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Tomato and Curly Chili Post-Planting Weed Community Composition

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ABSTRACT
The type of weed grows will be in accordance to the agricultural condition. Weed composition in high land is dominated by species diversity yet low number of individuals. In low land, however, the individuals are dominant but low species diversity. The research aims to find out weed community composition based on the dominance level. The research uses a quadrate method with vegetation analysis as its data analysis. Variables consist of density, frequency, and vegetation cover. The research result in Block I SDR, the dominant weed is *Borreria alata* 13.23%, in block II is *Cyperus rotundus* 9.70%, and in block III is *Asystasia intrusa* 15.39%.
Keywords*: post-planting, weed species*

I. INTRODUCTION

Weed is an efficient plant and it succeeds wherever it grows. Weed is considered as a plant that could grow in undesirable sites and without planting; however, its benefits have not been found. Weeds associated with cultivated plants will be a limiting factor for the plant growth. The main issue of weeds for main crops' growth and development is growth inhibition and in turn, a decrease in production.

Growing media that provides an opportunity for weeds is soil. In addition, altitude also has an influence. Weeds in agricultural area located in high land usually have high species diversity composition with low quantity per species. In low land, on the contrary, the composition of the number of individual is abundance but low species diversity.

Weed species diversity occur due to visible changes in environment over time. It is indicated by various types of interaction. If the microenvironment of habitat is relatively unchanged, the change in species composition will occur slowly or never happen (Sastroutomo, 1990, Sangadji, 2015).

The presence of weed community composition in an agricultural ecosystem, open spaces such as field, roadsides, waters as well as post-planting land is a natural phenomenon that stores various knowledge information sources useful for farmers, college students, or public. Studies on weeds have been conducted but each area with different topography and climate types will have different weed community composition in a different ecosystem.

The observation result in the research location indicated that tomato and curly chili post-planting weed community composition indicated high weed species diversity. It was, however, still unknown to what extent the density and dominance level of a weed species in the area. Hence, an analysis on weed community composition is required to determine a management/control method that is appropriate and economically cheap, easy to apply and has no negative effect on agro ecosystem environment.

The research aimed to identify weed community composition based on density and dominance level after tomato and curly chili planting.

II. METHODS

The research was conducted in a yard that had been used for tomato and curly chili planting in Gambesi Village, South Ternate Sub-disrict at an altitude of 80 m a.s.l. The research took place from September to October 2016. It used the quadrate method and the parameters consisted of density, frequency, and cover. The analysis data used was vegetation analysis.

III. RESULTS AND DISCUSSION

A. RESULT

Based on the vegetation analysis result, the number of weed found in observation block I was 20 species, block II was 22 species, and block III was 23 species. The weed species found according to leaf morphological type consisted of three groups: broadleaf, Gramineae, and sedges weeds. Of the three groups, the dominance weed in tomato and curly chili post-planting yard was broadleaf weeds. The weed identification results in the field suggested that there were 15 broadleaf weed species found in Block I, 2 species of Gramineae, and 3 (three) species of

sedges. In block II, there were 15 broadleaf weed species, 4 (four) Gramineae species, and 3 (three) sedges species. In block III, the weed species group found included 17 broadleaf weed species, and grasses and sedges each 3 (three) species.

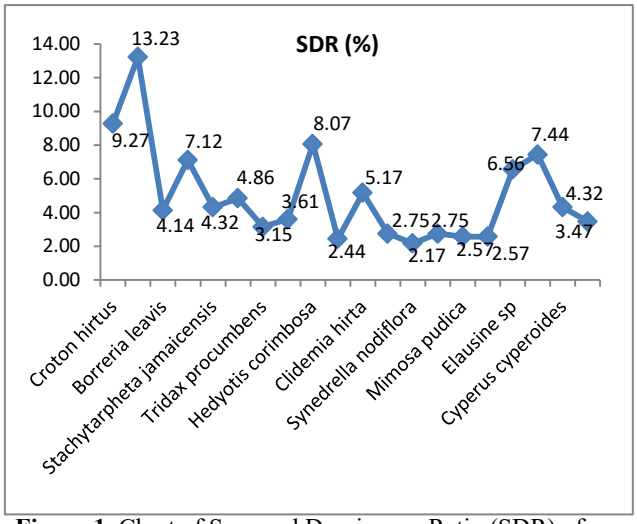

Figure 1. Chart of Summed Dominance Ratio (SDR) of Block I Weed

Figure 1 illustrates that weed species that had SDR value above 10% was *Borreria alata* 13,23%, whereas weeds with SDR value above 5% consisted of *Croton hirtus* (9,27%), *Hedyotis corimbosa* (8,07%), *Cyperus rotundus* (7,44%), *Asistasia intrusa* (7,12%), *Elausine* sp (6,56%), and *Clidemia hirta* (5,17%).

