Profitable Farming with Integrated Livestock

including Resource Recovery Utilizing EM

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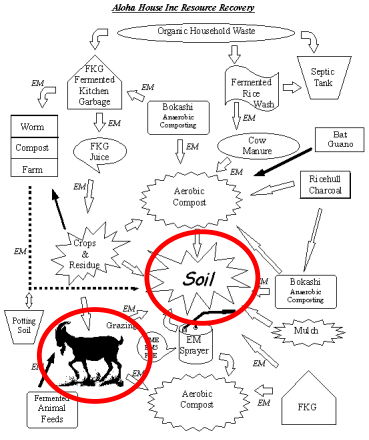
Sustainable Agriculture

Resource Recovery

Utilizing waste as an input for food production



Sustainable Agriculture

Low Cost/
High Value
Food Production

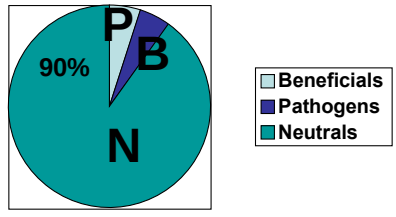
Utilize Waste for Food Production

Grow what you like to eat first, replace some of what you are buying the most of
- Spend 1 year with first livestock system
-Master 1 technology at a time
-Master 2 vegetables at a time

Total Microbial Balance

Pathogens-Destructive-Disease causing
- 5% of total population
- Will dominate with excess wastes

Beneficials
5% of total population
Will dominate when population increased

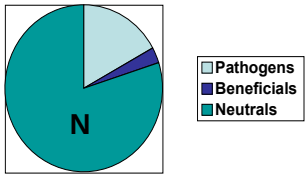


Abused Chemical System

Pathogens
- Higher % of total population
- Dominant

Beneficials
Lower % of total population
Little effect

Results
•Disease
•Infestations
•Poor nutritional end product
•Inefficiencies in resource utilizations
•Toxins are passed on to consumer
•Expensive chemicals to control symptoms

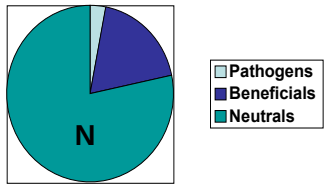


Healthy Sustainable System

Pathogens
- Lower % of total population
- Little effect

Beneficials
Higher % of total population
Dominant

Results
Low Disease
Minimal Insects
Excellent nutritional end product
No Toxins are passed on to consumer
Low input/Low cost



Sustainable Agriculture

Organic Farming, Natural Farming, Nature Farming

- Utilize farm and commercial waste for fertility

WITHOUT Ever using:
- Chemical Fertilizers
- Pesticides
- Fungicides
- Herbicides
- They are all suicides

Natural Farming Models

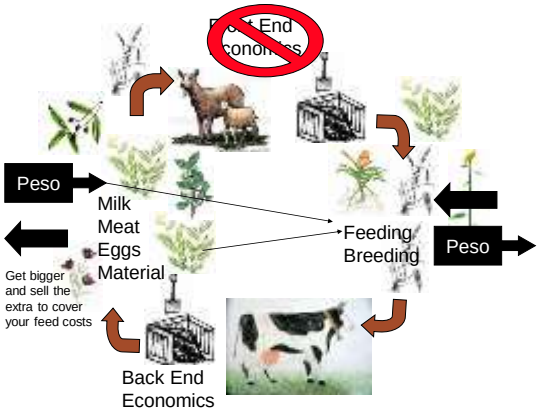
The Golden Rule
Feed the soil and it will feed the plants

The Fundamentals
The 10 Commandments of Sustainable Agriculture

The 10 Fundamentals

- Crop Rotation
- Legume Usage
- Companion Planting
- Composting
- Green Fertilizers
- Mulching
- Cover Cropping
- Minimal Tillage
- Insect Habitat

Integrated Livestock



Maximize the utilization of secondary by-products

Small Piggeries

- Won't make you rich
- Will earn for your family

It is less work than some livelihoods but requires proper management because of the high risk

Sustainable Concepts

Start small and grow into it

Develop your project with the confidence that God wants you
- to grow through the failures
- and thank Him for the successes

