IRDF Sustainable Agriculture Farm

(A report, March 2012)

1. Concepts of farm development:

1. The following analysis and perspective guide IRDF's sustainable agriculture advocacy;

a. IRDF believes that agrarian reform is central to development of the rural sector in the Philippines and other countries still saddled with a similar old mode of agricultural production. This mode is characterised by concentration of land ownership in the landed gentry, primitive land tenure arrangements such share cropping or leasehold, merchant monopoly and monopsony of inputs and agricultural products respectively, usury. The green revolution superimposed chemical based agriculture on this old farming system and resulted in an intensification of the old forms of unequal relations between the mass of small peasants and the traditional as well as new rural elites. Increased productivity did not improve the lives of peasant families due to the intensification of exploitation – higher land rent, usury and merchant monopoly profits through their control of inputs and farm produce markets.

b. But increased productivity is temporary. The green revolution package of technology has its own inherent limits which had long been reached. As peasants goaded by government persist in the chemical based farming system they encounter bigger problems the solutions of which, coming as they do, from the flawed framework of conventional agriculture only create bigger problems. For instance, the heavy use of chemical fertilizers has resulted in the loss of the soil's capacity to regenerate its fertility, mono cropping increases the risk of pest and diseases and hence crop failures, pesticides alter the balance of the ecosystem by eliminating both pests as well as their predators. In short conventional chemical based farming alters and undermines the natural (biological and ecological) processes that are the basis of agriculture in the first place.

c. Sustainable agriculture is agriculture that departs from the reliance on external (mostly industrial products) inputs in farming and relies on the natural processes in agricultural production. Sustainable agriculture encompasses a wide range of practices and philosophies that, overall, try to bring agriculture into harmony with the natural environmental processes and which overtime enhances rather than degrades agriculture's natural base. It includes simple soil amelioration techniques such as composting and green manuring for nutrient recycling and soil fertility improvement to crop diversification and integrated livestock and crop production systems designed to maintain the soil quality and farm productivity for a long time if not in perpetuity.

d. IRDF believes that sustainable agriculture is specifically applicable for small scale (peasant) agriculture as its emphasis is the maximization of on farm materials (e.g., compost, green manure), brings down cost of production for the poor peasant enables the peasant to increase productivity per unit labour and land over time. In the context of prevailing peasant agriculture in the Philippines, sustainable agriculture complements IRDF's advocacy for fundamental economic and political reforms.

e. IRDF, however, does not equate sustainable agriculture to small scale subsistence farming nor a romanticized view of it. Our bias for small scale farming stems from the fact that this is still the dominant farming system in the country and many others in spite of the advent of industrial agriculture in the developed economies. Sustainable agriculture as it applies to small scale farming is based on a holistic and scientific understanding of the factors as well as processes that affects agriculture. Moreover, peasants, in our context, remain to be the biggest and among the most important sector that is the subject and the object of development.

2. Objectives of the Farm:

Started in June 2010 as a component of IRDF's sustainable agriculture program. The farm is intended to showcase the desirability and feasibility of a sustainable farming system together with its component technologies.

Specific objectives were set as follows:

a. Develop and demonstrate a sustainable farming

system which can serve as a model for coconut based farms in the province;
b. Test specific technologies for sustainable agriculture;
c. Training center for farmer participants in the sustainable agriculture program;
d. Resource center for planting materials; etc.

3. Farm design and components:

a. The farm is an upland farm, (as opposed to paddy devoted to rice), very similar in terrain and other physical properties to small scale coconut based farms that dominate the area. Soil is sandy loam, probably volcanic in origin. The farm is located along the national highway that crosses Sorsogon from north to south, 8 kilometres from the town center of Irosin. It is about 2.7 hectares in area bounded on all sides by full grown mahogany trees. A small gully with a spring runs diagonally across the farm. Used to be part of a large coconut plantation, later sold as small parcels. The new owner then planted the farm to calamansi, cacao and a few other fruit trees and retained some of the coconut trees. A portion of the farm was used as a feed lot for cattle in the 80s and 90s. The farm was loaned to IRDF in 2008 and used as a nursery for coconut seedlings for distribution in a coconut farm replanting project. In 2010 work on the development of the farm as a small scale sustainable agriculture show case began.

