

Smallholder-based Seedling Production Systems to Improving Forest Restoration Outcomes in the Philippines

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Background

- Forest restoration is a global challenge
- Billions of seedlings are needed
- The importance of seedling quality in promoting FLR success cannot be overemphasized
- Seedling quality receives scant attention in FLR planning and implementation



Recent forest restoration approach in the Philippines

- **Community-based Forest Management (CBFM) Program since 1995**
 - Communities as partners of the government in restoration and sustainable development of forestlands
 - People's organisations (POs) to restore degraded forest landscapes in state-owned lands
- **National Greening Program (NGP)**
 - 1.5 billion seedlings planted in 1.5 million hectares from 2011 to 2016
 - Another 2.4 M ha of the 7.1 M ha lands suitable for restoration from 2017 to 2028



Common characteristics of restoration sites



- Grassland, low soil fertility, steep slopes, far from communities and with land claimants undertaking smallholder farming activities



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Seedling quality regulation in restoration

SUBJECT: REVISED REGULATIONS GOVERNING FOREST TREE SEED AND SEEDLING PRODUCTION, COLLECTION AND DISPOSITION

Section 1. Basic Policy. It is the policy of the state to ensure the sustainable use, development, management, and conservation of the country's forest resources not only for the present but also for the future generation. The government through the Department of Environment and Natural Resources shall promote the use of high quality planting materials in the establishment of agroforestry and other forestation activities to promote sustainable production and supply of wood and

Sec. 11. Accreditation of Forest Nurseries. An application for accreditation for forest nursery shall be submitted to the CENRO/PENRO for initial evaluation and field verification following the format attached as **Annexes G to I**. Said application must be accompanied by the following information.

4. SEEDLING PRODUCTION

The NGP will continue to use quality planting materials to ensure high survival rates and good quality plantations. Inoculation of Mycorrhiza shall be undertaken whenever possible. Proper nursery practices should be observed such as proper spacing of seedlings, culling, weeding, watering, hardening-off; use of appropriate size of seedling containers and quality potting media; use of germination and conditioning chambers, including the use of seedling trays for hauling.

