



Estrus synchronization program

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Care for mandarin cultivation

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How do the markets work?

A study to understand the market dynamics of North-East Indian agriculture markets

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Fruits displayed in the market

A salient feature of the vegetable value chain programme (VVCP-E) under MAGIP is to open up market access nearby Indian markets for Bhutanese agriculture products.

As a part of studying the market development and its dynamics in an Indian context, a team of officials from RAMCO, FCBL and SNV visited Meghalaya and Assam, India from 12-

20 October 2014. The team explored the market for Bhutanese products and immediate tie-ups between Indian and Bhutanese counterparts among others.

The team observed that Shillong in Meghalaya have very well managed vegetable farms that produces as per the market needs. They cultivate on raised beds depending on the local

climate patterns.

A visit to the 'Bora Vegetable Market and Vegetable auction yard' in Shillong revealed the systematic business transaction. Farmers bring their produce at an early hours and the

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How do the markets work?



Road side market

price was determined for quality and relationships. An established system of coding and labelling the packages was followed.

The market sections had different designated areas for vegetables, fruits, meat, handicrafts, etc. for customer friendly. There was also an easy availability of various in and out modes of transportation like cycles, vans and big trucks. A visit to non-wood forest products (NWFP) auction yard shared the dealing of broom, bay leaf, pine tree roots and cinnamon. At the 'Pamohi Fruits and Vegetable Wholesale Market' in Guwahati, the team observed that it work as a bridge between wholesalers and retailers.

For a good sense of the retail market, the team visited 'Mindmap', a retailer for locally processed vegetables, fruit, spices etc. It promotes natural farm products from hilly areas to reduce the intermediaries cost. Mindmap's Customers are increasing everyday due to health awareness and environment issues.

The team met some six service providing institutions like the

National Institute of Rural Development, Small Farmers Agribusiness Consortium, Assam State Agricultural Marketing Board etc. that supports the producers and value chain actors among others.

The teams' meeting with the

'Amalgamated Plantations Pvt. Ltd. (APPL)' was fruitful in highlighting the opportunities for selected Bhutanese products. APPL offers a wide range of demand for organic vegetables, cardamom, chilies, Pipla, Chirata, Lemon grass oil etc.

The visit provided numerous insights for the team on an efficient and well-facilitated agriculture markets. Quality and trust is key among the different actors of any value chain. The market realities also exhibit the character of consistency and persistence. Each stakeholder must play their part sincerely with diligence and hard work.

A portfolio of well-thought and positioned service provider agencies from public and private sector is crucial in developing markets and enhancing business linkages. The ultimate bottom line is therefore the maturity of capacity in each stakeholder and their mutual views and considerations for each other to grow, prosper and develop together.



Sample of processed agricultural products

Estrus synchronization program: a reflection

Dzongkhag Livestock Sector, Trongsa

A 12 day long infertility management and Estrus synchronization program in CHBPP cattle was conducted in Tangsibji geog under Trongsa Dzongkhag. Spearheaded by Dr. Lham Tshering, Animal Reproduction Specialist and Mr. Yuvraj Giri, the campaign commenced from 24.11.2016 till 6.12.2016, which saw a massive participation of farmers from the geog. Extension staffs from the field and the DVH also took the opportunity to acquire firsthand skills through practical engagement. The program also walked an extra mile by introducing “sex sorted semen” to the dairy cattle; a technological advancement that will shift the gear of modern dairy farming in the posterity.

In our continuing efforts to improve cattle breed for better production, the program was initiated to realize the following objectives:

- Produce quality heifer and breeding bulls for increased milk production
- Maintain sustainability of the program through uninterrupted supply of Parent stocks
- Enhance income of the CHBBP farmers

The Estrus synchronization protocol was as follows:

- Inserting of CIDR-B/TRIU-B and subsequent removal on day 7.
- Observing animals for estrus 24-48 hrs post removal and two inseminations subsequently.
- Injecting Receptal 2.5 ML/IM after AI.
- Observation of inseminated animals for 48 hours.

Dr. Lham Tshering, ARS, gave theoretical lessons to the participating staffs as well as engaged them practically in the program, which allowed for a wider understanding



of the use of the technology. With the lessons learnt, it is expected that the use of such technology can now be efficiently disseminated in other parts of the Dzongkhag.