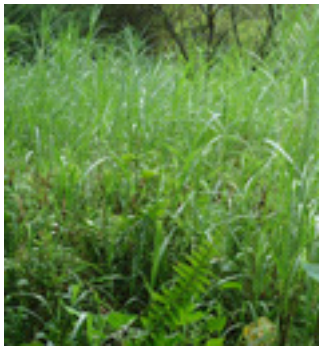
b. As the farm team started work preparatory to production (e.g. clearing the land) a closer look at the details of the physical properties was done. After discussions and taking into account the farm terrain and other properties it was decided that the farm design would be an integrated livestock and vegetable production with a fishpond to be developed in the gully, an area would be devoted to production of seedlings for intercropping in coconut farms, area for forage production and vegetable crop production were also allocated.

c. Goat breeding for meat production is one livestock component. The idea is to make use of the cheaper native does cross these with the

Anglo Nubian then finally with Boer breed to create a triple cross goat for meat production. Triple cross kids will be distributed to farmers to be grown for meat.

d. Swine breeding and production was added as a component to maximise labour and add to farm income and to respond to a popular livelihood activity of the peasant family in the area. It is meant to produce piglets for distribution as fatteners to peasant families and also to finish hogs for the local market.

e. Forage production is connected to the goat breeding first and to crop production. Nitrogen fixing species were chosen because of their nutritive value and for fertilization of the crops.



f. The farming system is intended to maximise the synergy between the livestock and crop components. Forage crops including grasses and nitrogen fixing species are fed goats or harvested as green manure to fertilise vegetable crops. Goat manure is used to fertilise vegetable crop as well as forage stands. This is central in the farm design and is meant to gradually build up soil fertility and farm productivity in the long run.

g. Fish production was incorporated to maximise specific features of the farm.

h. Vegetable production is the major continuing farm activity and is meant to contribute to a sound cash flow for farm operation. Production is meant for the local market which is the main consideration

in the choice of crops aside from adaptability to local condition.

i. Plant nursery: The objective is to produce seedlings of species suitable for intercropping with coconuts as well as forest and commercial species suitable for the area.

4. Chronology of activities and some lessons learned:

a. Land preparation and fencing took up the first 2- 3 months at the start of operation.

b. Vegetable production commenced with trials using a few vegetable species while the farm was still being prepared. Results were not promising (closer to failure). Macro-nutrient deficiency is our hypothesis. The tomato was heavily attack by bacterial wilt.

In June 2011, a second attempt at vegetable production was initiated. Ampalaya, pepper, eggplant, tomato and okra were planted in plots 1x20 meters covered with plastic mulch. Plots were fertilized with coconut peat based organic fertilizer 2 bags (50 kg) and 1 bag goat manure to a plot. Total area planted was 1000 m2. Harvesting was August through October. Total harvest was 1000 kg of assorted vegetables. Sales were a little less than PhP 20, 000. A result of this particular run was very encouraging.

Based on this result the team decided to develop 2 more areas of the farm for vegetable production hence multiplying area devoted to vegetable production three fold. Fencing and preparation of plots in the second area was finish in December and planted with and tomatoes and pechay between the tomatoes simultaneously. The same amount of fertilizer and manure as in the first area was used but with addition of 2 bags rice hull to improve soil texture and aeration. The idea was pechay would be harvested in one month as the tomato begins to flower. This relay cropping system increases land area effectively used for crop production.

The same technique was employed in the third area using using pechay and egg plant. Part of the second area is also planted to squash in individual hills (not plots) to minimize labor. Pechay harvested in the second area is now about 300 kilos or 15 kilos per 20 meter plot. Tomatoes are still bearing fruit and appear promising too in terms of yield. Draw back is the lower market prices of vegetables since it is the vegetable season.

Based on limited experience it would appear that it is possible to offset farm labour costs with vegetable sales so this is the first target. The key is a suitable planting calendar, and some simple tools like a seedling shed during rainy season. Another is a diversified cropping system to spread out risks due to pest, adverse weather condition and market.

The second is to complete transition to organic vegetable farming by next year. The key is the production, on farm, of sufficient biomass to fertilize the vegetable crop.

A vermiculture component is being added to the farm to produce organic fertiliser (vermin-cast) for the vegetable crops.

c. Goat breeding: Does were procured from small raisers in the province and Masbate. Construction of the goat house was rushed after the arrival of first seven animals. Our experience tells us of

the scarcity of does for sale in the area. Hence, criteria for selecting does were disregarded during procurement. Thirty four (34) animals were procured from various sources.

What was assembled as the starting herd of the goat breeding component of the farm was subjected to at least two significant stresses aside from transport to new location. The monsoon was starting as the herd was being assembled. The rainy season extended to March and April and rainfall was significantly more in that year. Second Bulusan erupted covering the area (farm location) with ash. The animals refused to graze ash covered forage and had to be supplied with cut forage from as far as 8 kilometres. This combined with the absence of an anti-stress regimen to weaken many of the animals. Pneumonia set into the herd taking the weak animals first. Half of the herd was lost together with all kids born during that period. In June of 2011, the weather in the area improved. A new feeding regimen (concentrate plus regular feeding of legumes) was introduced. Strategic de-worming is put in place. Many of the remaining does came to heat. Kidding began last October to January 2012. Nine kids were produced in the last season five of which were crosses bred by a purebred Anglo Nubian introduced last year. The next step is to produce meat type triple crosses using a Boer buck as terminal buck.