7.2 Harmonization

7.2.1

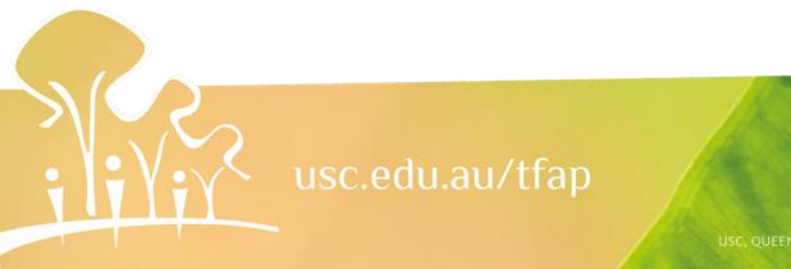
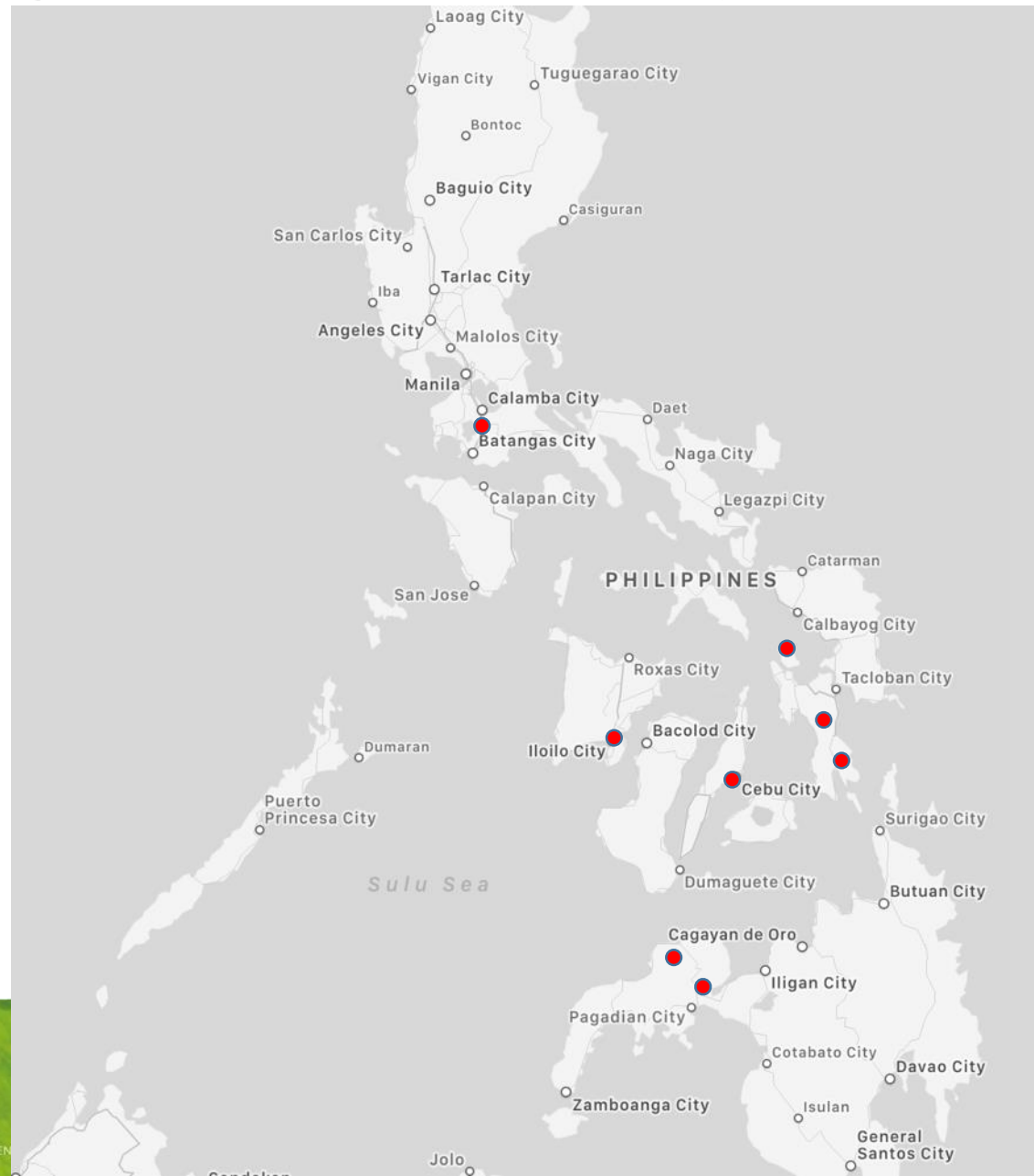
All DENR, CHED and DepEd shall produce appropriate quality seedlings annually for the NGP. Technical assistance shall be provided by DA, DENR, DAR under the Convergence Initiative.