The program managed to

successfully synchronize a total of 65 nos. cattle of which, 24 nos. were synchronized using CIDR-B and 41 nos. with TRIU-B. 40 nos. cattle were inseminated with sex sorted semen.



Basic information on Mandarin cultivation

Q. What are the suitable conditions for mandarin cultivation?

A: Orange is the most important cash crop grown in the country which occupies a major area among sub tropical areas. Most of the citrus growing areas are located in the southern part of the country below 1,500 MSL where annual rainfall often exceeds 1,500mm. It represents more than 99% of the total fruits production with an average production of about 23,000MT.

The plantation of a new citrus orchard involves substantial investment and need to be planned carefully start from the initial stage. The common practice of planting trees on any available land can result in poor performance. It is therefore essential to select the best possible site for the mandarins which will be their permanent home. The following are the necessary conditions.

Q: What are the roles of wind?

A: The selected areas should be protected from strong winds. It affects tree establishment shaking root anchorage, interferes pollination and increases premature fruit drops. Evapo-transpiration is increased under windy conditions leading frequent irrigation of the orchard. In case of areas prone to strong winds, windbreak species like poplars, cypresses and nitrogen-fixing trees may be planted.

Q: Is hailstorm suitable for mandarins?

A: No, hail during the flowering and fruit developing stage can cause heavy damage to the year's production, so an area should be relatively free from hailstorm.

Q: How much water do you need?

A: Adequate water should be available for irrigation (which depend upon the soil type, rainfall and evapo-transpiration) where rainfall is inadequate. Too much rain in the summer months will limit the production of good quality fruit. The critical stages for water requirements are during the fruit setting and fruit development stages. Prolonged dry periods will cause fruit drops.

Q: What is the best topography for mandarins?

A: Slopes that are too steep (above 40 degrees) should be avoided otherwise management of the trees would be difficult and soil erosion will also be a major problem. However this can be eliminated to a certain extent with the construction of contours.

Q: How does sunshine makes the difference?

A: The adequate sunshine in the summer and early autumn helps in enhancing maturation, ripening and colour development. Areas shaded for the greater part of the day should be avoided. The slope, which faces south rather than north, is suitable.

Q: What are the suitable elevations for the mandarins?

A: In Bhutan mandarins can be cultivated at an elevation between 500- 1000m above sea level. It prefers areas with a warm summer followed by a mild winter but avoid areas where frosting is common after March (during new leaf emergence).

Q: What type of soil is needed for mandarins?

A: The ideal soil texture for orange is loam which is well-drained and fertile. The soil with low water holding capacity and low in nutrients (shallow, gravelly or rocky) should be avoided. Mandarin cannot tolerate very acidic or very alkaline conditions; it prefers a PH soil between 6- 6.5.

Call for Papers for Agriculture Journal of Bhutan

The Department of Agriculture (DoA) is coming up with an Agriculture Journal of Bhutan which will be published annually. It is committed to promote the quality of Agriculture research and increase the visibility and impact of published work.

Therefore, DoA would like to invite submission of paper(s) that meet the general criteria of significance and scientific excellence in agriculture sector to be published in 1st issue of the Journal due in June 2017. Following categories of paper will be accepted.

- Original articles in basic and applied Agriculture research
- Case studies
- Critical reviews, surveys and short communications

As such, please submit the paper(s) to Chief, ARED, DoA at agjournalbht@gmail.com for review by editorial board. Acceptance of will be intimated to you by Editor-In-Chief.

Please follow the following timetable:

