

Food above all

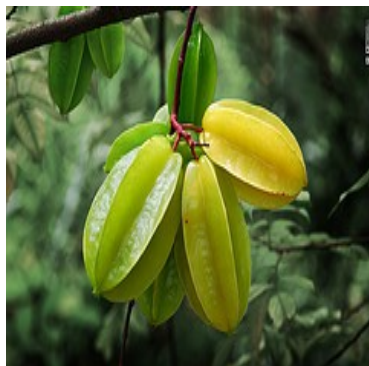
AGRIMANIPUR

Vol. 1, Issue 1

Nilakuthi Food Park: Going to shape food industries?



Meeting with a Star: *Shubhra*



Underutilised crops by *Nanita*



Ngakra farming by *Basudha*

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Editor viewpoint

We are in the era where pressure of food production strains every nation due to high population growth and shrinking arable land. We are no exception. Challenge lies in everyone of us; to produce more from limited amount of resources. Answer would be challenging and often coupled with unwanted offshoots. For instance, use of fertilizer, though spikes yield, spoils the land in long run. Nearly 50 % of the world population experiences the pang of hunger; forget about malnutrition! Fundamental cause points to low productivity or inefficient utilisation of land. Besides this, loss during transportation and storage contributes significantly to dishearteningly low reach-out to people. Given the fact that improved production of agricultural crops plays a crucial role in alleviating hunger, poverty and malnutrition, immediate attention is needed to be paid. So the mantra lies in sustainable improvement in agricultural yield.

Amidst this troubling situation, there exists a wide disparity between countries, states and regions in terms of agricultural productivity. Yield of

cereal of India is half to that of China and almost one third of US. Such big difference could result from varieties of reason. Where is the failure? Whom to blame? Difficult to point. Our aim is to address such issues by understanding and mitigating the problems through dialogue, discussion and dissemination. One of the issues that vex the common farmers is communication gap. An intriguing research article by Shanta and Purnima (2009) in *Annals of Library and Information Studies* revealed that knowledge and information required by farmers in Manipur for their agricultural activities are largely unmet. Either information can't be reached or they simply can't understand. Also flow of information is often unidirectional. What's wrong with the govt. machineries where tons of money were earmarked? Has money been drained somewhere? We believe information is the key and farmers are empowered by equipping them with information.

Solving staggering needs of farmers and other stakeholders necessitates view from different angles. There is no use of abundant supply of materials (seeds,

implements, manure, etc) when they don't have capacity to purchase. Here comes the role of credit. On another front, an employee in public sectors and MNCs are entitled to healthcare and other insurance policies. Who looks after when they ill? What about the farmers? Though they are doing the most noble job, they are discouraged due to lack of security. Farming is, therefore, compelled to be a secondary option. On the whole, nation suffers.

AgriManipur, a brainchild of Society of Agriculture, Food and Innovation, dreams. We hope readers can enjoy and believe that magazine will act as platform for farmers, food processors, entrepreneurs and directly reaching their voice to experts and policymakers in constructive manner and at the same time, farmers will also be benefited by getting timely, reliable and motivating views and advice.

We believe, with reliable information, can emerge successful despite the turbulence and malaise.

“Our aim is to address such issues by understanding and mitigating the problems through dialogue, discussion and dissemination”

AgriManipur

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Society for Agriculture, Food and Innovation, Wankhei Konsam Leikai, Imphal

HAPPENINGS

Governor inaugurated Agri Fair 2011

April 18, 2011. Three days CAU Agri Fair 2011 on the theme 'Agricultural Technologies and Farm innovations for prosperity of the north east region' was inaugurated by Manipur governor His Excellency Gurbachan Jagat Singh at the CAU Iroishemba Imphal. Manipur Govern-

nor reiterated the importance of earning surplus income from agriculture to enhance the investing capacity. This, he said, could be effected by providing quality seeds, irrigation, power, machineries, fertilizers, affordable credits besides appropriate trade and price policies. Among the promi-

nent dignatories present in the inaugural function includes Rajya Sabha MP, Shri Rishang Keishing, Lok Sabha MP Dr. T. Meinya, agriculture Minister Ph. Parijat and Vice-Chancellor of CAU Dr. SN Puri.



Chinjak festival in action

International Chinjak Festival @chinjakfestival.com

22nd April–1st May, 2011. 10 days International Chinjak (Food) Festival organised by The Innovative Youth Society, in association with Dept. of Tourism, Govt. of Manipur, was successfully concluded with excitement and hope. It was claimed to attract more than 35000 visitors and estimated Rs. 7.5 lakh was sold over 10 days. Four interna-

tional communities from China, Thailand, Vietnam, South Korea, Tibet and Saudi Arabia besides numerous locals stalls were participated in the 10-days food extravaganza. Managing director of the organising committee, Kh. Athouba puts his vision, "To preserve, promote and produce all the traditional and indigenous foods

of Manipur and the North Eastern states at large." Athouba is also planning to develop Chinjak Valley (a comprehensive tourist centre endorsing various local handloom and handicraft products along with the taste of various Chinjak) in 3 years down the line. Bravo!

Chinjak (Food) Festival
"To preserve, promote and produce all the traditional and indigenous foods of Manipur and the North Eastern states at large"

Bihar to shake agriculture from top

April 26, 2011. In one of the historic moves of Bihar CM Hon'ble Nitish Kumar, Cabinet meeting on agriculture was held. This reflects the top priority given to this all time neglected sector in a big way once again. The cabinet headed by CM consists of eighteen ministers from

18 agricultural relevant departments. Mr. Kumar also directed to form 14 committees to tackle various issues. Government has earmarked Rs. 848 crore for the 2011 - 2012 to bolster various schemes.

(Source: Hindu April 27, Bihar sets up its agriculture cabinet)

State Agri 'thumps down' to hybrid seeds

July 2, 2011. Deputy Director (Soil Chemist) of Agriculture Ph. Rajendro Singh expressed that dept doesn't encourage cultivation of hybrid seeds. Citing reasons for this, he stated that they extract the fertility of the soil to a great extent. Even seeds can't be used for further cultivation. However in low laying water logged

area, due to extremely low productivity, cultivation of hybrid seeds are taken up on experimental basis. PAC 807, PAC - 401 and recently Hybrid-813 are procured by the agriculture dept.