7.2.2

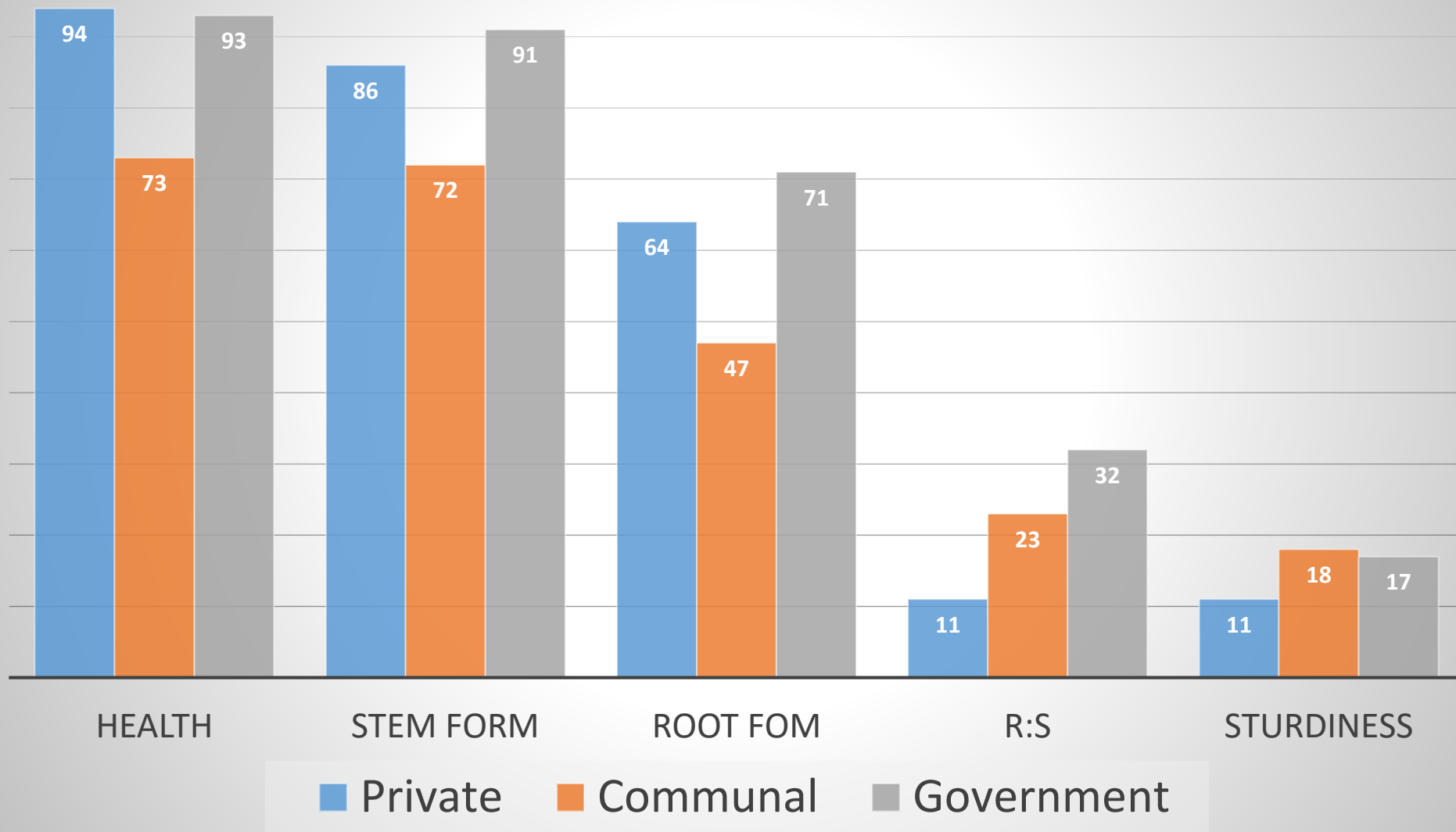
All government institutions particularly DENR, CHED and DepEd shall produce appropriate quality seedlings annually for the NGP. Technical assistance shall be provided by DA, DENR, DAR under the Convergence Initiative.

Low quality seedlings in restoration projects

- 36 nurseries in 8 provinces of 5 regions
 - Community = 18
 - Private = 12
 - Government = 6
- n = 1,800 seedlings



