



Enhanced Grassland Rehabilitation Technology for Degraded CBFM Area

Engr. Lyrae A. Casidsid¹ & For. Alma S. Uddin²

Background of the Study:

Study Site:

New Tubigon, El Salvador, New Corella, Davao del Norte

- Study was implemented in December 2015;
- The study site was located approximately 18 kms from Poblacion, New Corella. It is bounded on the west by Barangay Sta Fe, on the east by Barangay Linda, Nabunturan, ComVal; on the north by Barangay Maming and on the south by Barangay Bayabas, Nabunturan. Farmer cooperators are members of the El Salvador Tree farmer Association (ELFATPA);
- The selected site has a slope of 37% and dominated by cogon (*Imperata cylindrica*) as seen in Figure 1.



Figure 1. Study site dominated by cogon in El Salvador, New Corella, Davao del Norte

Significance of the Study:

One of the most pressing problems confronting the Philippine upland areas today, especially those located in public lands such as the Community-based Forest Management (CBFM) areas is degradation of its forest and soil resources.

The grasslands and other degraded areas in the country are estimated to be more than 5 million hectares. These areas need to be rehabilitated and made productive to alleviate poverty and increase income of upland farmers. Farmers in CBFM areas need to be supported since these are marginalized groups and mostly located in far flung barangays with limited government support.

Purpose of the Study:

The study was implemented to determine the most suitable indigenous and premium tree species treated without and with mycorrhiza as growth enhancer and combined with forage peanut for the rehabilitation of nutrient-deficient soils in cogon lands and degraded areas in the uplands.

Materials and Methods:

The implementation and assessment of the results of the study was carried out using the following methodologies: reconnaissance survey and site selection, site characterization, database development, establishment of the study including planting stock production/procurement, field planting; and data collection.

During the site preparation, eradication of cogon was done by spraying the site with ground plus. Six weeks after herbicide application, the cogon turned brown. (Figure 2). The site was then clear brushed and the plots were planted with forage peanut to replace the cogon. Outplanting of indigenous trees such as molave, dao and white lauan treated with and without mycorrhiza followed. Durian seedlings were also interplanted. (Figure 3).

Data collection was done using steel tape to measure the height of the trees; caliper to measure the. Further, ground cover using forage peanut was measured using the Quadrat Method (Figure 4).

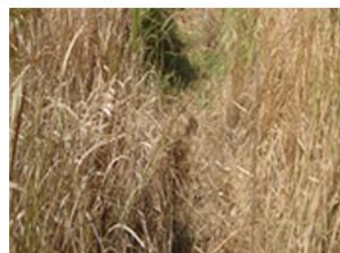


Figure 2. The cogon grass six weeks after herbicide application.



Figure 3. During the outplanting of grafted durian seedlings



Figure 4. Measurement of Ground Cover using the Quadrat Method with forage peanut as cover crop.

Preliminary Results:

Results showed that one year after planting, molave applied with mycorrhiza interplanted with forage peanut had significantly higher survival and height growth increment compared with dao and white lauan applied with and without mycorrhiza interplanted with forage peanut. (Please refer to Table 1 for the result of the statistical analysis.) For the ground cover, no significant difference was observed.



(Left) Molave with mycorrhiza after one year; (Center) Molave without mycorrhiza after one year; (Right) The project site after one year

