

IMPROVED PASTURES UNDER COCONUTS IN BICOL

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SUMMARY

Grazing trials on improved pastures particularly signal grass (*Brachiaria decumbens*) under coconuts conducted in Albay province showed that a higher income was obtained from coconut plus cattle operation compared to that of coconut alone. The trials which are being continued had served and will continue to serve as demonstration trials on pasture development in Bicol region. With the trial farmers taken to planting materials of improved pasture species, they have undertaken to establish, propagate and further distribute to other farmers.

INTRODUCTION

It is estimated that 3.2 million ha of the total land area (30 million ha) of the Philippines are planted to coconuts (PCA 1989). Coconut plantations in Mindanao account for more than 50% of this area, and the remaining areas are located mainly in Southern Luzon (including Bicol Region) and Visayas.

Average nut production is estimated at a low of 49 nuts/tree/year or about 4649 nuts/ha/year. There are marked regional differences in production ranging from 64 nuts/tree/year in Southern Mindanao to 38 nuts/tree/year in Central Luzon. Approximately 25% of the 401 million trees planted are non-bearing or unproductive. Coconut farmers with an average land holding of only 3.3 ha have an estimated net income of only \$164 per year.

With the current low productivity of coconut plantations, one of the alternative approaches is to integrate livestock particularly cattle under coconuts.

Grazing Trials

Guinea grass and pare grass are the most common species grown under coconuts in the Philippines. But signal grass (*Brachiaria decumbens*) and humidicola (*Brachiaria humidicola*) are becoming popular particularly in Albay and Sorsogon provinces where they were observed to be more productive than pare or guinea grass.

Several ongoing studies supported by the Food and Agriculture Organization (FAO) through the Regional Working Group on Grazing and Feed Resource in Southeast Asia on improved pastures under coconuts were reported (Moog 1993). One of the studies compared the performance of cattle on signal grass pastures at 3 different stocking rates (Moog 1993a). The study showed that the best stocking rate for signal grass pastures under coconuts in Albay was 2 beasts per hectare (Table 1). Using the results from the study, Table 2 shows the cost and economics returns analysis from coconut alone and coconut plus cattle on signal grass pastures grazed for 533 days at different stocking rates. With coconut alone, only PhP12,750 return per hectare was obtained but with cattle on signal grass it was PhP16,900-20,800.

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Table 1. Mean Liveweight gains of cattle grazing on grass pasture at different stocking rates (December, 1991 - May 18, 1993).

PARAMETER	TREATMENT		
	A	B	C
Number of animals	6	6	6
Observation period (days)	533	533	533
Initial weight (kg)	164.15	161.61	64.65
Final weight (kg)	343.7	323.7	294.7
Average daily gain (kg)	0.34	0.30	0.24
Total liveweight gain/head (kg)	179.55	158.15	130.05
Total liveweight gain/ha (kg)	179.55a	315.34b	391.54b
Total LWG/ha/year (kg)	124	219	262.8

Legend: TA - Signal grass at 1.0 a.u./ha
 TB - Signal grass at 2.0 a.u./ha
 TC - Signal grass at 3.0 a.u./ha

Note: Figures with similar superscript are not significantly different $P < 0.05$.

Table 2. Cost and economic returns analysis from coconut alone and coconut + cattle on signal grass pastures. (PhP/ha/year)

ITEMS	COCONUT FARM (CONTROL)	COCONUT + CATTLE		
		A	B	C
		Signal 1.0 a.u./ha	Signal 2.0 a.u./ha	Signal 3.0 a.u./ha
Cash Expenditures:				
1. Establishment cost per ha (PhP) ^a	-	1,849	1,849	1,849
2. Biologics	-	200	400	600
3. Maintenance cost	-	1,000	1,000	1,000
Total expenditures	-	3,049	3,249	3,449
Income from cattle ^b	-	6,200	10,950	13,140
Income from coconut ^c	12,750	13,776	12,915	11,193
Total income	2,750	19,976	23,865	24,333
Total net income	12,750	16,927	20,616	20,884

^a Cost of land preparation, labor for planting, planting materials, fertilizer, labor for forcing, barbed wire and fence posts spread in 8 years.

^b at PhP50/kg LW

^c at PhP1.00/nut

The Bicol region, which includes Albay is frequented by typhoon and if a strong one comes in a year, no nuts can be harvested for the next two years. This observation clearly indicates that integrating cattle under coconuts in typhoon prone areas will ensure income to farmer s from his land rather than not having anything at all when a catastrophe comes.