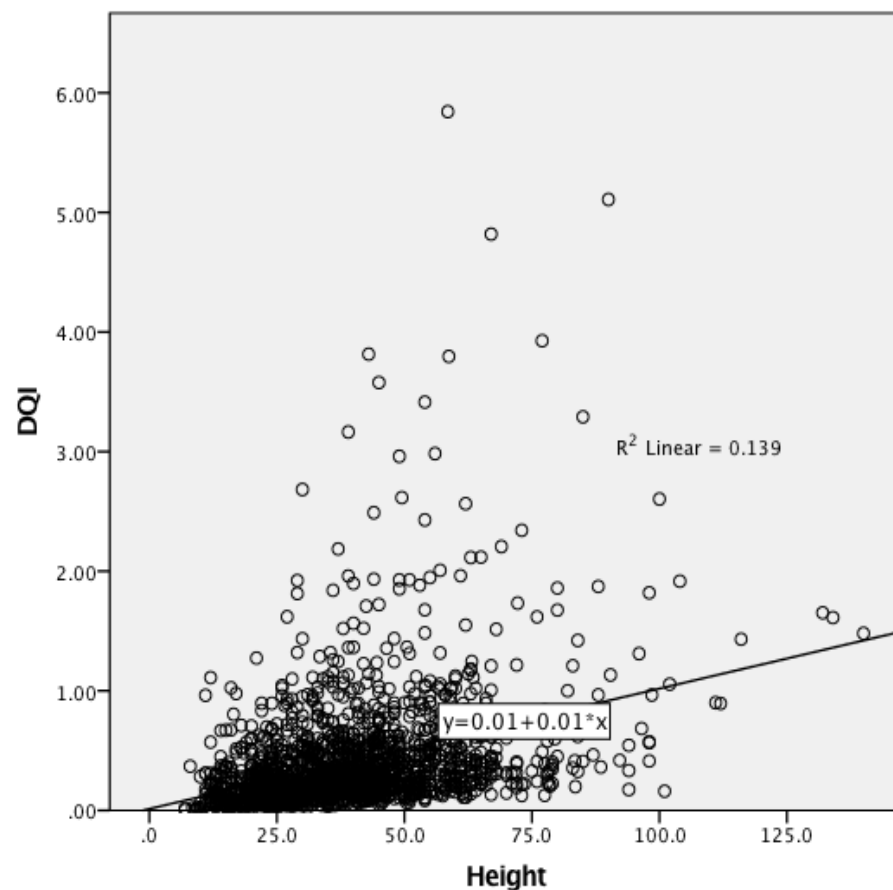
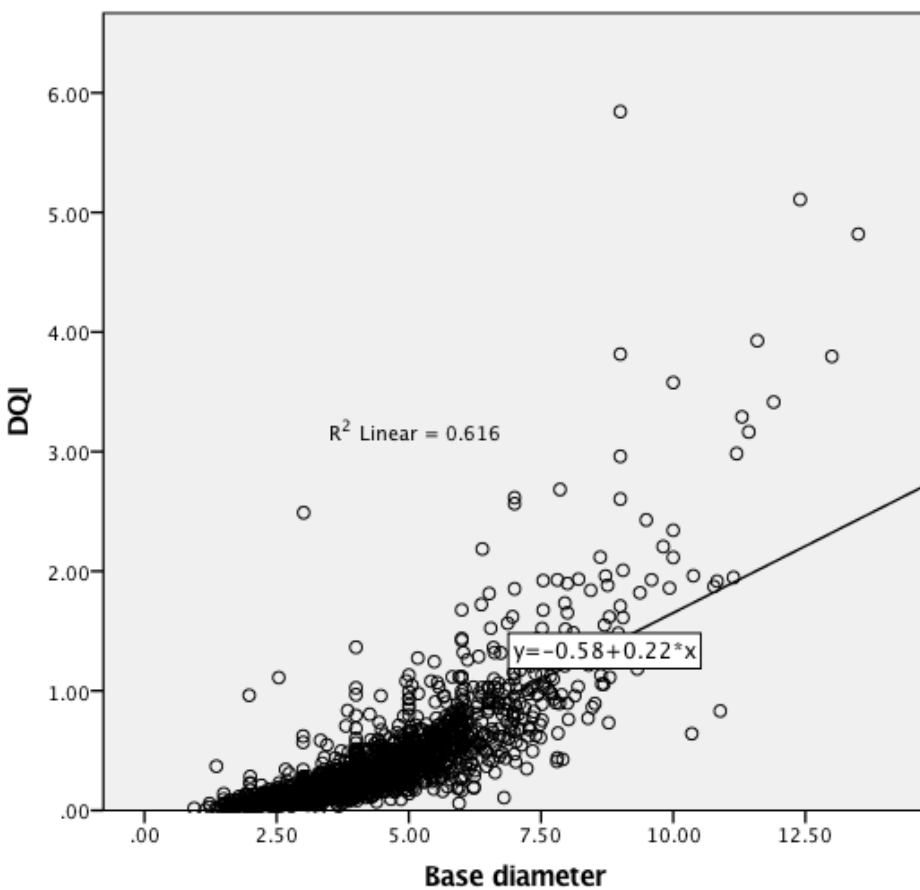
Sample seedling that passed the evaluation (%)



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Visit and Learn

Kawayanon Farmers Association Inc. (KFAI)

Brgy. Kawayanon, Caibiran, Biliran

PILOT REFORESTATION PROJECT

A Demonstration of Community-based Best Management Practice in Watershed Rehabilitation

