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## AGRONOMICAL CHARACTERS OF FOUR LOMBOK ISLAND INDIGENOUS GENOTYPES OF CASTOR BEAN (*RICINUS COMMUNIS* L.)

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### ABSTRACT

The major problem in cultivation and commercialization of castor bean (*Ricinus communis* L.) in West Nusa Tenggara as one of bio-energy crops has been lack of high yielding varieties for seed yield and seed oil content. Therefore, castor bean germplasm exploration has been conducted for further breeding programme. Characterization of the vegetative and reproductive traits within genotypes is useful in evolving high yielding varieties for certain condition of land. The exploration was then followed with screening for growth and yield performances of four selected genotypes, i.e. Beaq Amor, Klikit Kayangan, Gundul Bayan, and Hijau Sembalun. The result indicated that the genotypes showed significant differences in most vegetative and reproductive traits. Those differences in characteristics could be used as information of their genotypes attributes.

Keywords: castor, characters, exploration, germplasm, varieties

### INTRODUCTION

In the present year conservation and energy production has significant importance in the wake of the world energy crisis. Oil seed crops are potential renewable sources of fuels and castor bean (*Ricinus communis* L.) is one of that resources.

No report on genetic improvement aspect of this species has been taken up so far in Indonesia, but restricted to few publications at the global level. Systematic provenance trials at different locations have not been carried out intensively. On the castor development, we need trees with good genetic, high potential of yield, and good adaptation to wide range of bad environmental condition.

Screening of existing population in Indonesia for oil yield is needed to select the best producing genotypes. It can be used as source for crop improvement material. Besides, it can also serve for profitable production before systematic crop improvement program can yield

Article presented as poster at The 2<sup>nd</sup> International Conference on Biodiversity. Matam, Lombok, West Nusa Tenggara, Indonesia, 6-8 November 2012. good cultivation. This poster article described variation in vegetative and generative characters and also seed oil content of several selected

castor genotypes within Lombok Island of West Nusa Tenggara, Indonesia.

### MATERIALS AND METHODS

Exploration of plant material was done from April until May 2008 in Lombok island, West Nusa Tenggara (NTB), Indonesia where large population of castor grown was found. Seed from each genotype were obtained from tree stand showing good growth and development and representative for each region, and then prepared for study.

Study in cultivation areas was conducted at Amor-Amor Village, Subdistrict Khayangan, North Lombok, West Nusa Tenggara, during 2009-2010. Seeds were planted in the field experimental to test yield potential of each genotype without experiment design and three replications. Each experiment unit contained 24 trees plotted in 2 m x 3 m spacing.

### RESULT AND DISCUSSION

In general, seed sources of castor NTB genotypes vary significantly with respect to vegetatively morphological and reproductive characters. Table 1. below shows characteristics of castor Lombok island indigenous genotypes, and Figure 1 shows their performances. Those

of the morphological vegetatives and generatives difference might be due to genetic difference. Therefore, with adequate genetic variability exists in Lombok indigenous castor germplasm could be exploited in the breeding programmes. Sujatha *et al.* (2008) state that the development of indigenous genotypes has given new impetus to hybrid castor development

Based on this research, it is necessary to inform the important characters which can be

used to distinguish the Lombok indigenous castor genotypes. Result at the present study revealed that considerable differences exist in all reproductive and vegetative characteristics among the different genotype of indigenous Lombok Islands castor. Beaq Amor was found as a superior genotype on the basic of seed yield, seed oil content, and others agronomics traits.

Table 1. Description of Castor (*Ricinus communis* L.) Lombok Island Indigenous Genotypes