EM Hog Fattening

- Feed
- Housing
- Management
- Breeds
- Marketing
- Cost Study

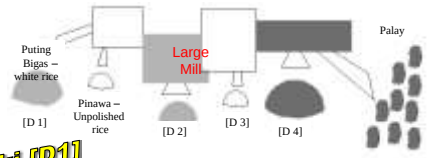
Feed - Grain Terms

Name	Filipino	Waste Source	Carbon/Nitrogen
Rice Hull	Ipa, Labhang	From Dehusking	high - carbon
Crushed Rice Hull	Magaspang	from beltway	high carbon/ some nitrogen
Rice Bran	Darak	from cleaning	some carbon/ some nitrogen
Bran	Tiki Tiki	from polishing	high protein-nitrogen

D1

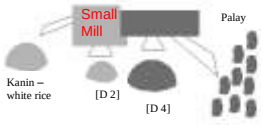
Feed-Grain Selection

You can lose many Pesos without the right feed stock



Tiki Tiki [D1] is the best

Small Mill Remedy



[D 2] is inferior to [D1] but can be supplemented with more fish meal

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Feed-EM Mix

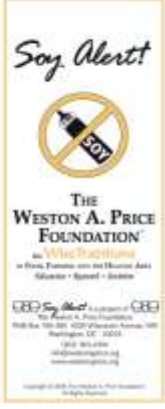
EM helps in livestock!

1. Boosts stomach flora
2. Prevents worms
3. Probiotic
4. Increases digestible protein
5. Minimizes odors
6. Increases fertilizer value
7. Prevents ammonium build up

Pig Protein - Soy w/ legumes

	Crude Protein	Cost P/ 50K sack		Cost P/ Kilo
B Meg Starter	18.00%	1,100.00		22.00
Fermented EM Feed	18.25%	537.29		10.75

Formula	Crude Protein	Weight (K)	Cost P/Kilo	CP Units	COST (Pesos)
Tiki Tiki	14.00%	50.00	9.00	7.00	450.00
Copra Meal	22.00%	8.00	9.00	1.76	72.00
Soy Meal	47.00%	11.00	31.00	5.17	341.00
Gulay	7.00%	11.00	0.00	0.77	0.00
Livestock Lime	0.0%	0.10	8.00	0.00	0.80
Rock Dust Minerals	0.0%	0.02	2.00	0.00	0.04
Charcoal-fine	0.0%	0.24	1.00	0.00	0.24
EM & Molases (each 100ml/10 Liters)		0.20	8.00	--	1.60
		80.56		14.70	865.68



1. High levels of phytic acid in soy reduce assimilation of calcium, magnesium, copper, iron and zinc. Phytic acid in soy is not neutralized by ordinary preparation methods such as soaking, sprouting and long, slow cooking. High phytate diets have caused growth problems in children.
2. Trypsin inhibitors in soy interfere with protein digestion and may cause pancreatic disorders. In test animals soy containing trypsin inhibitors caused stunted growth.
3. Soy phytoestrogens disrupt endocrine function and have the potential to cause infertility and to promote breast cancer in adult women.
4. Soy phytoestrogens are potent antithyroid agents that cause hypothyroidism and may cause thyroid cancer. In infants, consumption of soy formula has been linked to autoimmune thyroid disease.
5. Vitamin B_{12} analogs in soy are not absorbed and actually increase the body's requirement for B_{12}.

Soy Alert!

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in Food, Farming and The Healing Arts
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1. Soy foods increase the body's requirement for vitamin D. Toxic synthetic vitamin D2 is added to soy milk.
2. Fragile proteins are over-denatured during high temperature processing to make soy protein isolate and textured vegetable protein.
3. Processing of soy protein results in the formation of toxic lysinoalanine and highly carcinogenic nitrosamines.
4. Free glutamic acid or MSG, a potent neurotoxin, is formed during soy food processing and additional amounts are added to many soy foods to mask soy's unpleasant taste.
5. Soy foods contain high levels of aluminum, which is toxic to the nervous system and the kidneys.