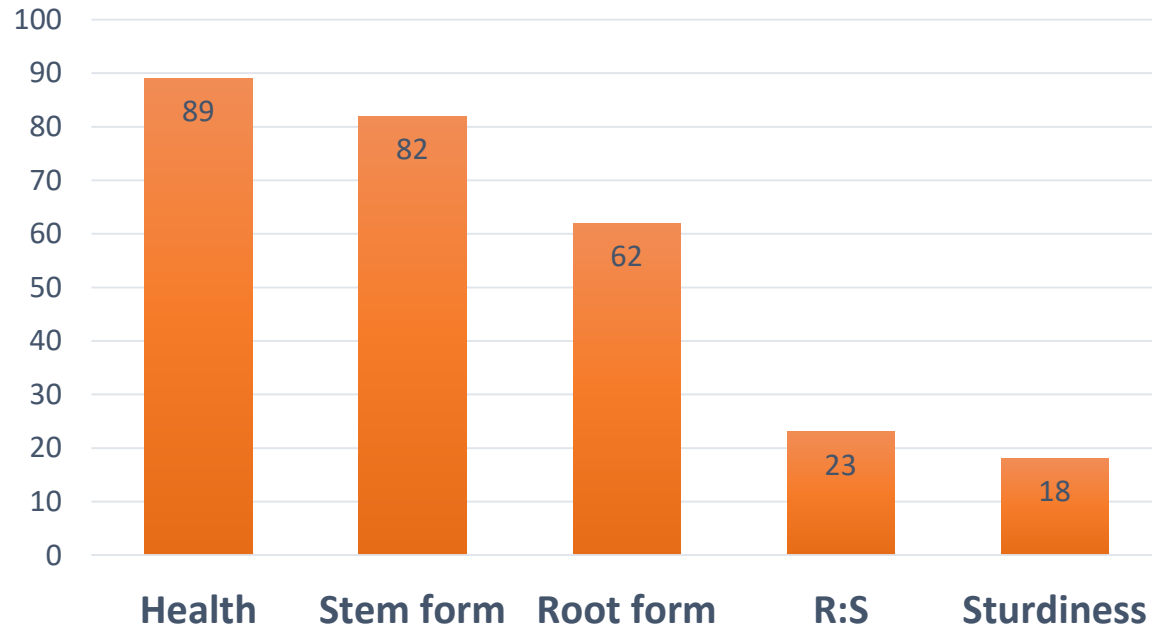


Supported by the Australian Center for International Agricultural Research (ACIAR), The University of Queensland, University of Sunshine Coast, Visayas State University and Department of Environment and Natural Resources (DENR)

The seedling production: before the pilot project



Passed (%)



- Sturdiness (ideal <6)
 - Mean: 8.4
- R:S (ideal is < 2)
 - Mean: 4.9



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- Improved supply of high quality seeds and wildlings
 - Inventory of mother trees from the natural forest of the community
 - Improved network with seed suppliers
- Compliance to Forest Nursery Accreditation Policy
- Nursery seedling enterprise

