RNR NEWSLETTER
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INSIDE

GALS containment program:
A Success remarks

Dzongkhag Agriculture Sector, Mongar Dzongkhag

Giant African Land Snail (GALS), *Achatina fulica*

The outbreak of snail (tentatively identified as Giant African Land Snail (GALS), *Achatina fulica* has first been observed in and around Gyalposhing areas in 2006 and left unbothered. However in 2010 the population has frighteningly increased. The snails were seen spread all over town and residents in Gyalposhing. The roads were flooded with snail especially during rainy day creating unhealthy surrounding to the pedestrian and plying vehicle. In reality it is an endemic, nuisance to the people. It enters kitchen, scavenge on kitchen garden and kitchen waste. It was an epidemic kind of things but usually appears during the dusk and early hours of the day.

The perceiving the risk of this pest, National Plant Protection Center (NPPC) together with Gyalposhing local communities, Gyalposhing High Secondary and Primary Schools, RNR sectors of Mongar Dzongkhag and RDC Wengkhar have carried out campaigns. The participants collected and destroyed the snail to whatever quantity they could afford to reduce and eradicate it. Chemical like herbicides were also sprayed as

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GALS containment program

part of control measures to avoid infestation to agriculture and forest areas, and cause human health and environmental hazards. The campaign has helped minimize its population for a couple of years. In 2011 and 2012 and GALS did not multiply much possibly due to unfavorable weather conditions and due to effect of mass handpicking and destruction in 2010.

But the situation has change in 2013, the two years gap have offered ample opportunity to multiply and exploded its population beyond unbearable as it lays 400 to 1000 eggs in one year as per literature. People can't even walk along the road and plying vehicles crushed on its way. The drains were packed and garbage pits were found full of snail feeding, creeping into the house and sheltering hanging on Melia trees around.

Since the GALS population has significantly increased and its likely impact perceived, the Department of Agriculture offered a budgetary support based on our requisition to conduct mass campaign involving multi-stakeholders of the region including Royal Bhutan Police officials. The 2013 GALS campaign were participated by the people of Gyalposhing and Lingmathnag town, Schools, Kurichhu Hydro-Power Corporation, BAFRA, RNR sectors, Mongar regional Referral Hospital and communities around. Prior to collection and destruction of snails, local communities were briefed on snails' biology, habitats, foraging habits, and dangers if snails escape and invade agricultural and forest areas.

The two days long mass campaign had collected and destroyed almost 8000 kg snails by dumping and salting in the pit. The shrubs and bushes were cleared and sprayed with herbicides to destroy its habitat and detach the food webs.

Since then the Department of Agriculture entrusted the responsibility to the Dzongkhag Agriculture sector to continue the GALS containment program as it is more or less considered as Agriculture pest with certain fund support. The national stakeholder workshop to contain the GALS was also convened at Agriculture Department Hall chaired by Mr. Ganesh Bdr. Chhetri the then the Specialist for Agriculture production. Various views were exchanged to develop strategies to contain the GALS or to eradicate it and finally landed up with the strategy of hand picking and dumping basically mass murdering. The workshop as well determined to deploy collectors and inform volunteers that Nu. 30/ kg is paid to the collectors. The setting up regulatory or quarantine check points at strategic location to control the spread of GALS to non infested area was another important strategies agreed among the stakeholders. Accordingly the Dzongkhag Agriculture sector has put in a tremendous effort foregoing the sin and criticism to reduce or eradicate it.

Containment/Eradication Method

Strategies deployed

1. Advocacy & awareness on its harmful effect to the people and the environment/crops/kitchen garden/ unhealthy surroundings
2. Quarantine/regulatory to control the spread to non-infested area
3. Handing picking & dumping/ salting to eradicate the GALS
4. Clearing & burning of bushes to destroy the habitat
5. Sanitation to disrupt the food supply
6. Religious measure- Rimdro/ Tsa Chhu Bumter/Gintser as KHANYEN

Several methods are available to contain or eradicate snails. The most common and practical method is handpicking and destruction of Snails by burying deep into the pit.

Bio- Security Check Point

Slashing and spraying Glyphosate to clear off the weeds-bushes to destroy snails breeding, hiding and feeding habitats.

GALS starts appearing in May and continue till November and Snails are active during rainy or wet days, thus collections have to plan when snail becomes very active.