Source: Poknapham

Special courts to check food adulteration

January 9, 2011. Each district in the state will have a special court to check food adulteration and to punish the accused. Speaking to Hueiyen Lanpao, a food safety officer of the state Health Department said that businessmen are selling food products by adding substances which are harmful to health and may even be fatal. State Food Safety Department is taking up measures under the Prevention of Food Adulteration Act 1954 and Prevention of Food Adulteration Rules 1955. It is for this reason that special courts to deal with food adulteration cases will be set up in all districts. He further said that many shops in the state sell adulterated food.

Source: Hueiyen Lanpao

Plant Health Clinics to be set up

August 23, 2011. In an inauguration function of plant health clinic at divisional agriculture office at Lamlai, State agriculture Minister Ph. Parijat announced that plant health clinics will be set up in all the districts of Manipur. He also stated that one clinic is already started working at Agriculture head office at Sanjenthong. This was the second one in the state.

Source: Hueiyen Lanpao

Contd. on page 15

**HOT
TOPIC**

Nilakuthi Food Park: Is it going to shape food industries?

'Food Park' was buzzing the circles of food entrepreneurs for quite a long time. Long wait is almost over now. Highly publicized Food Park at Nilakuthi is crystallising at last. Sigh of relief! Food park was poised as a succour to the state much needed food processing infrastructure. Food processors/ entrepreneurs are invited to assemble together and unleash their prowess. Last minute high profile call for entrepreneurs in a glossy front page of local newspapers either indicates its intention to start with pomp or inability to attract entrepreneurs. Many question remains: Will it crumble like any other govt set up? Why govt is hunting for potential entrepreneurs? Will it provide the facilities much needed by industries? Will it propel food processing forward and, if yes, how? How will it integrate state food resources? And many more...

Concept of Food Park

Food park or any other park has a simple philosophy - aggregating business entities in a single roof by providing/ sharing some facilities which are common to them thereby reducing fixed and running cost. A great idea - sharing for cost effectiveness. In food park, the food processors are located close by so they can enjoy the common facility installed in the park. For example, running cold storage individually is an expensive exercise for small and medium enterprises. Moreover, sometimes, single factory may not use its maximum capacity optimally. These limitations can be countered by sharing. With proper synchronisation, this may work wonder for SMEs. Some of the facilities which can be shared include weighing bridge, plastic blowing ma-

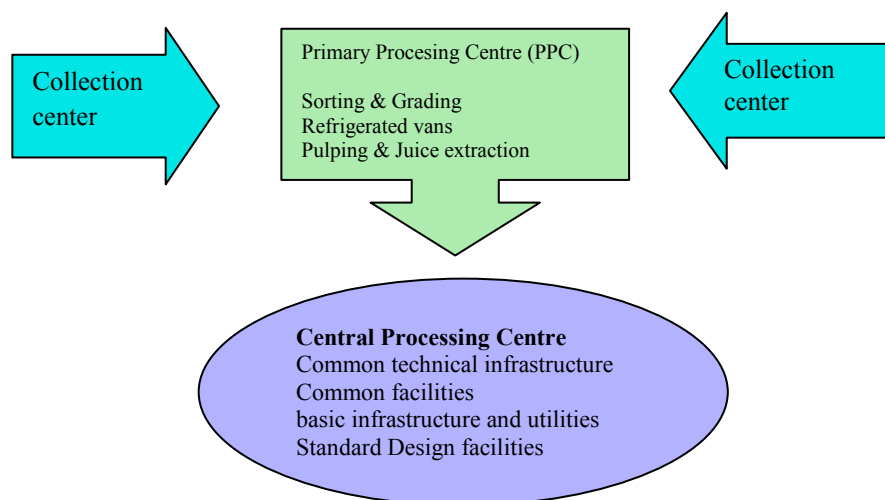
chines, electric transmission, boiler, etc. Food park also help farmers by overriding the middlemen which they traditionally rely on and thus reducing the cost of transaction. It also narrows down the not-so-reliable multiple channels to a few reliable, regulated and transparent routes. It may be particularly useful for developing countries where SMEs are dominant and cost a critical factor.

Food Parks in Manipur

As per MoFPI reports, there are two foods given financial supports. First one is MATA Food processing park. Though call Food Park, it doesn't have the attributes of food park since no other factories/ entrepreneurs other than MATA itself are operated. It has two plants; ginger oil extraction plant designed by CSIR Lab, Trivandrum and multipurpose fruit processing plant designed by CFTRI. MATA fruit processing unit boasts of having non-thermal juice concentration system, funded under PATSER scheme of DSIR, but faced with problems and commercial production has not been started so far. But the good news is in 2009 it tie up with Shimla Hills Offering Pvt. Ltd. And since then started producing canned pineapple slices on limited scale inspite of various hurdles.

Nilakuthi food park is another one funded and managed by state govt. under Manipur Food Industry Development corporation.

"Many question remains: Will it crumble like any other govt set up? Why govt is hunting for potential entrepreneurs? Will it provide the facilities much needed by industries?"



Mega food park concept



**Bridge connecting food park and NH37:
When to complete?**

Nilakuthi Food Park

Nilakuthi Food Park was conceptualised by NABARD under Rural Infrastructure Development fund. Food Park at Nilakuthi is a 30 acre food processing facility located on the national highway just 5 km from the Imphal centre. It will house numerous facilities like cold storage, warehouse, quality control labs, packaging, tool room, power and water supply, sewage treatment, etc. It can accommodate around 60 units with area about 600 sq. M for each unit. The total project cost is estimated to be Rs 3172.4 lakh out of which 13 crore is from NABARD's RID fund and the remaining Rs. 18 crore is provided by state govt under special plan assistance. However, due to steep price escalation the cost had to be re-evaluated and in doing so, state govt requested planning commission of india to sanction another Rs. 3. 36 crore. PCI generously accepted for utilisation during 2009-10 fiscal year but unfortunately the fund was lapsed. Now the ball is the court of ministry of food processing. The whole story underlines the delaying tactics of state govt resulting to suffer the completion of food park.

