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THE NUTRITIVE VALUE OF WEEDS UNDER OIL PALM PLANTATION AND ITS EFFECTS ON FEEDING PREFERENCES OF KATJANG GOATS

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BY

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CERTIFICATION

This project entitled **"The Nutritive Value of Weeds under Oil Palm Plantation and Its Effect on Feeding Preferences of Katjang Goats"** is prepared by Nur Fatin Nabiilah binti Miskan and submitted to the Faculty of Agriculture in fulfilment of the requirements of the course SHW 4999 (Final Year Project) for the award of the degree of Bachelor of Agriculture (Animal Science)

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ABSTRACT

This study was conducted to determine the effects of nutritive value of the weeds under oil palm plantation towards the weeding preferences by Katjang goats in Malaysia. Four Katjang goats were used in this. The goats were observed on their feeding behaviour of which type of weeds that they favour the most by calculating the number of bites on certain weed species as well as the time spent grazing on that weed. The goats were confined in smaller plots by the use of net electric fence for easier handling as well as plotting the area randomly. Time spent observing one goat is approximately fifteen minutes; when the time is up, the observation was shifted to another goat. The goats grazed for about three hours per day or until they have reach their satisfaction where all the weeds that they favours has been finished and all that left were the unfavourable ones. The samples of the weeds that the goats grazed on were collected and analysed for its content of dry matter (DM), crude protein (CP), crude fibre (CF), acid detergent fibre (ADF) and neutral detergent fibre (NDF). The results showed that the most favourable weeds by Katjang goats is *Asystasia intrusa* (Chinese violet) followed by *Clidemia hirta* (hairy clidemia) which are both broadleaves shrubs. The preference then goes with grasses such as *Centotheca lappacea* (barbed grass), *Cyrtococcum accrescens* (diffuse panic grass) and *Ischaemum muticum* (seashore centipede grass). The rest of the preferences are mostly ferns which are *Stenochlaena palustris* (giant fern), *Nephrolepis biserrata* (broad sword fern) and *Adiantum latifolium*, also one other broadleaves shrub, *Chromolaena odorata* (Siam weed).

Keywords : Nutritional value of tropical weeds, Katjang goats, oil palm plantation, feeding preferences, integration system.

ABSTRAK

Kajian ini telah dijalankan bagi mengenalpasti kesan kandungan nutrisi dalam rumpai di kawasan penanaman kelapa sawit terhadap pemilihan rumpai sebagai makanan kepada kambing Katjang di Malaysia. Empat ekor kambing baka Katjang telah digunakan dalam ekperimen ini. Kelakuan pemakanan kambing-kambing ini telah diperhatikan di mana jenis rumpai yang diragut di samping masa yang diambil bagi meragut satu-satu jenis rumpai. Kambing tersebut dikepung menggunakan pagar jaring elektrik bagi memudahkan pengurusan di samping membahagikan kawasan ragut kepada petak-petak kecil. Masa yang di ambil bagi memerhatikan seekor kambing adalah sebanyak 15 minit; apabila masa ini habis, pemerhatian akan beralih kepada kambing seterusnya. Kambing tersebut meragut selama tiga jam sehari atau setelah semua rumpai kegemaran mereka telah habis. Sampel rumpai telah diambil dan analisa terhadap kandungan bahan kering, protein mentah, gentian kasar, gentian nutral detergen dan gentian asid detergen. Dapatan daripada pemerhatian ialah rumpai yang paling digemari oleh kambing Katjang adalah Asystasia intrusa (rumput Israel) diikuti dengan Clidemia hirta (senduduk bulu) yang berupakan rumpai berdaun lebar. Seterusnya, kambing Katjang menggemari rumpai jenis rumput seperti Centotheca lappacea (rumput darah), Cyrtococcum accrescens (rumput telur ikan) dan Ischaemum muticum (rumput dawai). Pilihan selebihnya menjurus kepada jenis pakis seperti Stenochlaena palustris (paku miding), Nephrolepis biserrata (paku larat), dan Adiantum latifolium, juga rumpai jenis daun lebar, Chromolaena odorata (pokok kapal terbang).

Kata kunci : Nilai pemakanan rumpai tropik, kambing Katjang, kelapa sawit, sistem integrasi, kegemaran pemakanan.