Charaters	Beaq Amor	Klikit Kayangan	Gundul Bayan	Hijau Sembalun
Origin	North Lombok, NTB	North Lombok, NTB	North Lombok, NTB	East Lombok, NTB
Growth type	Upright	Upright	Upright	Upright
Hight of plant (cm)	125-275	200-360	175-300	130-300
Production period	1-3 years	1-4 years	1-2 years	1-3 year
Day of flowering (days)	40-70	70-90	65-90	55-80
Day of harvest (days)	120-160	155-190	160-180	135-170
Leaf form (lamina)	Peltatus, palmitate, round	Peltatus, palmitate, round	Peltatus, palmitate, round	Peltatus, palmitate, round
Leaf colour	Green	Green	Yellowies to green	Green
Colour of leaf petiole	Green to violet	Green to violet	Green to violet	Green
Lenght of leaf petiole (cm)	20-50	25-50	25-60	25-60
Stem colour	Green to violet	Violet to redish	Violet to redish	Green
Number of primary and scundery branches	2-10	3-7	3-6	3-10
Lenght of spike (cm)	35-90	30-75	40-65	40-90
Number of capsules/spike	60-130	40-110	40-105	50-140
Capsule form	Round with hair	Round with short hair	Round and bold	Round with hair
Maturation processes of capsules	Bertahap	Bertahap	Bertahap	Bertahap
Degree of spikes papow	Easy	Relatively easy	Relatively easy	Easy
Weigh of 100 seeds (g)	28-31	22-28	25-35	27-32
Seeds yield potential/plant/year (g)	1.008-1.280	650-1.100	760-1.300	1.010-1.270
Oil content of seed kernel (% w/w)	56-65	50-67	40-50	53-60
Condition of the experiment site during description	Semiarid type of climate with mean annual rainfall 600-900 mm			

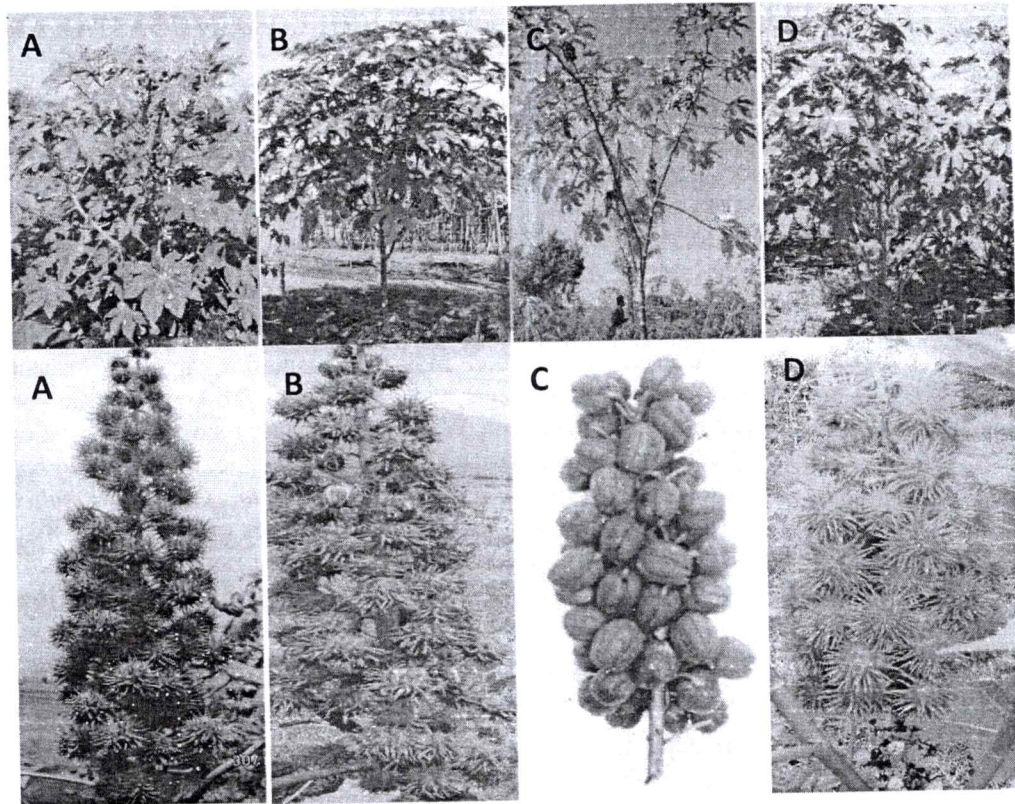


Figure 1. Performances of four castor (*Ricinus communis* L.) Lombok Island indigenous genotypes

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