Manipur Food Industry Development Corporation (MFIDC) under the department of commerce and industries is the nodal agency to implement and operate the food park project while UP based Construction and Design Services, Jal Nigam took up the construction work. However many state govt depts. like (PWD, electricity dept, IFCD) are involved in primary and secondary part of the project like bridge construction, road construction, street light, electrification, etc. This is also one of the reasons completion is always a dream. Besides 'lack of urgency' by the state govt in release of fund, various reasons are attributed to delay in



Cold storage

the completion of food park. Delay in release of fund led to delay of completion and the price of the material was escalated in the process. So, new fund had to be poured which itself is the worst nightmare of MFIDC.

Hurry in publicity in the excitement to capture media was also seen. Ex NABARD (Imphal centre) DGM Sonamani reported in November 2006 (Sangai Express) that 33% was almost completed and expected to complete in March 2007. Quite contradictory, in another news report, it was reported that construction started only in March 2007 and target was kept in August 2009. Again, govt promised to keep it in order by July 2011. That too failed and extended till December. Now we have to hope for the best. Our field investigation revealed many improvements have been made and there is a great hope that December dateline may be a reality.

How it will works

The present focus is certainly on completion of the construction. So apparently, the modus operandi has so far not been well thought; how the day to day management will be accomplished? What is source of finance? If fee/ rental has to be collected, will it be sufficient to meet variable cost (like maintenance) and fixed cost (like salary)? Besides this, will units maximally use the facilities? If not, can fixed fee be demanded? The shabby situation of the Takyel industrial estate is a glaring example (though style may be slightly different). Unique



Warehouse

mechanism may be necessary to usher the full advantage of the park. There is a need for proper synchronisation of facilities to avoid overlap or glut or under-utilisation. This is particularly true for cold storage where maximum utilisation is necessary from technical and financial point as well.

Entrepreneurs mind

The greatest crux so far with regard to the Nilakuthi park is on how to incorporate/ accommodate entrepreneurs to the park and system. How many existing/ potential food processors/ entrepreneurs have fall in line? As per our record, only 1/2 entrepreneurs have deposited money to book their space. Though the park looks attractive, few factors are likely to drag their interest. Deposit fee for the space is Rs. 5.2 lakh. Given the condition that most of the entrepreneurs, excepting a few, are at the level of cottage and micro level (not even small!), hefty sum of Rs. 5.2 lakh is difficult to bite. On the other hand those successful small/ large scale food entrepreneurs, have their own factories and shifting place may not be so comfortable.

The space they purchased will be their own; that means mortgage-able. This is a good one but again not friendly to entrepreneurs. Pakka construction is a highly cost intensive exercise. So the need for loan may arise. Can a land of Rs. 5.2 lakh be collateral of Rs. 20 lakh? Normally in most cases banks demand collateral value much larger than loan amount that too land value evaluated by conservative valuers. Bank also normally demand third party security. In the essence, concept of the park in the existing format may not be lucrative for entrepreneurs.

Given the size of the market, entrepreneurs may not be so interested in gambling over the risky exercise of food business. Frankly speaking, most of the entre-

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Helsnam Nanita

Underutilized crops of Manipur: Importance and Prospect - H. Nanita

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Introduction:

The crops, which are neither grown commercially on large scale nor traded widely, may be termed as *underutilized crops*. At the best, these crops are cultivated, traded and consumed locally. The popularity of these crops varies from crop to crop and locality to locality. The merits of these underutilized crops include their easy growth, hardy in nature or ability to withstand under adverse soil and climatic conditions. Most of them are very rich sources of vitamins, minerals, and other nutrients such as carbohydrates, proteins and fats. With greater pitch of publicity and value addition, these underutilized crops have the potential for future commercialization, wider use and, possibly, in reducing malnutrition. Since the Indo-Burmese region including Manipur is located at the confluence of the two tectonic plates, the region had been the 'Centre of Origin' of a variety of angiosperm

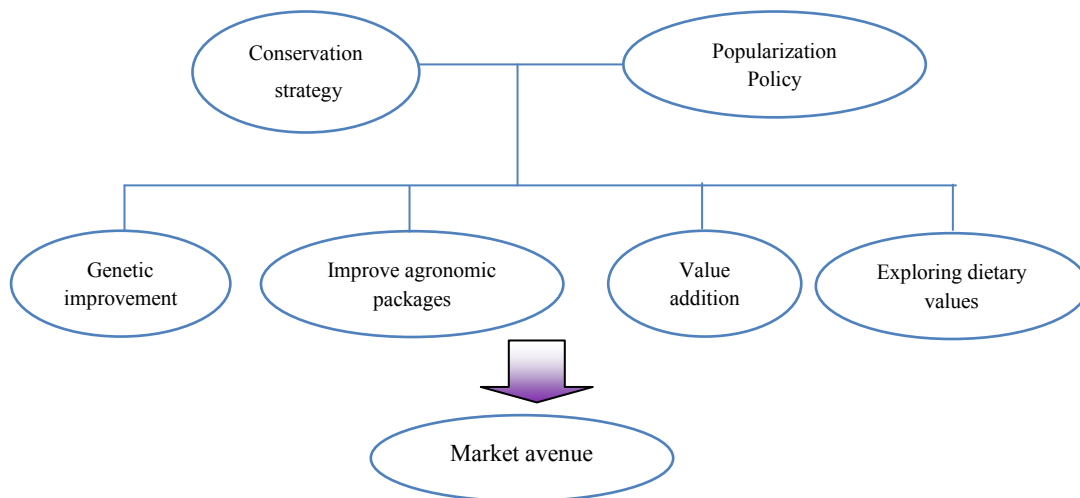
plants and Manipur abounds in extremely rich genetic resources and is one of the richest reservoirs of genetic variability and diversity of different horticultural crops of which many are underutilized.