Towards this, the sectors in close discussion with Gyalposhing Throm Thuemey have informed every individual about the buying of Snails but how to go about was a problem. The details of collectors and the amount collected have to be maintained for payment. We came up with idea of employing some youth to keep record of daily collection on Muster roll basis. For example, to determine the quantity of collection, the weights have to be taken and recorded so that payment is made accordingly. The youth go around door to door and weighs the Snails and transport to dump site. The vehicles are hired for transportation of Snails based on our annual quotation rate. The workers were supported with mouth mask, Gum boots, and Hand Gloves and

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GALS containment program

Snail Collection, recording &transporting to dumping site

rain coats as part of safety measures. Although the instruction from the Department was to pay Nu.30/kg but the sectors have decided the rates on ground reality and keeping in view the continuity of the containment program till it is eradicated and thus paid Nu.25/kg Snails collected.

As part of religious measures, laying of TSA CHHU BUMTEER as KHANYEN by Venerable Rangshikhar Rimpoche was also performed.

Accordingly the sector have also incorporated some budget in the Global Climate Change Alliance EU (GCCA) program in the 2014-2015 AWPB as there was no possibility of fund source against the GALS containment program.

Outcome of Containment program

With fund from EU GCCA, the sector and community managed to collect approximately 30 MT of Snails for destruction. The achievement was great and obvious and the places have become clean for the people and students around Gyalposhing except in few pocket areas. The GALS population around town has drastically reduced though there still may be few in some areas as it is found scattered here and there. The GALS become like YARTSA GOENBUB in Gyalsposhing to the pickers.

However, with breakdown up off fund support from DoA and allied agency, the containment program could be continued in 2015-2016 fiscal as revealed in the media BBS on 26th Sept. 2016. The EU GCCA program's funds have failed in release of fund in 2015-2016 in time besides our repeated request to DoA. The special request letter for fund support for this program from our part was also made to Department of Agriculture but in vain. This has offered GALS to multiply its population as it lays 400 to 1000 eggs in one year. Although we have put in lots of effort for past two years to eradicate the GALS but without resources, one can do nothing. The workers and collectors need to be paid on daily basis for which we are helpless.

Problem & issues

The most laborious part of the hand picking method is to search snail eggs or juvenile snails that are buried in the vegetation or grass cover.

GALS hide under stones, rubbish, vegetation cover etc. and it is difficult to locate them easily during day. The ones underground or hiding are difficult to hand pick, and the danger is that population increase is easily possible from those hiding snails.

Lack of fund support is a deterrent for the program to accomplish the objectives.

Conclusion

Any eradication program is a huge program, the GALS containment program at Gyalposhing will go long way and huge investment will incur while referring to outside country's experience. Continuity of the program is felt important in such kind of eradication program, therefore, I personally would like to request DoA and NPPC to revisit the strategies and come up with other options.

The main lesson learnt from the program is that 1 or 2 years of hand picking and destroying the snails is inadequate to eradicate the snails. An intensive thorough hand picking is necessary to ensure that snails are eliminated from the infested areas so that it is not spread and build up its population.

Some facts about Giant African Land Snail (GALS)

- GALS a native to Africa.
- GALS has a narrow conical shell.
- Adults may exceed 20cm in shell length but generally average about 5 to 10cm. The average weight of the snail is approximately 32 grams (Cooling 2005).
- Highly adaptable to a wide range of conditions and finds a wide range of foods and habitats.
- GALS aestivate (similar to hibernating) in extreme conditions to avoid de-hydration. This makes it an ideal invasive species, allowing surviving under adverse conditions.
- They require areas rich in calcium, thriving in locations with limestone, marble and places with concrete and cement.
- GALS is most closely associated with tropical and subtropical moist broad-leaf forests and tropical and subtropical dry broadleaf forests (Venette and Larson 2004).
- GALS is commonly found in and around human dwellings, gardens and woodlands.
- GALS hide during the day under leaf litter or in and around compost heaps and shrubs or in crevices in rocks and tree roots (Cooling., 2005)
- GALS are able to sexually reproduce in about one year. A single snail can build a large population.
- GALS begin laying eggs 8 to 20 days after mating and can lay eggs for up to 380 days producing 400 to 1000 eggs in one year.
- They may live 3-5 years to a maximum of 9 years. Although adult snails have both male and female sexual organs, reciprocal copulation is necessary to produce viable eggs.
- Eggs are placed in cool moist soil and under objects on the ground. After eggs hatch, juvenile snails eat their egg shells and then burrow underground for up to 2 weeks.
- GALS typically have a home range, feeding primarily on plants and returning home before dawn. Although nocturnal, the snail may become active at twilight on overcast days with moist and warm soil.
- There is a risk of GALS moving long distances when they cling to cargo, vehicles or machinery or carried as pet.
- During unfavorable environmental conditions, the snail can bury itself in soil and remain inactive for up to a year.
- Localized eradication on some islands of Hawaii appears to have been successful (Mead 1979).
- Handpicking can be very effective if done thoroughly on a regular basis. Hand picking, will over time; greatly reduce the number of snails. The best time is early morning or after sunset.
- Many snails are known to possess toxins or harbor parasites that can affect or infect humans. While short-term handling of a snail by the shell is probably safe, it is strongly recommended to wear gloves when handling them.