Submission of paper: 31 March 2017

Comments from Reviewers: 30 April 2017

Submission of final paper (revised): 15 May 2017

Publication of Journal: 15 June 2017

For more information visit www.moaf.gov.bt

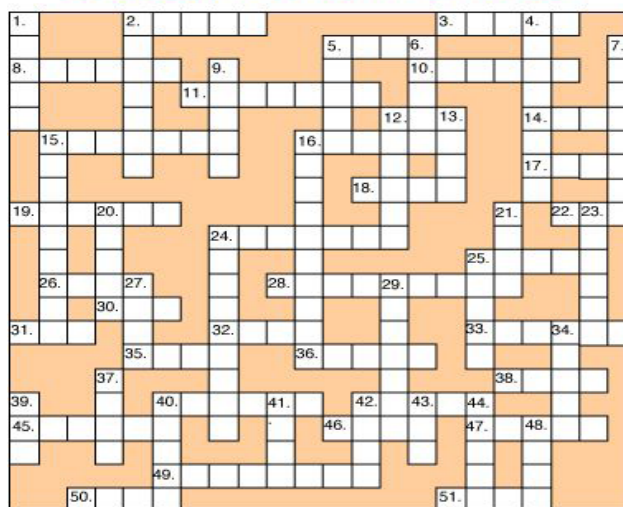
Logo Competition: Green Bhutan Corporation Ltd.

The Green Bhutan Corporation Limited would like to announce that we would like to have a official logo for GBCL. Therefore all interested candidates can design and submit your logo for GBCL. Your designed logo should capture GBCL Initiate and its main objectives and the logo (with soft copy) should be submitted to the GBCL office at Semtokha on or before February 15, 2017.

The logo that gets selected by GBCL management and the Board will be awarded a prize of Nu. 10,000/= . The GBCL management reserves the right to reject any or all logos if they are not up to the expected standard.

For details please contact at 02-350643

Crossword Puzzle



Across:

- Monkey
- Desert animal
- Canines
- Banana lover
- Horses have these
- Far away
- Animals have this type of coat
- Animals do this for food
- Tallest animal
- Member of dog family
- Midday
- Carnivores eat this
- King of the _____
- Felina
- Where an animal lives
- Explosions cause this

- Wolves do this to the moon
- Owls are this
- Facial part
- How old you are
- Fragrant flower
- Tree cutting rodent
- Green vegetable
- Slippery
- Egg layers
- Livestock
- Mistake
- Animal related to minks and skunks
- Horses' hair
- Riding animal
- Feelers on a cat
- Feet of an animal
- Member of dog family

Down:

- Baby sheep
- Fastest animal
- Largest land animal
- Australian wild dog
- Holler
- Animals use this for survival
- Striped feline
- Wooded area
- Relax
- He looks for his shadow in February
- Meat eaters
- Dog's angry sound
- Giraffes are this
- Lively
- Some animals do this in winter
- Famous fawn
- Leg or arm
- Mythical horned horse
- Tarzan swings from these
- Chore
- Female sheep
- Peek
- Animal nails
- Hearing organs
- A colour
- Short form of rhinoceros
- Top of a house



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The Ministry's week

Tiger on the prowl at Lamai Goempa Dzong in Bumthang

The camera trapping team from Ugyen Wangchuck Institute for Conservation and Environment (UWICE) has captured tiger prowling in the UWICE research preserve, near Lamai Goempa Dzong, Bumthang. This is the first time, a tiger has been captured in remote camera near Lamai Gompa. The camera trapping

exercise was initiated as part of the long term wildlife monitoring in the UWICE research preserve from mid May, 2016. More than 50 remote camera traps are set in the 2000 hectares research preserve. The UWICE research preserve was established in 2014 for conducting forestry and wildlife research.



4th Annual Nationwide Water-Birds Census

The 4th annual Nationwide Water-Birds census saw many bird enthusiasts as participants even from outside the forestry areas. It was carried out in all the major water bodies and wetlands across the country.

The survey was initiated by the Ugyen Wangchuck Institute for Conservation and Environment (UWICE) in 2014 to generate data from the identified areas for long term monitoring of habitat change and species response to the climate change.



Kuchi Diana Irrigation Scheme

His Excellency, Lyonpo D.N. Dhungyel, Ministry of Information and Communication formally inaugurated Kuchi Diana Irrigation scheme at Yoeseltse Gewog under Samtse Dzongkhag. The irrigation scheme which is 7.2 Km long will benefit more than 300 households of Yoeseltse and Sang Ngagcholing gewogs and it will irrigate more than 950 acres of land.

The construction started on 6 March 2015 and it was completed on 2 October 2016. The work has been carried out by M/s Chapcha Engineering Pvt. Ltd.

This scheme is one of the largest schemes constructed in Bhutan with the total project cost of Nu. 63.22 million funded by Government of India under Project Tied Assistance.



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