Scope:

Manipur has a geographical area of 22327 sq. Km. and it lies between 23.8° N to 25.05°N latitudes and 93.03° E to 94.78 ° E longitude comprising nine districts. About 90% of the total area is covered by hilly terrain and the remaining 10% comprises the valley. The size of cultivated area is only 9.41% of the total geographical area and of this total cultivated area 52% is confined to the valley therefore the pressure on land in the valley is thus quite conspicuous. Under these circumstances, development of horticulture is the only option for optimizing returns through judicious utilization of land and other resources to ensure sustained remunerations. A

survey by the NABARD in collaboration with the Department of Horticulture and Soil Conservation, Manipur have identified 277064 ha as potential areas for growing different horticultural crops. Out of these potential areas only 15.5% are explored and 84.5% are still to be brought under horticultural plantations which fall on hill districts of the state. The average productivity of the horticultural crops is not even half of the national productivity. Grain farming proves unremunerative in the undulating topography of hilly tracts, which is deprived of irrigation facilities. Despite the government's endeavors to uplift the region, vast potential remains unexploited. It becomes possible to exploit the untapped potential of the region through location specific horticulture and subsequently expanding the area under horticultural crops. This production of underutilized crops can also be increased through adoption of scientific technologies.

"The average productivity of the horticultural crops is not even half of the national productivity."



Sl. No.	Local Name	Common Name	Scientific Name	Type of Plant	uses
1.	Asi heibong		<i>Ficus hispida</i>	Tree	As Fruit and medicinal plant
2.	Awa kege	Physic nut	<i>Jatropha curcus</i>	Shrub	As medicinal plant and bio-fuel
3.	Awa phadigom	False corriander	<i>Eryngium foetidum</i>	Herb	As spice
4.	Chak hawai	Rice bean	<i>Phaseolus calcaratus</i>	Herb	As Pulse and vegetable
5.	Chaning	Job's tear	<i>Coix lacryma-jobi</i>	Herb	As Cereal and decorative item
6.	Chantrook	Shepherd's purse	<i>Capsella bursa</i>	Herb	As Spice and vegetable
7.	Charuyen		<i>Volvareilla esculenta</i>	Fungus	As vegetable
8.	Ching charot		<i>Ophiopogon wallichianus</i>	Herb	As Spice and vegetable
9.	Ching heiyen		<i>Antidesna acidum</i>	Tree	As Fruit
10.	Elaichi Achouba	Greater cardamom	<i>Amonum subulatum</i>	Herb	As spice
11.	Eshing ikaithabi		<i>Neptunia prostrate</i>	Herb	As vegetable
12.	Eshing kambong		<i>Zizania latifolia</i>	Herb	As Vegetable
13.	Fakchet		<i>Alternanthera sessilis</i>	Herb	As vegetable
14.	Fakpai		<i>Polygonum posumbu</i>	Shrub	As spice
15.	Feija		<i>Wenlandia glabrata</i>	Tree	As vegetable
16.	Haona	Lemon grass	<i>Cymbopogon citrates</i>	Herb	As medicinal plant
17.	Heibi		<i>Meyna laxiflora</i>	Shrub	As Fruit
18.	Heibong	Fig	<i>Ficus carica</i>	Tree	As Fruit
19.	Heiboong		<i>Garcinia anomala</i>	Tree	As Fruit
20.	Heikak	Water chestnut	<i>Trapa bispinosa</i>	Herb	As Fruit



Chaning



Heibi



Heikak

Cont. from page 7Underutilized crops of Manipur: Importance and Prospect



<http://www.assamesecutsine.com>

Fakchet

Poor recognition of these crops in horticulture promotion programmes.

- Improper institutional arrangements and limited role played by financial institutions in setting up of agro industrial and horticulture based industrial units.

Strategies for the development of underutilized crops:

- Genetic erosion is very serious problem in non-traditional fruits and many land races will become extinct if these are not conserved soon. Domestication of potential wild species through homestead cultivation should be encouraged for avoiding over-exploitation from natural sources.
- Under-utilized horticultural crops are mainly grown/ managed under traditional farming systems by diverse ethnic commu-

nities. Increased focus to document indigenous knowledge is required. Such emphasis will help tap value additions as much of native diversity is put to multi-purpose uses.

- There is a necessity to make the farming community aware about the nutritional importance of unexploited horticultural crops, use of mass media like radio, TV, news paper and other printed literature can play an effective role in creating awareness among the farmers.

- For proper exploitation and better economic returns from underutilized horticultural crops emphasis should be given on developing processing units in this area. It would also provide employment opportunities to the rural folk.

- The yield and quality of these

crops are poor which hamper the productivity. Hence, special efforts are needed on the part of the research scientists to develop the suitable location specific package of practices of different horticultural crops including the development of superior varieties, and conservation of genetics resources.

- Under-utilized horticultural crops are nutritionally rich and adapted to low input agriculture. More R & D efforts in these will add substantially to food security.

- Limited number of species needs to be targeted for detailed research and development in under-utilized horticultural crops by national programmes focusing on their conservation and use. Research needs to be geared up both on species/crops important for subsistence farming and those



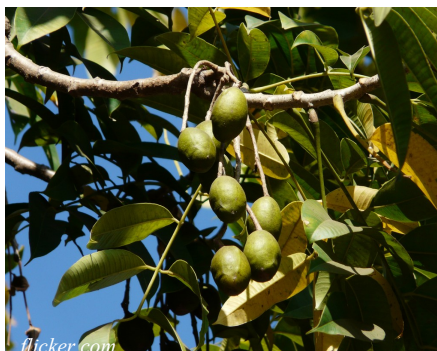
Fakphal

21.	Heikru	Indian goose berry	<i>Phyllanthus embilica</i>	Tree	As Fruit and medicinal plant
22.	Heimang		<i>Rhus semialata</i>	Tree	As Fruit and medicinal plant
23.	Heijaang		<i>Citrus medica</i>	Tree	As Fruit
24.	Heining	Hog plum	<i>Spondias pinnata</i>	Tree	As Fruit and medicinal plant
25.	Heinoujom	Carambola	<i>Averrhoa carambola</i>	Tree	As Fruit and medicinal plant
26.	Heirangkhoi		<i>Amoora rohituka</i>	Tree	As Fruit and medicinal plant
27.	Heiribob		<i>Citrus macroptera</i>	Tree	As spice
28.	Heiri khagok	Bael tree	<i>Aegle marmelos</i>	Tree	As medicinal plant
29.	Heirit		<i>Ficus cunia</i>	Tree	As Fruit
30.	Heithoom		<i>Citrus paradise</i>	Tree	As Fruit



<http://www.banana-tree.com/Product/AEGLE-marmelos-Bael-Fruit>

Heiri-khagok



flicker.com

Heining



flicker.com

Heinajom

exhibiting potential to become commodity crops.