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Feed-EM Mix

Fish Meal

EM helps in livestock!
1. Boosts stomach flora
2. Prevents worms
3. Probiotic
4. Increases digestible protein
5. Minimizes odors
6. Increases fertilizer value
7. Prevents ammonium build up

Pig Protein - Some FAA w/ Fish Meal Low CP Gulay

	Crude Protein	Cost P/ 50K sack		Cost P/ Kilo
B Meg Starter	18.00%	1,100.00		22.00
Fermented EM Feed	17.99%	487.83		9.76

Formula

	Crude Protein	Weight (K)	Cost P/Kilo	CP Units	COST (Pesos)
Tiki Tiki	14.00%	50.00	9.00	7.00	450.00
Copra Meal	22.00%	7.00	9.00	1.54	63.00
Fish Meal	47.00%	9.00	20.00	4.23	180.00
Gulay	7.00%	4.00	0.00	0.28	0.00
Livestock Lime	0.0%	0.10	8.00	0.00	0.80
Rock Dust Minerals	0.0%	0.02	2.00	0.00	0.04
Charcoal - fine	0.0%	0.21	1.00	0.00	0.21
Fish Sliage (FAA)	33.0%	2.00	6.00	0.66	12.00
EM & Molases (each 100ml/10 Liters)		0.20	8.00	--	1.60
		72.53		13.05	707.65

Feed-EM Mix

FAA
Walang Fish Meal

EM helps in livestock!
1. Boosts stomach flora
2. Prevents worms
3. Probiotic
4. Increases digestible protein
5. Minimizes odors
6. Increases fertilizer value
7. Prevents ammonium build up

Pig Protein - FAA no Fish Meal - Low CP Gulay

	Crude Protein	Cost P/ 50K sack		Cost P/ Kilo
B Meg Starter	18.00%	1,100.00		22.00
Fermented EM Feed	18.00%	395.81		7.92

Formula

	Crude Protein	Weight (K)	Cost P/Kilo	CP Units	COST (Pesos)
Tiki Tiki	14.00%	50.00	9.00	7.00	450.00
Copra Meal	22.00%	7.00	9.00	1.54	63.00
Fish Meal	47.00%	0.00	20.00	0.00	0.00
Gulay	7.00%	4.00	0.00	0.28	0.00
Livestock Lime	0.0%	0.10	8.00	0.00	0.80
Rock Dust Minerals	0.0%	0.02	2.00	0.00	0.04
Charcoal - fine	0.0%	0.18	1.00	0.00	0.18
Fish Sliage (FAA)	33.0%	15.00	6.00	4.95	90.00
EM & Molases (each 100ml/10 Liters)		0.20	8.00	--	1.60
		76.50		13.77	605.62


Erin Nixie Farm
Forage Chopper

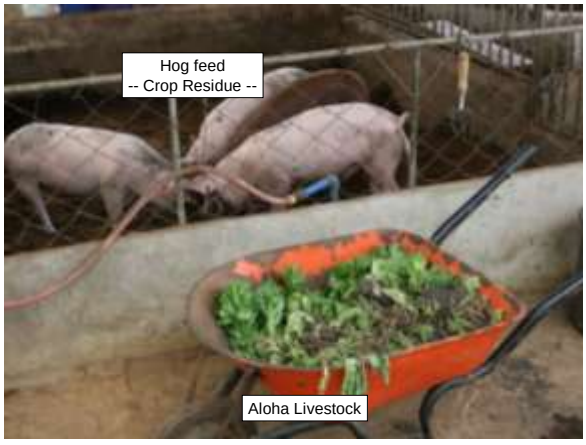

Erin Nixie Farm
Fermented Feed Drums


Fermented Feed Drums
Fermented Feed Drums
Fermented Feed Drums
Fermented Feed Drums


Erin Nixie Farm
Fermented Feed Drums


Erin Nixie Farm


Hog feed
Feed-EM Hog Fattening
Vegetative Feed
The following have been used successfully at Aloha House.
Depending on crop residues will lower feed costs.
Fermenting Greens- Legumes are best, Peanut tops, Kakawati, Ipil Ipil, Flamengia, Rinzoni, Kudzu
no Sitao [bawal], no Cassava leaves (dahon bawal)
Snacking Greens- Komote, Kang Kong, Coco leaves, Grasses, clover, Alugbati, Carrot tops, Maize stalks, Peanut tops
no Sitao [bawal], no Cassava leaves (bawal ang dahon)
Snacking Fruits and Vegetables – Tomato, Cucumber, banana, watermelon, papaya, upo chopped
Aloha Livestock