A management system with focus on nutrition and animal health and breeding techniques is in place and while continuously being developed.

This season we will continue to breed crosses of native and Anglo Nubian and postpone the last phase of breeding triple crosses for meat animals to concentrate on increasing the number of Anglo Nubian upgraded does.

d. Forage crop development: This component of the farming system was started early. A 1000 m2 Napier stand was first established, latter expanded to 2000 m2. A 100 m2 patch of pinto peanuts (arachis pintoi) was also established. One meter wide rows of a mix of Indigofera, Flemingia and Rensonii about 300 meters long was established along the edges of the gully and fences was established. Currently we are establishing rows of guinea grass along the periphery of the paddocks and vegetable area. Mulberry trees were also panted in the periphery. Gliceridia (kakawate) is used for fencing as another forage source. A 1000 m2 area on was side of the farm is shaded and will be planted to Flemingia in the rainy season. Small patches of forage grasses may be established in areas that are unsuitable for vegetable production (e.g. along perimeter fence which is shaded by mahogany trees.

Forage stand seems sufficient for the present number of goats and may be even be sufficient for the projected expansion. Nutrition of the goats and fertilization of vegetable crops are the two reasons for the mix of forage grasses and legumes. This maybe supplemented by planting other leguminous species (e.g. cowpea, mungbean and peanuts in rotation with the vegetable crop.

While maximizing organic matter production on

farm we will tap other sources of organic matter such as the drier facility (bukas mata in Makawayan) that produces carbonized rice hull as waste material and coconut fiber plant which churns out coconut peat and rice hull from rice mills. There are a good number of sources of organic matter in the area but the farm must have its own transportation vehicle to benefit from these. An investment on transport will facilitate the attainment of the objective to raise organic matter content of the soil to optimise vegetable crop production.

e. Swine breeding: Component started with the purchase of 2 pregnant sows from a local source after building of a minimum structure as pens. The sows gave birth after 2.5 months to 12 piglets for

the first and 5 for the second sow. The piglets were fed commercial feeds (from pre-starter to finisher), given iron supplement . These were weaned at 35 days; males castrated at 2 weeks; the whole batch disposed as slaughter animals at 150 days.

Results of this run were poor. Average weight was78 kilos, way below generally accepted standards. Mortality was 4 out of 15.

For the second run one of the 2 original sows was bred. The second sow was culled and a gilt was procured from another farm. The remaining sow dropped a 12-piglet litter. This batch was finished and sold for slaughter after 160 days (10 days more than the first batch. Live weight averaged 90 kilos with one head weighing 106 kilos..

A gilt was also selected from the 10-piglet litter in the first batch and latter bred bringing total sows to 3 for the third run. The first sow dropped a 14-piglet litter; the second aborted (full); the third had a partial abortion with 4 live piglets. Suspect is brucellosis perhaps from the boar (the same boar was used) to breed both sows that aborted. As of this report there are 13 hogs are being finished in the third batch.

Objective is to bring this component to 10-sow level at which level half of the piglets produced will be allocated for dispersal and half for finishing on farm.

f. Plant nursery: A small component of the farm is meant to produce planting materials for distribution to members of peasant organization. At present there are 2000 seedlings of pili, about the same number of mahogany. Other species include, marang, cacao and coffee seedlings ready for distribution.

g. The fish pond culture and vermi-culture components are in their early stages.

5. General assessment and conclusions:

a. The first issue is the path of development of the project in relation to set objectives or the choice of path given our capability to undertake this project. At the beginning high up in the hierarchy of our objectives was resource provision for our organizations (i.e., animal dispersal, piglets particularly, seedlings etc). This explains the prioritizing at the start of the project. Priority was decidedly in the goat and swine components of the project together with forage and linked to t he goat component. Vegetable trial began also very early but as an instinctive act of those involved in the project rather than as part of an overall plan.

b. Vegetable production seems to be a economically viable component as shown in the trial run last year. The first half of the year is the more favourable time for vegetable production but a planting calendar that takes into consideration weather pattern in the area could be designed to enable production whole year round. When the entire area suitable for vegetable production is maximized, sales could easily off set total labour cost.

c. Labour requirement is relatively high because the land can not be worked by machine and has to be tilled manually. Moreover, organic farming requires higher labour input to convert on farm materials to inputs for crop production.. To improve output per unit labour we have introduced a grass cutter to facilitate clearing of crop and forage area for less labour which is now being diverted to actual planting and cultivating of vegetable crop.

d. The transition to organic vegetable farming requires intensive labour applied consistently over a period of time. It takes time and a lot of effort to raise organic matter content of the soil. It takes time too to put together the various components necessary to make the system viable. After 2 and one half years the major components are in place though not fully developed yet but sufficient to carry the system to its full potential. In the absence of sufficient amount of capital to fast track development of the farm system, the only way this could be done is by consistent efforts cumulatively setting the basis for a sustainable system at every step.