Conclusion:

Manipur is bestowed with the most congenial climatic conditions for the production of various underutilized plant. The increase in area and production of this plant can provide many fold employment opportunities in agro-based industries, packaging, storage, preservation, canning and transportation. Thus there is an urgent need to take up the improvement programme of this plant with collection, conservation, multiplication of quality planting material, standardization of agro-techniques and technology for processing and value addition.

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“Manipur is bestowed with the most congenial climatic conditions for the production of various underutilized plant”

Dear farmers, food processors, nutritionist, ...torchbearers of Manipur

Do you have you story to share?

If yes, please feel free to write. Your success stories or setback centered around agriculture, food and nutrition are most welcome no matter how big or small. If required we will try to solve through our experts' network. You can write in any languages. We will translate and publish.

Know your Food

Parkia roxburghii (Yongchak)



Source: <http://gardenbreizh.org/photos/karlostachys/photo-281532>

Common name:
Tree beans
Yongchak (in Manipuri)

Botanical name:
Parkia roxburghii

Type:
Plant (Tree)

Family:
Leguminosae

Sub-family:
Mimosoidea

Habitat:
Commonly grown in the hills

Use:
Classical relishing legume in Manipuri society; use as main component in vegetable curry and salad

Medicinal use: NA

Source:

Nutritional information

Food Chemistry, Vol. 62, no. 4, pp. 477-481, 1998

	<i>Parkia roxburghii</i>	
	Pod	Ma-ture kernel
Moisture (%)	6.7 – 8.4 ^a	10
Protein (%)	12.1- 18.8 ^b	28.8
Fat (%)	1-15.5 ^b	33.5
Ash (%)	6.1-7.4 ^a	5.7
Carbohydrates and fibres (%)	52.9-71.1 ^a	22.0
Energy (Kcal)	342-426 ^b	505

^a decrease with maturity

^b increase with maturity

Lemanea australis (Nungsham)



An old woman selling *Nungsham*

Common name:
Nungsham (Manipuri)

Botanical name:
Lemanea australis

Type:
Algae

Family:
Rhodydophyta

Habitat:
Grown under the rocks in flowing river during winter in Manipur

Use:
Dried, fried, roasted; as an adjunct with other dish. Gives prawn like flavour.

Medicinal use:

Used in the treatment of diabetes.*

Source:

Nutritional information

World Journal of Dairy and Food Sciences, 6 (1): 27-34, 2011

*Assam University Journal of science and Technology: Biological and Environmental Science, Vol. 7. No. 3, 63-66, 2011

<i>Lemanea australis</i> found in Imphal river	
Moisture (%)	76.24±0.88
Ash (%)	26.22±0.76
Crude fiber (%)	0.79±0.4
Protein (%)	26.22±0.76
Lipid (%)	1.83±0.02
Total carbohydrate (%)	26±1.36
Total free amino acids (%)	15.8±0.03
Potassium (mg/100 gm)	363.05±0.5
Sodium (mg/100 gm)	474.78±0.2
magnesium (mg/100 gm)	8
Calcium (mg/100 gm)	111.3±0.53
	112.26±0.4
	9

mean± standard deviation

Prospects of *Clarias magur* farming in Manipur - Ch. Basuda



Ch. Basuda is a scientist working at ICAR Research Complex for NEH Region, Manipur Centre . She is actively involved in developing techniques for scaling up the production indigenous fishes and training to farmers. She can be contacted at devibasud@yahoo.com

Aquaculture has assumed the status of fast expanding industry in many countries in the world. India is basically a carp culture country; the indigenous and exotic carps account for bulk of production. However, interest in the culture of catfish increases rapidly in recent years due to their high market price and hardy nature. Catfishes are easily distinguished by their smooth and fewer scale bodies. It lives in fresh brackish water and marine habitats. It

can also be found in marine habitat. Some of the important catfishes found in Manipur are *Wallago attu* (Sareng), *Aorichthys* sps (Ngaten), *Mystus* sps (Ngasep), *Ompok bimaculatus* (Ngaten), *O. pabda*, *O. pabo*, *Clarias magur* (Ngakra), *Heteropneustus fossilis* (Ngachik) . They are famous for their restorative properties and generally marketed in live state. Hence, these fishes are commonly known as 'Live fish'.

These Clariids are a group of fishes which, by virtue of the presence of accessories respiratory organ, can thrive well in fallow derelict swampy waters normally considered as low oxygen environment conditions. This ability of Clariids to feed and grow in the virtual absence of dissolved oxygen, coupled with fast growth, an omnivorous diet and generally high resistance to stress, make them of particular interest in aquaculture. Its importance gained momentum since 1985,



***Clarias magur* brooders**

Clariid catfishes are grown by small-scale and large-scale fish farmers in 30 countries with a total production of over 3 00 000 t, which was valued at nearly US\$400 million in 2006. Currently, cultured clariid production contributes nearly 60% to the total global production (FAO 2009). Twenty countries in Africa, Asia and Europe produce at least 100 t per annum.

Among the catfishes *Clarias* is one of the most important aquaculture species in Asia. *Clarias magur*, commonly known as Ngakra in Manipur. It has good market price and fetches a higher price than the major carps, owing to its good taste, nutritional and medicinal value. Attempts have been made for farming of this fish by few progressive fish farmers in Manipur. However due to inadequate supplies of seed culture of *Clarias*, production is still very low. In recent past, *C. magur* seeds were available in many places in Manipur during



Hormone injection

monsoon and post monsoon months i.e. August-October. The young one of these fishes were collected in large number from paddy fields or water logged, low lying areas by employing indigenous fishing devices. The collected fishes were stocked and cultured with carps in ponds. Collection of seeds from wild is unreliable, time consuming and uneconomical. To overcome this constraint, induced spawning is the only option for supply of quality seeds for *Clarias* farming.

Recently, ICAR Research Complex for NEH Region, Manipur Centre and a few progressive farmers produced *Clarias* seeds for culture by artificial breeding using hormone injection such as ovaprim, ovatide, wova-FH, etc and stripping.