CHAPTER ONE

1. **Introduction**

   1.1. **Background of study**

   Animal and crop integration system

   Oil palm plantation has been one of the biggest crop plantations known in Malaysia for its primary product which is palm oil. A lot of effort has been done, whether the plantation is own by giant companies or individual. It takes a large space to make a good large oil palm estate, for a good outcome. Therefore, such space has been taken up and disallowing the chance for rearing livestock animal that also would contribute so much to national economy. This has been a major problem for local animal farmer, for they are having trouble to get more space for their reared animal.

   To solve this space problem, integration system can be applied combining both oil palm plantation and livestock animal rearing. The animals can be released under the oil palm trees for free grazing for a fixed amount of time until they have collected all the nutrition they can take and go back to their shed. The condition under the oil palm tree itself as we know it, may be filled with shrubs and weeds that has no positive effect to the plantation itself. These weeds can be cleared out by the use of the livestock animals if being allowed under the plantation. Such animal has to be the ones that can withstand harsh local condition and climate, particularly a local breed animal. Also, it best to allow small ruminant under integration system rather than large ruminant. Sheep and goats are mainly kept for meat. Because of their low value compared to cattle and

the convenient amount of meat they provide, most animals slaughtered by choice are sheep and goats (Jonsson, 2010). If large ruminant is used, the amount of weed available may not be enough for all of the animals to graze and fulfil their supplementary need at one time. This is because large ruminants eat more than small ruminants. The stocking rate for cattle varies from 0.3-3.0/ha and in the case of sheep, from 2.0-14.0/ha. Animals should be relocated after 60% of the forage is grazed when it meets both objectives of weeding and forage regeneration (Jalaludin, 1996).

For better grazing, small ruminants that usually move in large numbers can be allowed to graze at a place at one time, and being moved to another space for other time to avoid overgrazing and compaction of soil. Furthermore, small ruminants such as goats are a good browser. They tend to choose their feed and not simply graze on anything green. Therefore, the plant that they chose could been of a good nutritive value and palatability, which is then to be measured by undergoing laboratory chemical analysis.

Local weeds nutrition

The weeds itself plays a huge role in allowing the integrated system to succeed. It has to contain all the important nutritive values and palatability that is required by the animal itself. As we know, Malaysia does not have a suitable grassland, environment; given it type of soil is too acidic. Wong and Chen (2011) stated that the peat, acid sulphate and bris soils are problem soils, and are difficult to manage for both crop and pasture production, and in particular for

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legumes. Thus, it is mandatory to manipulate the soil pH before planting any grasses or legumes. It further causing the type of weeds that is available under the plantation to vary in nutrition. These differences in nutritive value can be seen through the behaviour of the animal itself. The purpose of this study is to see the preferences of the weeds by the Katjang goats based on the nutritive value of the weed. Furthermore, goats are considered to browse to a higher degree (Ouéndraogo-Koné et al., 2006) which affects the type of weed they choose to feed on. The browsing habits of goats could be due to several morphological features, which allow the goat to be a successful browser (Ngwa et al., 2000). This could suggest that goats tend to choose feed of greater nutritive value as well as palatable. The use of the weeds is only as additional feed to the animals and they are not to depend solely on the weeds under the plantation as their main source of nutrition.

Biological weed control

We can make use of the animals as the biological control of the weed, therefore the use of chemical pesticide is no longer in the main interest. This can results in the decline of application of chemicals into the environment, excluding the use of fertilizer. Goats have been used to clear bush in many parts of Africa inclusive of trypanotolerance, and are potentially important likewise in the use of tree and shrub savannahs regions in the world (O'Reagan and Turner, 1993). Besides, the cost for chemical pesticide and the labour cost to apply it also can be

cut. Allowing the goats to graze in a provided area also can satisfy their natural instinct of grazing freely and roam around to mimic their behaviour naturally.

1.2. Research problem

The goats feed on most of the weeds under available under oil palm plantation but the nutritive value of such weeds is not known quantitatively. Therefore it is not known which weed has the best value to be used as additional feed source.

1.3. Research hypotheses

The goats preferred to feed on more palatable and nutritious weeds under oil palm plantation.

1.4. Objectives

General objective: To investigate the nutritive value of the weeds available in oil palm plantation that can suits Katjang goat's preferences.

Specific objective:

1. To recognize the most favourable weeds by Katjang goats under oil palm plantation.

2. To investigate the effects of feeding weeds to the body weight of the goats.

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