Feeding for Developmental Stages

Period	EM Feed	Crop Residue Cut and Carry	Daily Amount Of EM Feed
0 to 45 days [To weaning]	Pre Starter	None	Ad Lib [continual till 5 pm]
46 days to 18 Kilos	Starter	12:00 noon	Ad Lib [continual till 5 pm]
18-50 Kilos	Grower	3 x daily	1-2+ Kilos EM Feed
50+ Kilos	Finisher	Ad Lib	1 Kilo
Sow	Maintanence	3x	2-3 Kilo
Sow	Buntis	Ad lib	3 Kilo
Sow	Lactating	Ad lib	3 Kilo + ½ kilo/piglet

Transition Feeding

	Period	EM Feed	Commercial Feed
L.B.M. Zone	day 1-5	0%	100%
	day 6-10	25%	75%
	day 11-15	50%	50%
	day 16-20	75%	25%
	day 21 onward	100%	0%

Hog Housing

Bedding of the Pig Pen

Materials Description:

Sawdust -preferably the coarse rather than the fine dust, but a mix will work fine
- in warm area, preferably coconut sawdust to make the bedding cool
- in cold area, preferably forest sawdust to make the bedding warm

Rice Hull Charcoal - Carbonized (Uling) not ash [any ground charcoal works]
No raw rice hull (hindi ipa)

Soil Preferably sandy loam or garden soil but clay soil is ok

Salt Rock salt or sea salt

Sawdust	=	10 Sacks
Sandy Loam	=	2 Sacks
Or Clay Soil	=	1 Sack
Charcoal	=	1 Sack
Salt	=	½ kilo

Aloha Livestock

Hog Housing

Aloha Livestock

Hog Housing

Aloha Livestock

Hog Housing

Aloha Livestock

Hog Housing

Aloha Livestock

Hog Housing

Bedding of the Pig Pen

Sawdust	=	10 Sacks
Sandy Loam	=	2 Sacks
Or Clay Soil	=	1 Sack
Charcoal	=	1 Sack
Salt	=	½ kilo

Procedure:
Make small batches and layer the components after they are mixed. Make a mixture of 10 sacks sawdust, 1 soil etc. then spread out and start next batch
Spray 1 liter EM Extended 1:100
Continue the process till the 1-meter hole for bedding is filled

- The Charcoal is a harboring agent for the microbes, very important for long term stability, health and odor control of the bedding.
- Sea Salt helps provide trace minerals and the soil is actually eaten by the animals.
- You can also mix Bokashi in each layer at 1 kilo/10 sacks sawdust.

Aloha Livestock


Hog Housing
Aloha Livestock


Hog Housing
Aloha Livestock


Hog Housing
Aloha Livestock


Hog Housing
Layering
Aloha Livestock


Hog Housing
Aloha Livestock


Hog Housing
Aloha Livestock


Hog Housing
Aloha Livestock


Hog Housing
Only Harvest
Fertilizer, never change bedding
Happy Pig
8 year old bedding
Aloha Livestock


Hog Housing
Aloha Livestock
EM Fermented Manures

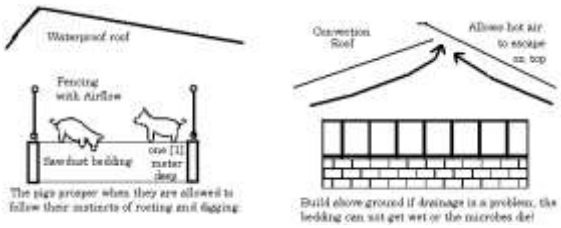

Hog Housing
Cleaned by Chicken
EM Fermented Manures
Aloha Livestock


Hog Housing
feeder
drinker
feeder
feeder
drinker
feeder
feeder
drinker
feeder
Aloha Livestock


Hog Housing
Drinker
Drain
Aloha Livestock

Housing-EM Hog Fattening

- Make the roof leak proof with good airflow below. Bedding can not get wet. You must not build over low areas where water will leach into the bedding. The bedding is 1 meter deep and lined with hollow block to prevent the pigs from digging under fencing.