Breeding

C. magur exhibits sexual dimorphism and differentiating secondary sexual characters are shape of muscular papilla at vent re-



Stripping of *Clarias magur* female

gion. Males have elongated papilla, while females with round button shaped papilla. The fecundity of this species is very low, though the maximum fecundity recorded was 37720; fishes with a fecundity range of 15000 to 20000 per kg are common. The breeding period falls during June to August

The *C. magur* can be breed by inducing hormones @ 0.8 ml/Kg body weight to female. The latency period between injection and stripping of female is 16 hours at 28° C. The male fishes are held separately in a tank or container before artificial fertilization. Before the female are stripped, male fish with gravid testis are to be sacrificed, and testes are taken out and macerated in normal saline (0.9% NaCl). The spermatozoa become inactive in this medium and this extract can be maintained for few hours in refrigerator. After 16 hours of latency period female fish is stripped and ova are collected in to dry

Contd. on page 16

Meeting with a Star: Subhra Hanjabam



Subhra Hanjabam

“My social & moral responsibility towards society gave me strength to my materialize my dream”

Subhra Hanjabam, a multifaceted personality, takes food processing to her heart. Master in nutrition, Subhra started her journey with a single pan and no budget at all. Her formidable courage makes her today a household name of indigenous food products. Her enterprise, Meira Food, is also a symbol of women empowerment. The industry is exclusively run and managed by women only. Please find out more about her and her mission.

1. AgriManipur: When and how was the enterprise established?

Subhra Hanjabam (SH): Meira Foods was established in the year 2004 under the aegis of Action for Community Transformation Manipur (ACT-M). Under the Sponsorship of MSME, Takyelpat conducted a training on Food and vegetable preservation training. After completion of the course most of them expressed their inability to state a unit. When I invited them to work with me out of 30 participants, 5 of them turn up. That was how we started products, trying out new thing and variety to the market.

2. AgriManipur: What attracts you to take fruit and vegetable processing as your profession?

SH: After my completion of Master Degree in Food & Nutrition in the year 1990 from Banasthali Vidyapith, Rajasthan, I tried many govt. jobs. But fortunately or unfortunately that was the period when govt. banned most of the Govt. recruitment. After appearing many of the written examinations and interview results never come out. I served in Private college (Wangkhem Mani Girls College), participated in water analysis project work, joined All India Radio as Casual Announcer, and joined NGO actively. None of the above jobs satisfied me except working in NGO (I work 13 years with NGOs). That's when I learned

working with people and social activities. I was interested in economic improvement of women, solving of the crucial problem of society like unemployment and industrialist process for improving state economy. My educational background and availability of fruits and vegetables help to select processing of fruits and vegetables as my ultimate profession.

3. AgriManipur: What drives you to run this business for long time when many of other industry perish?

SH: My social & moral responsibility towards society gave me strength to my materialize my dream. My girls (who are working with me) untiring support and sharing faith in me make me to face all the difficulties. One esteemed customer guided us to produced more variety of products of their taste. My family and friends supported us in all the possible way. I am thankful all of them.

4. AgriManipur: Would you give a brief picture of balance sheet of your business?

SH: We started on business with zero investment. Whatever I have in kitchen we utilised it. Whatever we received after the sale of our product was first investment. We reinvest whatever we earn and expanded our business.

5. AgriManipur: As a food processor and businessman what kind of difficulties were faced/ are facing? Technical, financial and emotional?

SH: As we have endless opportunity, difficulty also follows. But belief in the saying “Where there is a will there is a way”. Being a life member of Association of Food Scientist & Technologist, India (AFSTI), Manipur Chapter, members of Association extend all possible help when ever any Technical difficulty is there. My girls, friends and family are there to support me when ever I feel helpless. I am not happy with financial institutes which makes so difficult to receive any financial help. Friends and family always supported whenever I'm in need.

6. AgriManipur: What kind of supports are needed for the welfare of small scale entrepreneurs?

SH: For the welfare of small Scale entrepreneurs, financial institutes should come forward to support us those who are genuinely working and has future in it. Government should provide more of technical service to these industries. Basic needs like electricity and water should be provided uninterrupted. Some incentive

and welfare scheme for the workers to meet their family needs are also imperative.

7. *AgriManipur*: **What problems are being faced by small scale food processors in general ?**

SH: Till now no large problem are faced except fluctuations of price due to frequent bandhs & blockades.

8. *AgriManipur*: **What in your opinion is the future of food**

processing and its business in the state?

SH: With improvement in its quality, packaging and diversification of products according to market demand, there is a huge scope to accelerate the business and move beyond the state.

9. *AgriManipur*: **As you know today's youth are less bothered about entrepreneurship or hard earned profession but instead choose short cut route to earn**

their livelihood. This may affect the society. Do you have any suggestion to reverse this trend?

SH: Earning by short cut method always disturb the integrity of a person. It gives more of ill effect to the society rather than helping them. I am creating an environment to earn by working hard. Being in production, I am not only helping to meet personnel requirement but also the economy of a society; creating a sustainable society, for today and for ever.

AgriManipur: Thank you very much. Hope you have great future and enlighten our generation.

CoooooNECT

Hope this will connect you with useful information you are longing for. This information hub intends to help you in advancing your enterprises/ business making use of it.

NATIONAL HORTICULTURE BOARD

What is it?

NHB is an autonomous society set up by Govt. of India in 1984 with a mission to promote horticulture sectors by infusing technologies and capabilities along the horticultural chain. Its objectives are multifold which includes *development of hi-tech commercial horticulture in identified belts, development of integrated, energy efficient cold chain infrastructure for fresh horticulture produce, transfer of technology to producers/farmers and service providers such as gardeners, farm level skilled workers, etc*



National Horticultural Board

What schemes it has?

- Development of Commercial Horticulture through
- Production and Post-Harvest Management of horticulture crops
- Capital Investment Subsidy Scheme for construction/expansion/modernization of Cold Storages/
- Storages of Horticulture Produce
- Technology Development and Transfer for Promotion of Horticulture
- Market Information Service Scheme for Horticulture Crops
- Horticulture Promotion Service

Most of the the shemes gives back-ended capital subsidy upto 20% - 33%

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preneurs are in the cottage / self- help group level, so jumping directly into bigger landscape may be technically and financially unwarranted.