Results of another study compared the performance of cattle at 1 and 2 a.u./ha in the first 2 sets or batch of animals. Higher liveweight gains were observed in the first set at lower stocking rate (1 a.u./ha) than at 2.a.u./ha. However, the second set of animals had higher liveweight gains at 2 a.u./ha compared to 1 a.u./ha. indicating that higher quality herbage was available to grazing animals at 2 a.u.tha and mature herbage was accumulating at the lower rate (1.0 a.u./ha).

Table 3. Mean liveweight gains of cattle grazing on signal pasture at different stocking rates (a./ulha)

Parameters	Grazing Period and Stocking Rate (a.u./ha)	
	1	2
	February 1991 to June 1992	
	1	2
ADG (g)	465	431
LWG/hd (kg)	109	134
LWG/ha (kg)	109	268
	August 1992 to March 1994	
	1	2
ADG (g)	240	371
LWG/hd (kg)	142	219
LWG/ha (kg)	142	438
	May 1994 to December 1994 ¹	
	2.5	3.0
ADG (g)	350	490
LWG/hd (kg)	72	100
LWG/ha (kg)	72	200

¹UMMB supplements given

In the third set of animals, stocking rates were raised to 2.5 and 3 au/ha (because based on herbage data there were more than enough biomass for 1 and 2 au/ha) and UreaMolasses-Mineral-Block (UMMB) supplementation in both stocking rates. UMMB improved the liveweight gain performance of animals compared to the second set even with high stocking rates. Higher liveweight gains were attained at 3.0 au/ha compared that of 2.5 a.u/ ha. This could be attributed to the presence of *Centrosema* in the pasture at 3.0 au/ha but none at 2.5 au/ha. The presence of *Centrosema* could be attributed to higher stocking which reduce the competing ability of signal grass against the legume.

The model farm and its role in pasture development

Grazing trials undertaken by Ligao Farm Systems Development Inc. serve as models on demonstrating the importance and value of improved pastures in livestock production. The farm serves as a model during field visits of livestock technicians and farmers. With the trials farmers readily became aware of the value of having improved pastures which leads them to be motivated on pasture development.

Ligao Farm Systems Development Inc. is initially the center for pasture development which started in 1988 for signal grass. Pasture development for signal grass was expanded and had reached a total of 60 hectares. In February 1992, *Brachiaria humidicola* (BAI) was introduced and initially established in 0.5 ha-area. Its main objective is to have a nursery for expansion and to be used for a grazing trials in the farm. *Brachiaria humidicola* was later expanded to about 100 hectares due to ease of establishment, high herbage production, persistent, palatable and adaptable under local conditions. The farm serves as a source of planting materials for farmers and cooperatives not only in the province of Albay but in the neighboring provinces such as: Camarines Sur, Masbate and Sorsogon.

Pasture development in smallholder farms

Individual farmers and cooperatives who visited the demonstration trials with grazing animals in Ligao have developed interest on planting improved pastures in their own farms. More often, before they leave the farm they usually bring along planting materials of either signal or humidicola or both. In fact, those who wish to plant larger areas usually come back to the farm to gather the required planting materials.

Farmers who got planting materials were monitored. Coordination with the Provincial Veterinary Services and the local municipal staff specifically the Municipal Agricultural Officer (MAO) in every municipality in the different towns of Albay is being done.

In general, farmers prefer signal and humidicola over the other species. With cut-and-carry system, napier finds its place, but in smaller scale of planting.

Degree of success in establishing and monitoring pasture varies among farmers. Cost of pasture are to stray animals of neighbors, absence of fencing, negligence and lack of control on number of stock to graze the pasture. Solving some if not all of these problems will help a lot in convincing farmers to pursue pasture development.

SUMMARY AND CONCLUSIONS

The existing pasture demonstration trials in Ligao, Albay had served and will continue to serve as tools for effective extension work on pasture development under coconuts in Bicol. Observations show that initial planting of farmers who got planting materials of signal grass and humidicola from Ligao has been multiplied and redistribution of planting materials to other farmers has been going on.

Considering the distribution of farmers who planted the various pasture species, monitoring would be difficult. There should be attempts to concentrate efforts of research and extension people focus on specific site(s) where success in pasture development would have high degree of success and experiences gained to be modified and adopted in other sites.

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