *Koro Begog*. The process is similar to making velvet-bean tempeh. The only difference is before fermentation *Begogs* are cut into thin slices and then the starter is added and wrapped. One pack consists of 5-10 pieces of tempeh. After 1-2 days, the thin tempeh can be prepared by frying until dry by first mearning it with cassava flour and rice flour, "she said.



Ever since they started doing a lot of discussions in the group, the view points of the women farmer groups assisted by Surati is expanding. They now understand why *Koro* is increasingly scarce. *Koro* that is considered as a second crop to the subsidiary crops (*palawija*) turned out to be very important for the "nguri-uri" or preserving its diversity. They decided to do *Koro* conservation efforts through several activities, one of which is to improve the cultivation method.

"The cultivation of *Koro* is not as easy as it sounds. If the plant is given too much water, the result is not good. If it is fertilized, the plant will produce lush leaves but no fruit. It is advisable for the plant to have rainwater 1 or 2 times and be given manure alone."

One of the challenges in farming *Koro* is the seed crisis, the shortage of seeds and problem in selecting high quality seeds. According to Surati, high quality seeds are the main key to the success of *Koro* cultivation. Usually the farmers get *Koro*-seeds by setting aside some of their crop yields. There are some farmers who don't keep the seeds and sell them all. The seeds for the next planting season are obtained by asking from their neighbors or by buying them from *Koro* sellers in the market which actually don't have the quality for planting so the result is not good.

Nevertheless this women group is resourceful. They decided to copy the method used by their ancestors, by saving and exchanging seeds. Surati and members of her group together with Gita Pertiwi Foundation pioneered the establishment of a seed bank and *Koro* collection. The hope of the establishment of a seed bank is simple. When the planting season arrives the farmers will have no difficulty obtaining seeds.

The seed banks were established by a group of women farmers in the four districts with the support of Gita Pertiwi Foundation. The idea of a seed bank is collecting various species of *Koro* which are both rarely encountered, and which are still widely planted by farmers. When the farmers harvest their crops, they set aside some of the yields for future planting seeds. They don't sell these seeds because they are only for personal use.



In a seed bank, farmer group members deposit at least one kilogram of seeds to be stored and managed by the seedbank. When the planting season arrives, members of the group can borrow seeds from the seed bank.

"The seeds are stored in the form of *Cengkorongan* and dried beans. The dried beans are placed in a plastic or glass bottle whose both ends are coated with ash so as not to become powdery (*Bubuken*)," said Warsi, a member of Harjaning Bumi group. *Bubuken* is word for the condition of seeds that have been eaten by insects, making the seeds powdery or have a lot of holes.

Currently, the seed banks are still in its early stage. The groups are drafting the rules that are going to be applied in each group. One group made the rule that for each one kilogram of seeds borrowed, 1.5 killograms must be returned. To start the seed bank, Gita Pertiwi Foundation loaned one kilogram *Koro Begog* seeds for each member of the group.

The Banks are beginning to show positive results. At least the positive results were shown during the presentation by Dewi Sri Group at the *Koro* End of Season Forum in October 2012. Here's their report, "From the starting 74 kilograms of *Koro Begog* seeds given to 71 members in February 2012. Currently the bank has already collected 96 kilograms of seeds which will be returned to Gita Pertiwi." The good news lifted up the spirit of the members.

The efforts of *Koro* collection, which are done by each member of the group are also beginning to show positive results. *Koro* collection aims to meet the needs of tempeh industry.

So when there is a demand of *Koro* to make tempeh, either from the members or the order from outside of their group, the seed bank will be able to meet that demand. This is another benefit from the group because small producers can obtain *Koro* from the group, so it will also improve the business of the group.



The hard work of women's groups to popularize *Koro* is beginning to be appreciated. The preparation of foods made from *Begog* by Dewi Sri group in Selopuro, Batuwarno, has brought this group to win the *Koro* End of Season Forum on October 20 to 21, 2012 in Tegiri Batuwarno.

They displayed a variety of cuisines made from *Koro Begog* such as marinated *Begog* tempeh, *Begog* chips, vegetable *Begog* and green chili soup, *Begog* pastries and *Begog* donuts. "*Begog* chips, pastries and donuts have been sold to the people in our village. Praise to God, they provided an extra income of individuals and groups".

However recently they are facing another problem, not only scarcity of seed, but also a lack of funds when the planting season arrives. The funds are needed to buy the seeds and fertilizer, as well as for *Koro* buying and selling business.

Finally they agreed on organizing savings and loans in the group. Later on, the savings and loans became very useful for the members. Ibu Mulok for example said, "Through my group I could borrow money from KSU Gita Pertiwi to invest in my *Koro* selling business. Praise to God, in less than one year I have reached the return of the investment, and my business runs smoothly," she said with a smile.

Although they have not been able to restore all the species of *Koro* that were once widely grown by the people, Surati and the groups of women farmers who are trying to conserve *Koro* plant have made a significant step. The seed banks will be used as the media to ensure that all the species of *Koro* in Wonogiri will not disappear. Therefore the farmers will be able to obtain high quality seeds easily because the banks have a system to provide and meet the demand of seeds among the farmers, either among the members or among the farmers in Wonogiri or even in a larger scope of Central Java.

Hopefully in the future, not only the velvet bean tempeh will become known, but also all the different species of *Koro* will become the hallmarks of Wonogiri, in addition to *Gaplek* and *Tiwul*.



## Asti Pramudiani

Her full name is Pramudiani Asti, and Asti is the nickname. This 37-year-old woman is already married. In 2012, Asti participated actively in Gita Pertiwi Foundation, Solo. Currently, Asti is entrusted as facilitator of Koro Plant Conservation program in 4 (four) districts namely Tirto Moyo, Batu Warno, Giri Woyo and Giri Tontro districts in Wonogiri regency of Central Java province. Asti's activities to conserve and to develop the function of Koro (jack beans) with women farmers are expected to boost the economy of farmers' family.