Besides the infrastructure provided by the food park, there are other issues that seriously affect the business of larger degree. Cost of transport is excessively high. For example, the cost of transporting canned pineapple from Imphal to Delhi is almost twice to that of Guwahati to Delhi. Raw materials also become uncompetitive when it reach Imphal; thanks to geographical accident and unofficial tax. On the other side, sea change is required from horticulture perspective. Unreliability of fruits growers is also one good reason that affects the processing. Unless growers produce what processors wants, a win-win situation appears remote. Cost also needs to be brought down to make it competitive which on the other side demand use of technology and GAP (Good Agricultural Practices). In the present context, there is wide gap between the growers and processors. State fruits procurement grid would be help in fixing the issue facing by food processors.

Plus points

There are also many positive points that may overshadow painful points. Envisaged dedicated electric line would be an attracting factor to pull entrepreneurs. However, excepting few industries like milling and bakeries, the fruit n vegetable processing industries requirement of electricity is very limited



by the size and nature of the business. 24 x 7 electric supply will certainly help the food industries. Packaging facility is the need of the hour. Packaging machines including PET Blowing machines at the park will certainly help the investors. It will not only lower the cost but will ease the business by narrowing down physical distance which is now facing by food processors. Quality control lab can assist in taking preventive measures from impending dangers and will also able to enhance the reputation of the products.

Concluding remarks

Nilakuthi Food Park will be a landmark point in the state from industrial perspective. But this should not only be in physical sense. Action is what is required. Investors

and buyers alike were puzzling how to come to Manipur and take advantage of state food resources. This may no longer be the story. This will be a gateway for future investors and buyers in the state.

There are bigger challenges ahead. Maintenance is more taxing than just erecting buildings. To avoid future collapse, operational mechanism needs to be worked out well in advance. Success is important. Nation will not only praise; Manipuri denizens will be injected with 'we can do' attitude. Is it not that we all need?

FEW FACTS

- Schemes for Food Parks under 10th five year plan was reformulated as Mega Food Parks Scheme (MFPS) for 11th five year plan. 15 MFPS have been approved.
- MFPS aims to raise the processing of perishable (fruits and vegetables) from existing 6% to 20% and to increase the global food trade from 1.5 % to 3%.
- Rs. 1000 crore Patanjali Food and Herbal park, claimed to be biggest in the world, is starting soon. It is located at Haridwar, UP and promoted by yoga guru Baba Ramdev.
- Entire North East has only one Mega food Park, North East Food Park. The Central Processing Centre (CPC) of the Mega Food Park will be housed in 58.41 acres of land located at Nathkuchi Village near the Tihu township of Nalbari District in Assam. The site is only 90 Kms from Guwahati City.

Contd from page 3..... **HAPPENINGS**

Arum cultivation takes over paddy in Wainem

August 9, 2011. With cultivation of Arum turning out to be more profitable than paddy, the farmers in Wainem village of Senapati district have taken to Arum cultivation in a big way. The hill cliff of the village where traditionally Paddy used to be cultivated have been taken over by Arum today with farmers earning a minimum of Rs 46,000 from cultivation of

Arum over one Sangam of land. Secretary of Rani Gaidinliu SHG Majasilui explained that initially womenfolk of the village formed 10 SHGs and as beneficiaries of the World Vision of India members of these SHGs started cultivation of Arum over 4 Paris of land with the seeds provided from the side of World Vision of India. Majasilui further informed

that around 1200 to 1300 kg of Arum is normally produced from one Sangam of land and from selling them at the minimum rate of Rs 30 per kg, one can earned around Rs 46,000 very easily.

Source : Sangai Express

Do you know?

Root of arum is used for colds and swelling (inflammation) of the throat. It is also used to promote sweating and to loosen chest congestion. However its safety is an area of concern. Some varieties are poisonous.

Source: www.webmd.com

Chilli variety brings pride to Ukhrul village

August 31 2011: Around 5 tonne of Chillies have been produced in the 2nd Hathei Phanit (Chilli festival) which was held at Sirarakhong village with the stated objective of promoting a variety of Chilly grown in the village which is known for its taste and look. Sirarakhong village is located around 60 kms from Imphal, close to the road connecting Mahadeva and Pfuzero via Tolloi under Ukhrul district.

It is said that the cultivation of the particular Chilli variety found in the village started since the days of yore by the forefathers of the villagers and they still continue with the practice reaping rich dividend year after year. Unfortunately, major chunk of the production could not reach the markets at Imphal on account of the deplorable road condition.

In such a situation, the Chillies

produced in Sirarakhong village is taken to neighbouring Nagaland and other States including Assam where there is great demand. During the 2nd Hathei Phanit which was underway at the village today, many people who understand the quality of the Chilli variety turned up from different parts of the State to make purchases of the Chilli and its products made from it to their hearts' content.

Source : Sangai Express



Intelligent Advisory System for Farmers (IASF) launched

August 11 2011: Intelligent Advisory System for Farmers (IASF), an expert advisory system for answering queries related to farming activities carried out in North East States of India, was launched at Agriculture Directorate, Sanjenthong today. The launching function was graced by Agriculture Director L Palendro, CAU Department of Agronomy Prof L Na-

bachandra and Agriculture Joint Director O Nobo as chief guest, guest of honour and president respectively. Through internet, the IASF would provide expert advice regarding farming activities and associated problems. The system supports languages like Manipuri, Assamese, Mizo, Bangali, Khasi etc. The system would also provide a platform for knowledge sharing by ex-

perts, students and farmers through discussion forums. Experts can also send alerts and useful information to farmers from time to time. The IASF was installed with monetary support from the Ministry of Communication and IT, and necessary data and information would be uploaded by the Centre for Development of Advance Computing.