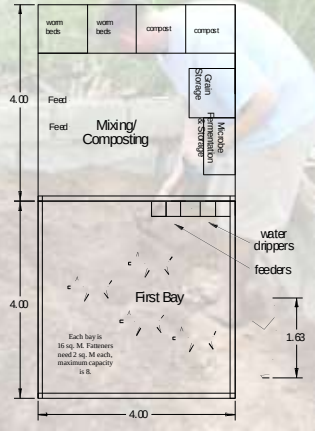
Either roof design works as long as rain does not enter. They need help staying cool and we no longer spray them or wash them with water. EME is sprayed weekly to control odors. Also water is treated with EME 1:1000 and feed is fermented with EM. TWO [2] SQUARE METERS ARE REQUIRED PER PIG FOR FATTENING, OVER CROWDING DOES NOT WORK. Average weight is lower and it causes disease .

TWO [2] SQUARE METERS ARE REQUIRED PER HOG FOR FATTENING, OVER CROWDING DOES NOT WORK

Housing-EM Hogs

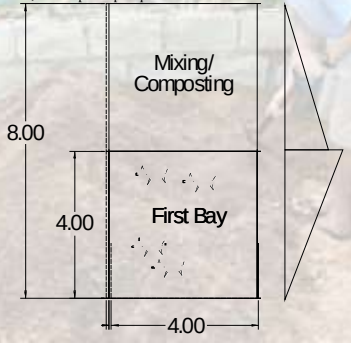
- First round fatten only 4 hogs, start small and gain expertise. Vegetable production will sustain family, fatteners will supplement income sporadically. As manure increases, fertilizer will be sufficient for a family of four to six, plus some surplus for sale.

The manure from 4 months of production for 8 pigs can average 6 cubic meters. That is 300 pales [20 Liters]. Example: Eight fatteners can produce enough fertilizer for 10,000 sq. Meters of watermelon. That soil can then produce 1200 pcs organic watermelon averaging 4 kilos each. Off season we can fetch 20 pesos/kg. That is P50,000.00 gross income from pig manure!



Housing-EM Hog Fattening

As success is achieved, expansion can be done in modules. Each bay can fatten 8 hogs and bring a net profit of P1,000.00-2,000.00 with a five bay build out potential of P80,000.00 pesos per quarter.



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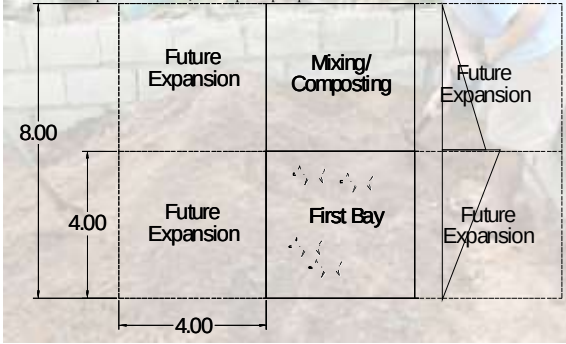


Breeds-EM Hog Fattening

- Good genetics is more important than good breeds
- Land raise
- Large white
- Landraise/LargeWhite (hybrid vigor)
- Durok males (females-poor furrowing sows)
- Look for professional growers
- Avoid pointy nosed native blood

Problems - EM Hog Fattening

- Pig Problems
  - Never feed sitao, it is toxic to pigs
  - Use ipil ipil sparingly - kunti kunti -skin/hair loss
  - Ipa/labhang (rice hull) is not best in the bedding
  - Coco lumber sawdust is best
  - Gemelina sawdust is toxic to pigs
  - Bad odor is from wet bedding or bad feed. Do not feed with kitchen/ restaurant food.
  - Do not feed your livestock with darak, use only Tiki Tiki.
  - Fish meal and copra meal are high protein.
  - 10% copra meal is the maximum in feed, more will cause LBM (diarrhea).