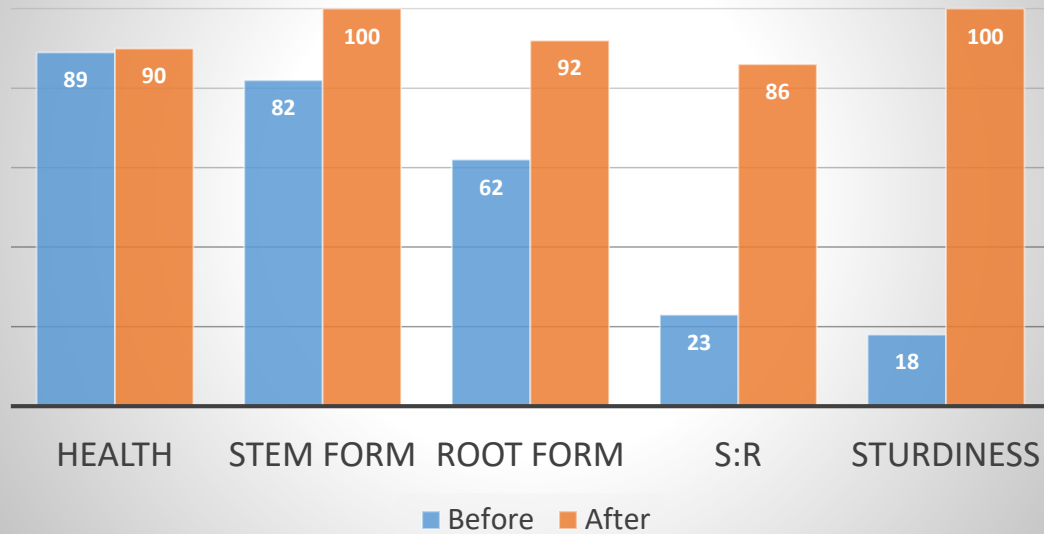


Outcomes

- High quality seedlings
 - Desirable morphological qualities
 - Germplasm collected from plus trees
- High wildling survival and seed germination
- No overgrown seedling because of elevated beds
 - Efficient use of resources



Proportion of seedlings that passed the assessment



■ Sturdiness (ideal <6)

• Mean: 3.3 (from 8.4)

■ R:S (ideal is < 2)

• Mean: 1.8 (from 4.9)

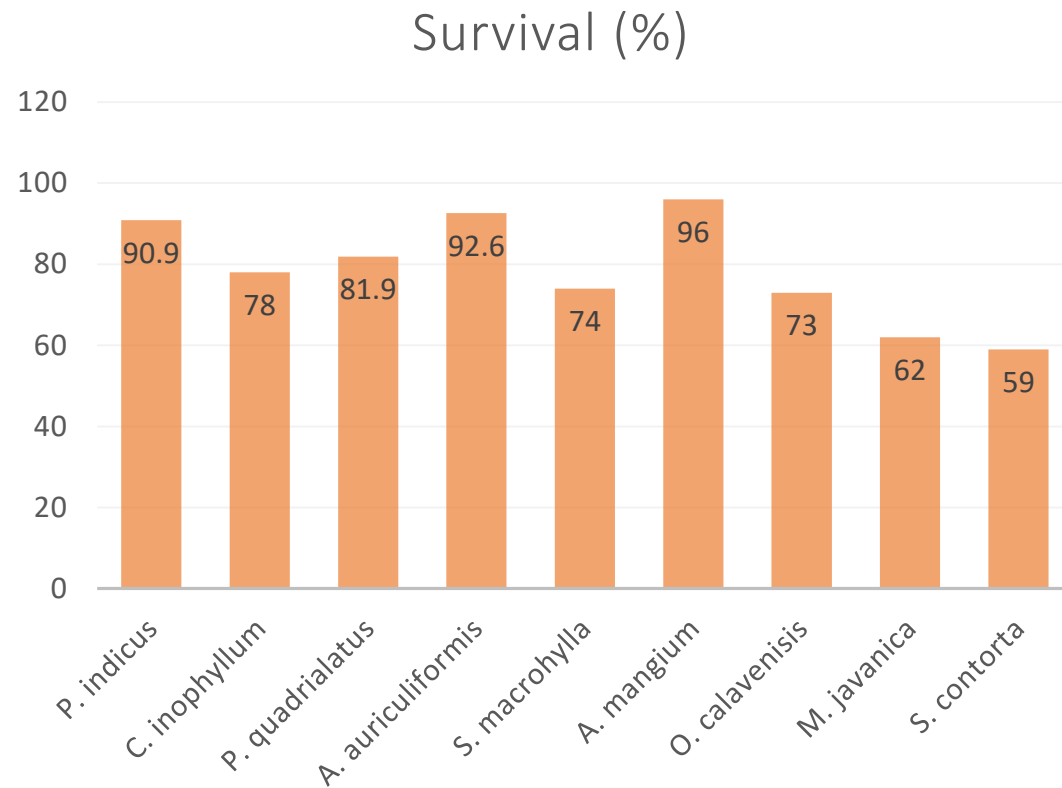
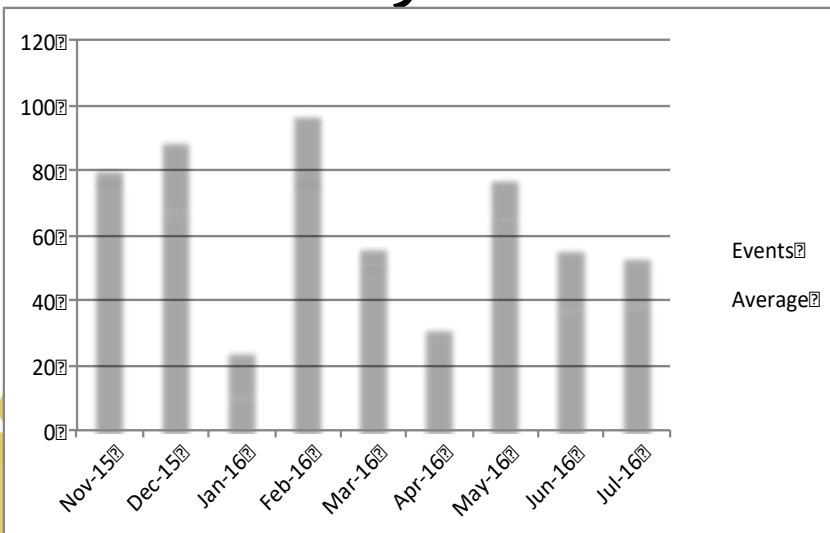