Source : Sangai Express





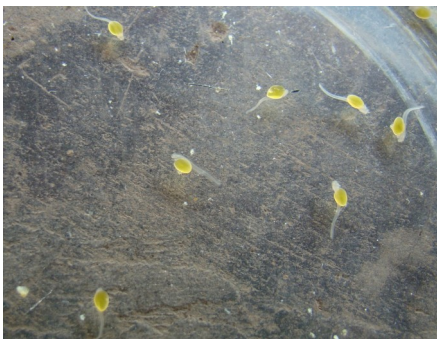
Fertilized eggs



Fertilized eggs clung to hyacinth roots



C. magur hatching in well aerated FRP tank



4 days old embryo of *C. magur*



Well prepared nursery pond for *C. Magur*



C. magur fingerlings



tray. Before fertilization milt (spermatozoa) extract medium is activated by addition of fresh water, sperms become active and motility of sperms can be confirmed in microscope. Sperm preparation thus obtained will be sufficient to fertilize the ova stripped from 2 females. Sperm extract is sprinkled over the ova and gametes are mixed gently using with a bird feathers and allowed to 2 to 3 minutes for fertilization and washed with fresh and clean water. After repeated washing with fresh water fertilized eggs are transferred to hatching trays for incubation.

After transferring the fertilized eggs to the flow through incubating system, a feeble flow of water was provided to maintain good water quality. The water temperature between 27 and 28°C was maintained for development and hatching.

Nursery rearing:

Clarias fries requires very shallow water level 2-3 ft, because at deeper water they could not swim to surface for gulping air hence died. *C. magur* is better suited to these shallow waters. In addition to their suitability for culture in derelict waters those catfish can also be cultured in proper well-managed shallow ponds. Pre-stocking nursery pond preparation included the removal of aquatic weeds and predatory fish followed by liming and fertilizations with organic manures and inorganic fertilizer.

Recommended stocking density of *Clarias* is 50,000/ha. However, in Thailand the stocking density of *Clarias* is very high 60-100 fingerlings/m² (6-10 lakhs/ha). *C. magur* easily trained to feed on artificial feed such as fish

meal mixed with rice bran, low grade meat, etc. Fish offal, slaughter house waste also accepted. Growth is commensurate with feeding. On an average the conversion rate with recommended feed is 1.5-2.0. Under favourable condition *clarias* is expected to attain weight upto 130g in six months of growing period.

Production potentials of *C. magur* in Manipur have been amply assessed by a series of field demonstration in different local conditions. In monoculture production were ranging from 1,000kg to 7500kg ha in 4-12 months. A mixed culture demonstration of *clarias* with *Anabas* and *Heteropneustes* at a stocking rate of 25,000/ha in a derelict swampy pond of 0.04 without supplementary feeding and fertilization.

From aquacultural point of view, Manipur is endowed with vast water resources that can be use for *Clarias* production.

Given the fact that *ngakra* is a highly valued fish relishing among most communities in Manipur, their mass and cost effective production is the need of the hour. Large scale breeding had been quite a big challenge among famers and scientists. The present effort is a move in this direction. Mass production will not only help the farmers achieving good economic return but will also encourage economic independence and ensure nutritional security for the state.

WORLD FOOD DAY

World Food Day was established by FAO's Member Countries at the Organization's Twentieth General Conference in November 1979. The date chosen - 16 October - is the anniversary of FAO.

The Food and Agriculture Organization (FAO) of the United Nations celebrates World Food Day each year on 16 October, the day on which the Organization was founded in 1945.

The objectives of World Food Day are to:

- encourage attention to agricultural food production and to stimulate national, bilateral, multilateral and non-governmental efforts to this end;
- encourage economic and technical cooperation among developing countries;
- encourage the participation of rural people, particularly women and the least privileged categories, in decisions and activities influencing their living conditions;
- heighten public awareness of the problem of hunger in the world;
- promote the transfer of technologies to the developing world; and
- strengthen international and national solidarity in the struggle against hunger, malnutrition and poverty and draw attention to achievements in food and agricultural development.

THEMES

2010 - United against Hunger

2009 - Achieving Food Security in Times of Crisis

2008 - World Food Security: the Challenges of Climate Change and Bio-energy

2007 - The Right to Food

2006 - Investing in agriculture for food security

2005 - Agriculture and intercultural dialogue

2004 - Biodiversity for Food Security

2003 - Working together for an International Alliance Against Hunger

2002 - Water: source of Food Security

2001 - Fight Hunger to Reduce Poverty

2000 - A Millennium Free from Hunger

1999 - Youth Against Hunger

1998 - Women Feed the World

1997 - Investing in Food Security

1996 - Fighting Hunger and Malnutrition

1995 - Food for All

1994 - Water for Life

1993 - Harvesting Nature's Diversity

1992 - Food and Nutrition

1991 - Trees for Life

1990 - Food for the Future

1989 - Food and the Environment

1988 - Rural Youth

1986 - Fishermen and Fishing Communities

1985 - Rural Poverty

1984 - Women in Agriculture

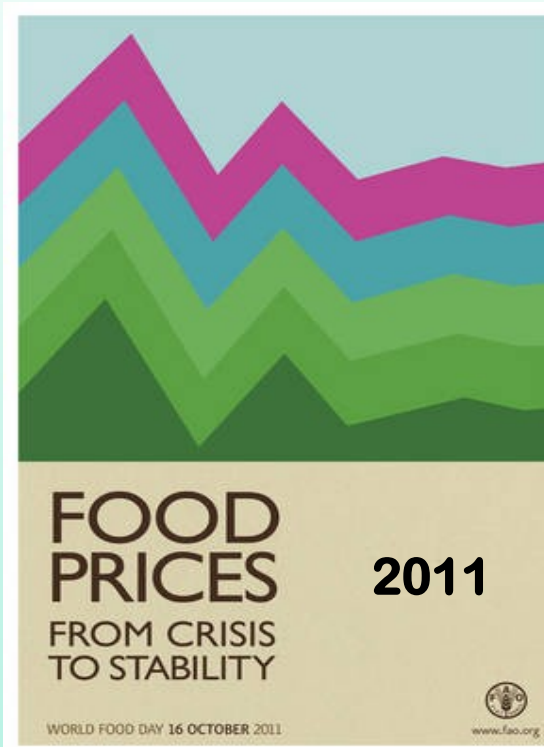
1983 - Food Security

1982 - Food Comes First

1981 - Food Comes First

1987 - Small Farmers

Excerpts from <http://www.fao.org/getinvolved/worldfoodday/>



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