

# LOCAL WISDOM AND BIO-DIVERSITY

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## Background

Speaking about farmers local wisdom as food providers, inevitably our minds must be getting ready for the "two-world" of mind that are dealing at the same time, where local wisdom was faced with "formal knowledge" based on science.

Let us thinking to the past, who found the water buffalo used for plowing? Who found of livestock manure can good used for fertilizer? Who found of turmeric as a cure wounds? Who found of bitter melon that consumed by Sunda tribe people in Indonesia now been patented for the immune system of cancer medicine or HIV /AIDS?

Then, let's move thinking now, why malnutrition or food insecurity happens? As illustration, at my backyard, there are local chicken (hen) with chicks looking for food. The Mother scratching the ground with its claws or scavenge leaves to find earthworms and other food. The uses claws as technology to meet its food. Then, the chicks give a voice with joy and the mother send back voice if found food. It signifies that they are not just a bunch of chickens, but a living institution. The chickens are able to live independently and safely as long no one hurt them (human or other wild animals).

So, which one is cleverer, are we as human or local chicken? If we as a nation are not able to provide food to young generation, does it mean we are weak than local chicken? Does it mean if we always depend by other will the same as the character "broiler chickens" or cattle in a pen? Given all the sources of life with one purpose: to eventually butchered, whether it's for consumption or sell to earn money

## Catastrophic loss of local wisdom

The current trend is a change in eating habit of our society where local food produced our own society (for example rice, cassava and so on) can't compete with the food "modern" like pizza, bread. The question is, whether the agricultural and food industry we progress if its people change their consumption habit and lack of respect for their own food production?

In the world, green revolution was growing in 1943 - 1960's which there had been a big revolution on agriculture, that showed by extent of spread of rice and wheat hybrid seeds in Asia and agricultural technology development that results increased production of revolutionary. In Indonesia, green revolution was starting in 1960s and 1970s, which marked the entry of hybrid seeds, chemical fertilizers, pesticides and agricultural machinery. The green revolution is indeed proven to bring fundamental change to the farmers in relation between another farmers and nature.

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Initially, the green revolution is considered as a "savior" for the agricultural sector, especially in developing countries, which was then characterized by: low productivity, low harvest, low growth and poor farmers. The Era "glory" green revolution had indeed been successfully increased the production. In Indonesia, the time of self-sufficiency was very short only during 1985, 1986, 1988 and 1993. The period of the sweetest have ever happened in Indonesia was 1984 is unlikely to be repeated, where at that time, Indonesia is known by the world as a country that is characterized by self-sufficiency and got an award from the Food Agriculture Organization (FAO). But, after that, Indonesia becomes biggest country of import in the world. (Please check table No. 1.1 bellow).

Table1. Rice Import development of Indonesia (1960 – 2006)

YEARS	Total Import (1000 ton)	Import Proportion of production (%)	Period average Import per year (1000 year)
1960	890	8,68	
1964	1.024	10,44	1.000
1969	604	5,35	392
1974	1.071	7,74	1.051
1979	1.930	10,99	1.539
1984	375	1,76	893
1989	262	1,05	84
1994	876	3,52	290
1995	3.014	9,32	3.014
1996	1.090	3,28	1.090
1997	406	1,30	406
1998	7.000	22,81	7.100
1999	5.014	15,59	5.014
2000	1.800	5,56	1.800
2001	1.400	4,46	1.400
2002	3.100	9,58	3.100
2003	2.400	7,31	2.400
2004	2.000	5,92	2.000
2005	304		304
2006	710		710

The above data shows that progress in production is not followed by a rise farmer's welfare. Progress in production is not driven by the spirit of welfare itself, but because of economic compulsion and fear. Farmers were forced to plant seeds and chemical fertilizers and pesticides, by district level government controlled by the military. Consequently, farmers

became dependent on intake (fertilizers and pesticides) and the chemical seeds produced outside by TNCs (Transnational corporations). Farming systems that used wisely for nature and agriculture that could be said first calculations were made in bargaining farmers with nature, is now changing with the needs of modern state power and driven industrialization. Everything must be paid except their own labor. Hybrid seedlings, chemical fertilizers and pesticides must be purchased from the big stores that channel transnational corporations owned by the nations of the North. Every year, farmer spend to buy a variety of pesticides are considerable: U.S. \$ 1,105 million for the insecticide, U.S. \$ 1.170juta to herbicides, U.S. \$ 840 million for fungicidal. Majority of pesticides are used by rice farmers in Asia. Moreover, farmers also have to pay for the labor, paying wages of land. In another places, there are pay water usage besides irrigation, chemical intake over the threshold. Beside on that, monoculture cropping system also make increase pollution and environmental damage. Loss of natural pest predators, loss of local seeds from the hands of farmers into the hands of transnational corporations, the loss of culture of mutual cooperation led to the impoverishment of biodiversity. Green Revolution leads to missing and shifting biodiversity and local wisdom of farmers.