Armyworm ALERT 2018

All the Extension officers and ARDCs are advised to carry out regular monitoring of the armyworm particularly in paddy nurseries and maize fields to implement control measures on time.

Where and when is it a problem?

The early arrival of warm dry weather followed by rain in spring is favorable for reproduction and multiplication of armyworms. Local impacts can occur every year, but significant damage only occurs when there are severe outbreaks. Such outbreaks, when large numbers of larvae move from field to field voraciously feeding on foliage, can occur every several years but are typically quite localized. They are difficult to predict.

Why is it a problem?

Armyworms can cause heavy losses to rice nurseries, with caterpillars destroying seedlings. They also attack rice and maize fields and, to a lesser extent, barley and buckwheat. Considerable losses in rice seed can result from larvae cutting of the panicles. They are readily managed provided infestations are detected early enough.

If you detect armyworm outbreaks in your locality, please contact National Plant Protection Center at phone number: 02351016 or email at nppcsemtokha@gmail.com.

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Leisure

Notification

Meat Ban

This is to bring to the notice of all the concerned that the slaughter of animals, import and sale of meat is prohibited from 16 February 2018 to 17 March 2018 coinciding with the first month of the Bhutanese calendar which is in accordance with the Section 16.5 of the Livestock Act of Bhutan 2001.

-BAFRA

Submit articles for RNR-Newsletter to tandindorji@moaf.gov.bt

The Ministry's week

Stakeholders discussed National Highland Flagship Program

A consultative meeting on National Highland Flagship Program was held on February 27 to seek endorsement of its concept note and agreement on forming a technical working group. The program is the first among flagship programs to reach the final stage of implementation. Flagship programs are major means to achieve the NKRA besides AKRAs and LGKRAs. The programs involve multi–sector interventions to address key national issues; therefore, the Royal Government places high priority to these programs. As a strategic approach to addressing issues and challenges, the broad interventions shall take place under eight thematic areas: policy, education, health, energy, communication, livelihood, and tradition and culture.

Third Technical Working Group meeting for SPCR

The Watershed Management Division organised the Third Technical Working Group (TWG) meeting for the Scoping Study on Water Source Drying Up at Metta resort, Paro. The two days' workshop discussed on the overall technical framework, criteria for site selection, workplan for 2018-2019 and collaborations with ICIMOD for technical support.RGOB has received a grant of USD 1.5 million in support of the preparation of the Strategic Program for Climate Resilience. This Preparatory Project Scoping Study on Water Sources Drying-Up is one of the five technical Projects approved for the Strategic Programme for Climate Resilience (SPCR). This Preparatory Project will explore the causes of why water sources are drying up in the country.

Groundbreaking ceremony for Integrated Yak Breeding Farm

The Department of Livestock conducted the salang tendrel ceremony for the construction of Integrated Yak Breeding Farm in Chonaphu. The occasion was graced by Dasho Drangpon, Haa among other senior officials. The farm is expected to be completed by mid of the 2018. Once in place, it will contribute to yak breeding and conservation, promote yak based cottage enterprise, support restoration and sustainable utilisation of rangeland and build capacity of extension staff and communities for sustainable rangeland resources. The farm is supported with a fund of Nu. 3.6M through the BTFEC project,.

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