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"Improving Food Security : The Challenges for Enhancing Resilience to Climate Change"

Volume II

The University of Lampung

Indonesian SEARCA Fellow Association

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INTEGRATION OF OIL PALM PLANT AND ANIMAL IN LAMPUNG PROVINCE

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ABSTRACT

The aims of the research were to evaluate carrying capacity of palm oil by product including of forage among palm oil plant. The data were collected consisted of secondary and primary data. Secondary data was collected from agriculture department. Primary data was collected by dry weight range method. The samplings were collected from forage among palm oil plant. Primary data and secondary data were combined to evaluate the carrying capacity of forage.The research showed that there were two methods of farmer to integrate of oil palm and animals. The first the animal cattle was housed and secondary the animal was grazed among oil palm plant. Each farmer had 4—5 cattle in housed anime method. The cattle tend to fattening. In grazing method, the farmer had 5—20 cattle. This method was efficient for breeding system of cattle. The totally potency of forage from palm oil in Lampung Province was 670.852, 23 ton/years. The carrying capacity of the forage was 204.208,59 animals unit. If the assumption of dry matter requirement of cattle was 9 kg/day, therefore, 1 ha of palm oil plant had 3 animals unit for its carrying capacity. On the other hand, if the resource of forage was only from among palm oil plant then the carrying capacity was 2.2 animals unit. From field observation on forage in palm oil plant that non productive site (such as in young plant palm) we found 20 species of plants, and 15 species of plant found in plant oil palm productive site.

Key□ords: carrying capacity, integration of oil palm and animal

INTRODUCTION

Beef importing in Indonesia was increasing, to decreasing beef importing livestock population must be increased. On the other head productivity of livestock must be improved. To

improve productivity of livestock, feed management must be combined by feed technology, including feed processing and feed supplement utilization.

A viability of forage was a problem to developed ruminant productivity. Integration program between livestock and crop plant could increase viability of forage in palm oil plant. Forage among palm oil plant had high potential to serve forage for livestock, especially cattle. Carrying capacity and botanical composition of forage was important to observe.

METHODS

The date was collected consisted secondary and primary data. Secondary data was collected from agriculture department. Primary date was collected by dry weight range method. The samplings were collected from forage among palm oil plant. Primary date and secondary date were combined to evaluate the carrying capacity of forage. To collect carrying capacity date, was used assumption that dry matter consumption was 3% from weight of animal (Parakkasi, 1999). One animal unit (AU) equal with one cattle that weight 455 kg (Santoso, 1995).

RESULTS AND DISCUSSION

Based on field observation, there were two methods/ways of farmer make integration between oil palm plant and animal, first livestock was housed, and second livestock was grazed.

A. Housed ay/ system

In housed system farmer used cut and carry to serve forage. Farmer was not fully used forage from palm oil plant. The farmer also used other forage.

In housed system, the livestock feces was collected and used for fertilizer. In this system, dietary feed concentrate was used to improve of growth of the livestock. This housed system attempted to fattening livestock, especially cattle. Otherwise, most of farmer had breeding system. In housed system was suggested to fattening of cattle.

B. Grazing System

Based on field observation, grazing system was used in the palm oil plant at PTPN VII Lampung, in where Rejosari and Bekri plantation area cattle were let grazing among the crops. At this condition, the system had high efficient for the farm, it could be grazed by 5—20 of cattle. Further information in regard the plantation, the palm oil plants were in five years old.

Carrying Capacity

Based on sampling unit the forage among the plant of palm oil could produce 7237.42 kg/ha/years and produce of palm leaf blante was 264785 kg/ha/years. If the asumption one animal unit (1 AU) needs 9 kg of dry matter per day so, one ha of palm oil plantation could have carrying capacity of 3 animals unit.

The potential carrying capacity of palm oil plant to serve forage could be seen in Table 1. From this Table 1, Mesuji district had high potential to serve forage from palm oil plant (53669.75 AU) and followed by Way Kanan district (35903.25 AU) Lampung Tengah district (28279.75 AU), and Tulang Bawang district (24185.39 AU). Total ability of Lampung Province to be potential to serve forage from oil palm plant was 670,852.22 ton/years and carrying capacity 204,208.59 animal unit.

Botanical Composition

The research showed there were different botanical/plant composition species between forage plant oil palm production and oil palm pre-production. Different plants species at oil palm pre-production site had much more species of plants compare those in the oil palm production site. The percentage of botanical/plant composition species from these two different sites of palm oil plant could be seen in Table 2. From this table, forage species that growth under pre production of palm oil plant site had more variance (20 species) compared to those growth under of palm oil plant production (15 species).

The variance species was caused by different of shading oil palm plant. The shading of crops/plant decreased of forage species variance. The shading of palm oil plant in production site had more shudder combined to palm oil plant in pre production site. According to Hutari (2006) shading effected forage species variance caused forage needs sunlight for forage metabolism. Similar to it, Reksohadiprodjo (1994) stated that the most of species forage did not resistent to shading. Human factor also effect on growth of forage under oil palm plant. Harvesting process of palm oil plant could distract forage under palm oil plant.