Problems - EM Hog Fattening

Problema	Possible Cause	Solution
Foul Odor	Bad feed	Mix with out kitchen waste, use soy meal not fish meal
	Wet bedding	Dripper drainage, roof leaks, house in low area, flood area
	No beneficial microbes	Use EME in bedding, feed and water
Rashes on Pigs	Sitao in feed	Quit feeding sitao, try other legumes
	Too much kakawati, Ipil 2	Quit feeding kakawati, Ipil Ipil
	Rice hull (ipa) in bedding	Use sawdust lang
	Mites	Isolate, coat with oil / aloe vera
Slow Growth	Bad genetics	Get professionally bred hogs
	Bad feed mix	Use high protein feed stock and gulay
	Stress	Over crowding, give 2 sq. M each pig
Diarrhea	Bad feed	Ferment with EME one week, 10% copra meal only
	Too much soil/shallow	Remove soil - Add sawdust
Flies	Wet bedding	Dripper drainage, roof leaks, house in low area, flood area
	Bad feed	Mix with out kitchen waste, use soy meal not fish meal
	No beneficial microbes	Use EME in bedding, feed and water

After much clinical research, experts have now identified the top four leading causes of premature death…

After much clinical research, experts have now identified the top four leading causes of premature death…

Marketing - EM Hog Fattening

- NCCC/ Market etc.
  (minimums)
- Direct Sell
  (value added products)

Cost Study- EM Hog Fattening

				Total Feed Cost		1,433.27 P
				Delivery costs		167.00 P
				Piglet Cost		2,500.00 P
					TOTAL COST	4,100 P
SALE PRICE		Break	Profit = SALE PRICE - TOTAL COST			
		Even Weight	KGS 70.00	KGS 80.00	KGS 90.00	KGS 100.00
75.00	P/Kilo	53 K	1,267 P	2,016.73	2,766.73	3,516.73
80.00	P/Kilo	49.9	1,616.73	2,416.73	3,216.73	4,016.73
85.00	P/Kilo	46.9	1,966.73	2,816.73	3,666.73	4,516.73
90.00	P/Kilo	44.3	2,316.73	3,216.73	4,116.73	5,017 P

A Case Study – Natural Pork

- 16 Hogs - Fatteners
- Cover 2 farmers salary
- Spend ½ hour per day

Feeding, caring (no washing)

- 3 hours per week (mixing feed)

= 13 man hours per day for cash crops – gulay not palay

A Case Study – Natural Pork

- If 16 Hogs works then would 160 work better?
- So just add a zero, move a decimal point, multiply for projections, right?
- WRONG

Nothing is sustainable without careful growth through skilled hands on management.

Why do you think the Chinese live over their work and never take a vacation?

Hog Log

Hog Log

Hog Log

Found good supplier

Hog Log

At 70 Kilos
Fermented feed=1kilo
Crop residue=2-3kilos

Hog Log

At 100 Kilos
Fermented feed = 1-2 kilo
Crop residue = 3-8 kilos

Hog Log

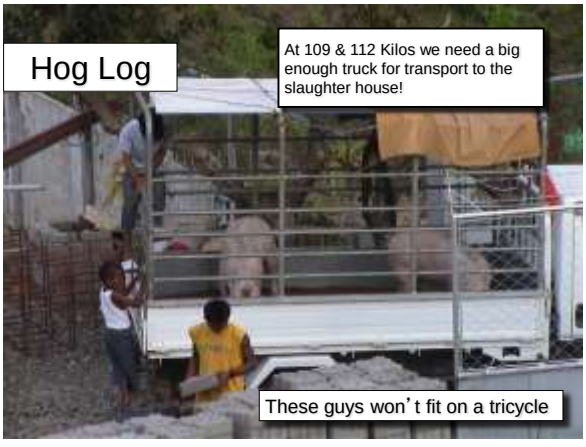
At 112 Kilos
Our only problem is getting a big enough truck to transport

Hog Log

Butcher brings slaughtered animals in the morning

Hog Log

Hog Log



Hog Log

Hog Log

Hog Log

Hog Log


Farrowing


Farrowing Unit
Hagedorn Piggery
Cement Flooring
20cm. bedding only


Pick
Winners


Farrowing
Natural environment

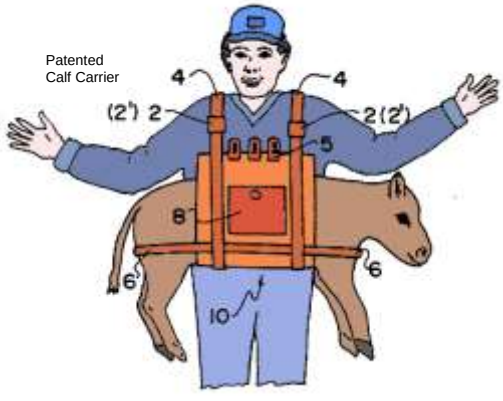

EM Livestock
1. Cow
2. Goat
3. Chicken
4. Hogs
5. Pets
6. Ducks
7. Tilapia
8. Bees
9. Ostrich
10. Horse
11. Carabao