In social aspect, the loss of local wisdom, local seedlings cannot be calculated with the material. In politically, import food is also very risky. When food insecurity happens, hunger will be repeated. Therefore, restoring food sovereignty is an obligation, through the revitalization of agriculture, followed by the introduction of new cultivation techniques, post-harvest, and processing.

### **Revitalization of Agriculture (back to local wisdom and biodiversity)**

we have to learn from the "local chicken". We should be able to live independently be not dependent on other people, using everything in the existing environment by building systems that are adaptive and innovative. Variety of plants and animals that exist around us more than enough if we could use it. Local culture must be explored to be a source of inspiration, adaptation and innovation.

In my opinion, from a variety of experiences and observations together farmers, there are some agricultural systems must change, to achieve food sovereignty (self-sufficiency). It is time for farmers to return to farming systems technology ancestors who turned out very good, wise, and appropriate and combine with simple technology and adaptation with climate change.

There are several solutions in order to relive ancestral farming systems, suc as:

1. Farmers can re-apply system called sustainable agriculture, integrated farming, collaboration between livestock and farming systems it more useful, efficient and effective. Apparently, the expression of the Batak Toba tribe in Indonesia said "Sinur na pinahan, Gabe naniula, Horas Jolma" is the best solution for the procurement of fertilizer farmers. Natural farming or better known as organic farming is the effort made various circles, especially among civil society (NGOs, farmers' groups, churches) to return to the ancestral farm system, both technically through the use of local seeds.
2. Farmers also have to create food sovereignty through family-based farming systems and creating family food (grow your own food). Very worthy family-based farming systems are eroded by the large plantation system revived. This family-based farming system is also known as the garden house (home gardening). In Batak tribe this system called "Pargodungan" is an environmentally friendly farming system through the approach to the utilization of the potential / natural resources around so that farmers owned regained consciousness to gradually recover from dependence fertilizers and chemical pesticides.

Family-based agriculture movement can also be done in a massive through community movement.

3. Pest control can be done by using the concept of Integrated Pest Management (IPM) is the use of pesticides is not intended to eradicate or kill pests, but more focus to control pests such an extent that under the economic threshold or threshold control. Integrated Pest Management is an approach to pest control methods combined with the biological, cultural, physical and chemical, as an effort to minimize; costs, health and environmental risks. Some of the techniques by farmers is through the creation of Fertilizer Pesticide Alternatives (PPA) are made and processed together and in groups in which the materials were taken from leaves that contain fragrance or perfume that is not favored by pests. Can also be done through crop diversity, better known as intercropping planting (manifold), and rotation of crops. And the use of cover crops. Or also to do with the union plants seen growing season, such as the expression of Batak tribe said “the bird cage and mice have to have to hole”, where to look in how rats and birds not interfere with rice and crops the farmers to control pests without using chemical pesticides.
4. Farmers back to revive a sense of mutual cooperation (especially at the land of Batak called Marsiadapari). Marsiadapari means labor exchange, working together system. It is still necessary during opening new land, harvesting time, build the house, founded the village, a. Marsiadapari more like real labor exchanges in the predetermined object instance, each hoeing fields. Sallary are not given, but share food to those who give lend hand.

## **Conclusion**

Let's learn from history, local wisdom and biodiversity has proved the balance of nature is an element that is able to keep the food security of a nation, maintaining prosperity and food security. Another example of the wisdom of people than can be seen from any tribe in Indonesia like Bali. In Bali, farmers understood preserve dozens of species of fruits with diverse tastes. In the forest area of Banten Baduy tribe people know that there is a cure efficacy in various plant species.

All the problems of farmers are getting worse and worse. All the society elements like Non-Government Organizations (NGOs), academics, religious organizations, universities and government should joint together to solve the problems. The success of developing local wisdom must be accompanied by the willingness of farmers' awareness and growing ideological farmers to want to fight together trough organization to be released from the bondage of "green revolution “ that the welfare of farmers and food sovereignty can be realized.