Dominant forage species that growth under palm oil plant at production site were *Paspalum conjugatum* 20.58%, *Asystasia gangetica* 17.47%, *Ottochloa nodosa* 15.40%.

Calopogonium mucunoides had better growth under palm oil at production site with 0.30%. *Calopogonium mucunoides* did not need full of sunlight to grow.

Forage species that growth under pre production site were *Asystasia gangetica* 23.19%, *Paspalum conjugatum* 11.95%. *Asystasia gangetica* did grow better than others, because it does resistant to shading. The least forage species that growth under pre production site was *Cleome rutidosperma* with 0.29%.

CONCLUSION

1. There were two different methods of farmer in handling their livestock by grazing system and housed system.
2. The grazing system was suggested for breeding of livestock.
3. Potentially of ability forage from palm oil in Lampung Province was 670,852.23 ton/years. The carrying capacity of the forage was 204,208.59 animals unit.
4. If the assumption of requirement of dry matter of cattle was 9 kg/day, so 1 ha of palm oil plant had 3 animals unit of carrying capacity. On the other hand if resource of forage only from of palm oil plants the carrying capacity was 2.2 animals unit.
5. Other plants composition of forage in palm oil plant that non production (young plant palm) site were 20 species, and 15 species in plant oil palm production site.

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Table 1. Planting area of palm oil plant, forage production, carrying capacity of each district in Lampung Province

No.	Districts	Total Planting area	Total forage production of palm oil plant	Total forage production of under palm oil	Total forage production (kg/years)	Total forage production (ton/years)	Total carrying capacity (AU)
1	Lampung Barat	3052	8081252,605	16122922,48	24204175,09	24204,17509	**7368,09**
2	Tanggamus	0	0	0	0	0	**0,00**
3	Lampung Selatan	4169	11038906,33	22023743,06	33062649,39	33062,64939	**10064,73**
4	Lampung Timur	2805	7427232,49	14818085,7	22245318,19	22245,31819	**6771,79**
5	Lampung Tengah	11714	31016970,19	61882016,36	92898986,55	92898,98655	**28279,75**
6	Lampung Utara	8571	22694762,81	45278364,54	67973127,35	67973,12735	**20691,97**
7	Way Kanan	14872	39378895,4	78564909,28	117943804,7	117943,8047	**35903,75**
8	Tulang Bawang	10018	26526208,58	52922489,32	79448697,9	79448,6979	**24185,30**
9	Pesawaran	511	1353053,762	2699480,14	4052533,902	4052,533902	**1233,65**
10	Prengsewu	1005	2661093,994	5309153,7	7970247,694	7970,247694	**2426,26**
11	Mesuji	22231	58864458,28	117440592,9	176305051,2	176305,0512	**53669,73**
12	Tulang Bawang Barat	5612	14859760,69	29646736,88	44506497,57	44506,49757	**13548,40**
13	Bandar Lampung	24	63548,51328	126785,76	190334,2733	190,3342733	**57,94**
14	Metro	3	7943,56416	15848,22	23791,78416	23,79178416	**7,24**
15	**Proinsi Lampung**	**84587**	223974087,2	446851128,4	670825215,6	670825,2156	**204.208,59**

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Table 2. Forage Species and percentage botanical composition of palm oil plant preproduction and Production

Code	Species Name	Local Name	Preproduction (%)	Production (%)
A	*Mucuna pruriens*	Kara benguk	2,66	7,31
B	*Ottochloa nodosa*	Rumput sarang buaya	5,34	15,40
C	*Centrosema pubescens*	Kakacangan	0,98	6,69
D	*Asystasia gangetica*	Ara sungsang	23,19	17,47
E	*Mikania micrantha*	Sembung rambat	8,23	2,80
F	*Paspalum conjugatum*	Rumput paitan	11,95	20,58
G	*Agrenatum conyzoides*	Babandotan	4,29	7,61
H	*Chromolaena odorata*	Kirinyuh	4,98	7,06
I	*Synedrella nodiflora*	Jotang kuda	0,98	1,46
j	*Eleusine indica*	Rumput belulang	2,83	3,34
k	*Cyperus kyllingia*	Rumput kenop	2,32	-
l	*Calopogonium mucunoides*	Kacang asu	11,25	0,30
m	*Acalypha australis*	Anting-anting	0,70	-
n	*Cleome rutidosperma*	Maman ungu	0,29	-
o	*Digitaria sanguinalis*	Genjoran	7,25	-
p	*Mimosa pudica*	Putri malu	0,70	3,47
q	*Cyperus rotundus*	Teki lading	4,00	-
r	*Oxalis barrelieri*	Belimbing tanah	2,43	-
s	*Eclipta prostrate*	Urang-aring	3,30	-
t	*Conyza sumatrensis*	Jalantir	2,32	-
u	*Lantana camara*	Saliara	-	0,61
v	*Imperata cylindrical*	Alang-alang	-	0,73
w	*Ipomoea triloba*	Katang-katang	-	5,17