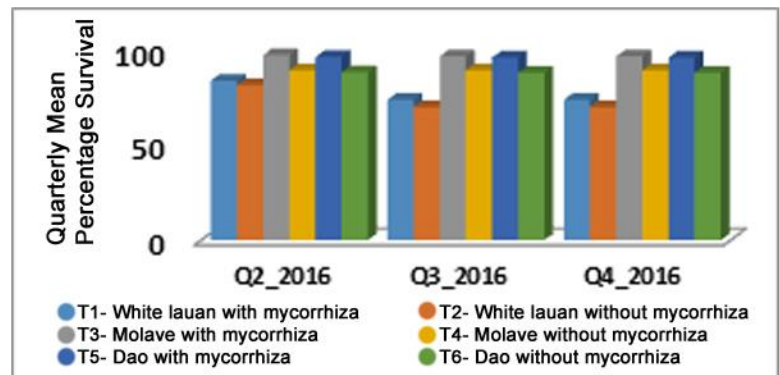
Additional Figures and Tables

Treatment	Percent Survival (%)	Height Increment (cm)	Diameter Increment (cm)
T1-White lauan with mycorrhiza	73 ^b	2 ^d	0.14 ^c
T2-White lauan without mycorrhiza	70 ^b	2 ^d	0.14 ^c
T3-Molave with mycorrhiza	96 ^a	69 ^a	0.61 ^a
T4-Molave without mycorrhiza	89 ^a	46 ^b	0.46 ^b
T5-Dao with mycorrhiza	95 ^a	37 ^b	0.61 ^a
T6-Dao without mycorrhiza	87 ^a	21 ^c	0.13 ^b

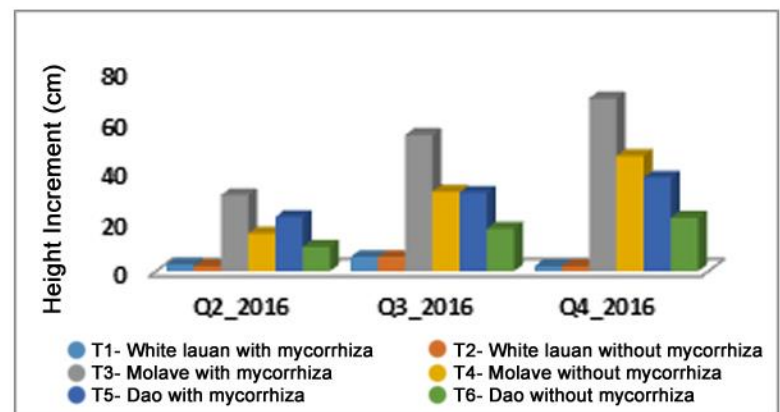
Table 1. Survival height increment diameter Increment of est plants after one year

Treatment	PERCENT GROUND COVER (%)			
	Q1_2016	Q2_2016	Q3_2016	Q4_2016
T1-White lauan with mycorrhiza	9	16	45	65
T2-White lauan without mycorrhiza	9	16	40	70
T3-Molave with mycorrhiza	6	22	51	75
T4-Molave without mycorrhiza	8	20	58	76
T5-Dao with mycorrhiza	9	20	53	76
T6-Dao without mycorrhiza	10	19	43	71

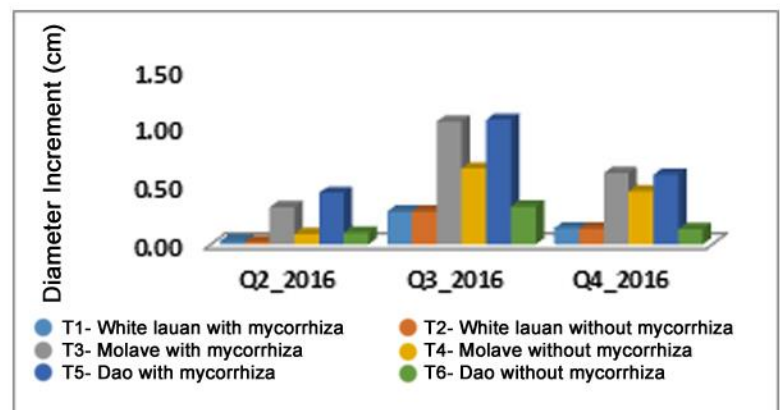
Table 2. Quarterly Percent Ground Cover of Treatment Plots



Quarterly Mean Survival of Test Plants



Quarterly Mean Height Increment (cm) of Test Plants



Quarterly Mean Diameter Increment (cm) of Test Plants

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Editorial Adviser: Bighani M. Manipula, Ph.D.
Lay-out Artist: Jethrone M. Setenta

Magdum, Tagum City, Davao del Norte
(084) 216 3548 denr_erds11@yahoo.com
www.mdarrcerdb.wordpress.com

Research Station 1 Amas, Kidapawan City, Cotabato (064) 572 3118 denr_erds12@yahoo.com	Research Station 2 Nabunturan, Compostela Valley nrs_8800@yahoo.com.ph
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