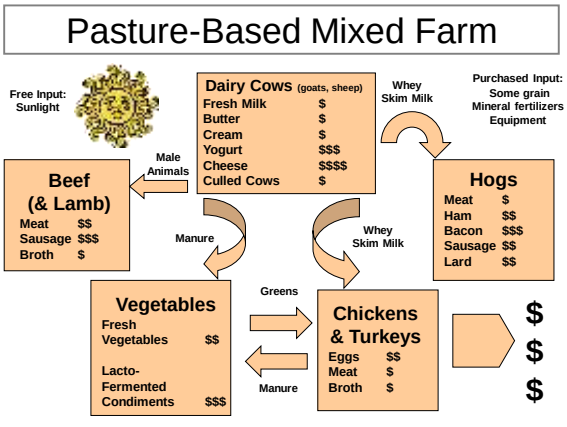

Cattle
Natural environment
Brownie


Cattle
Simple cow shed with sawdust floor
Natural environment
Brownie


Cattle
Brownie
Natural Feeds

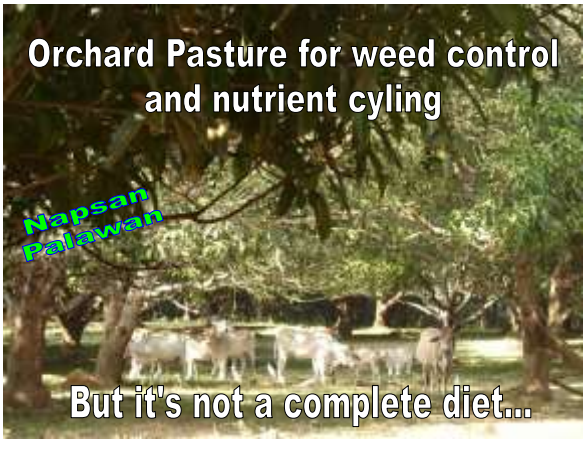

Cattle
5 weeks
Brownie and Red
Natural Feeds


Patented
Calf Carrier


Pasture-Based Mixed Farm
Free Input: Sunlight
Dairy Cows (goats, sheep)
Fresh Milk $
Butter $
Cream $
Yogurt $$$
Cheese $$$$
Culled Cows $
Whey Skim Milk
Purchased Input: Some grain Mineral fertilizers Equipment
Male Animals
Beef (& Lamb)
Meat $$
Sausage $$$
Broth $
Hogs
Meat $
Ham $$
Bacon $$$
Sausage $$
Lard $$
Manure
Whey Skim Milk
Vegetables
Fresh Vegetables $$
Lacto-Fermented Condiments $$$
Greens
Manure
Chickens & Turkeys
Eggs $$
Meat $
Broth $
$
$
$


Cattle
Milk the Females
Cull the Males 1+ yr. old
2 weeks
Natural Feeds


Cattle
Natural Feeds


Orchard Pasture for weed control and nutrient cyling
Napsan Palawan
But it's not a complete diet...


Napsan Palawan


Napsan Palawan
Signs of nutritionally deficient forage

Cattle

Cattle

Cattle

Cattle

Nutritional Ledger	Grain Fed Beef	Grass Fed Beef
Added Hormones	Usually	No
Fed Antibiotics	Usually	No
Fed Grain	Yes	No
Omega-3 Fatty Acid	0.1	1.22
Omega-6 Fatty Acid	3.1	1.08
CLA	0.21	1.46
Beta Carotene	41	87
Vitamin E	1.3	5.3
Vitamin A	10	52
Total Fat	High & Saturated	Proper Balance
Flavor	Bland/Pasty	Original and Bold
All Other Factors	Fair	Ideal
E. coli Danger	E. coli Danger	Minimal

Cattle

Value Added Processing