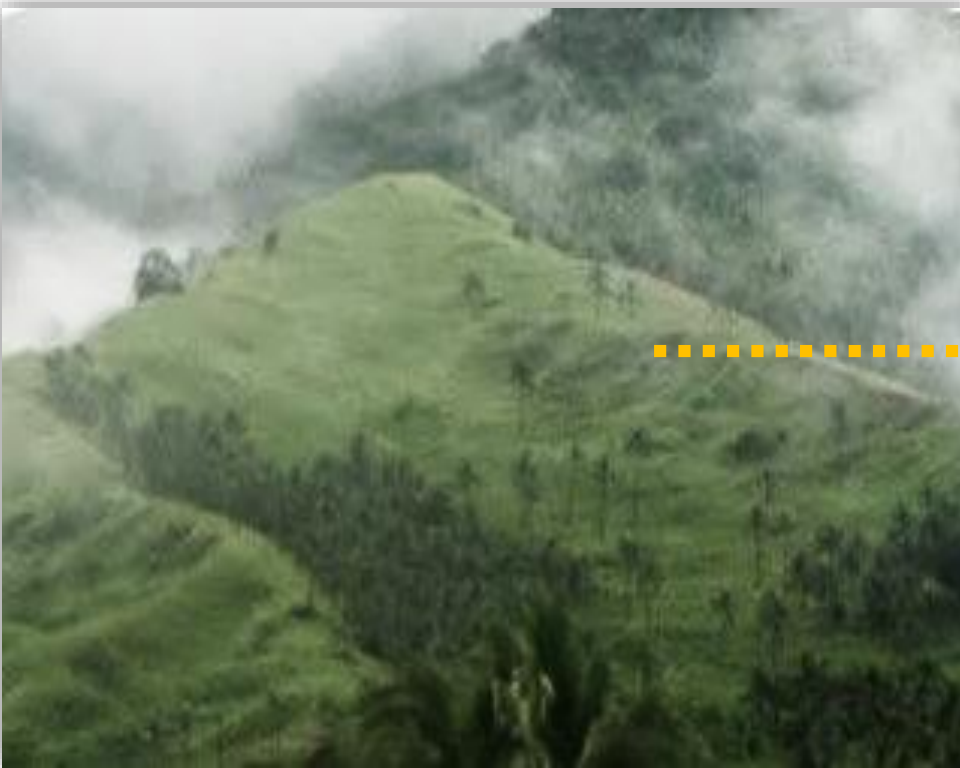
■ Reduced cost of hauling to the field

- light potting mix with excellent physical quality
- 60% soil + 20% ricehulls + 20% compost



- High seedling survival rate in the field
 - Reduced cost of replacing seedling mortality





**After 4 years
of planting**



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■ The People's Organisation is applying for forest nursery accreditation

- Nursery seedling enterprise as livelihood
- Passed the assessment conducted DENR Biliran and DENR-ERDS Region 8



Conclusion

- Community groups play crucial role in supplying seedlings for FLR
- Technical support is necessary
 - Need-based training; not an event but a process
 - Follow up support is crucial
- Policies are needed and good governance is imperative
- Producing high quality seedlings does not require expensive facilities and sophisticated techniques
- Nursery is a potential livelihood for communities in FLR; an enterprise largely suited for women