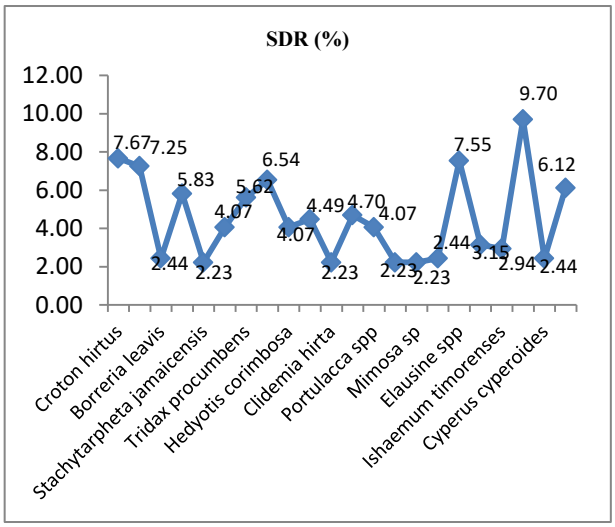

Figure 2. Chart of Summed Dominance Ratio (SDR) of Block II weeds

Figure 2 indicates that weed dominance in Block II observation was, on average, below 10%, namely: *Cyperus rotundus* with SDR value of 9.70%, *Croton hirtus, Elausine* sp and *Borreria alata* with SDR value of 7.64%, 7.55% and 7.25%, respectively. Other weeds had SDR value of 5%, except *Cleome rutidosperma* of 6.54%, *Cyperus kyllingia* of 6.12%, *Borreria sp* of 5.83% and *Tridax procumbens* of 5.62%.

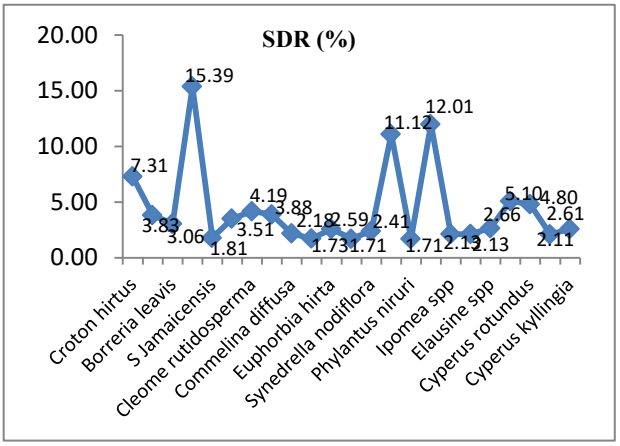

Figure 3. Chart of Summed Dominance Ratio (SDR) of Block III

Figure 3 shows that the highest weed dominance in the three blocks was *Asystasia intrusa* with SDR value of 15.39% and followed by *Brassica* spp and *Ageratum conyzoides* of 12.01% and 11.12%, respectively. Two weed species that had SDR above 5% included *Croton hirtus* of 7.21% and *Axonopus compressus* of 5.10%. Other weeds had a dominance level below 5%.

B. Discussion

Summed Dominance Ratio (SDR)

Important score comparison or Summed Dominance Ratio (SDR) of weeds in the field from three observation locations resulted in that the dominant weed species was generally broadleaf weed, except in Block II observation area that dominated by sedges group (Figure 2).

Weed species with the highest SDR was assumed to be the dominant weed that dominated the growing space. The dominant weed was considered as unstable in its domination since it only dominated certain area and it would likely to be replaced by other weeds if continued succession occurred. According to Sastroutomo (1990) species composition in a plant community often experienced a change over time. The process is known as succession.

Based on the observation result, the change in domination from one weed to another will occur repeatedly through the succession process. It was related to the land condition that just been rested from tomato and chili planting activity that it was likely the dominant weed species would be from seasonal broadleaf weeds comprised *Borreria alata*

(13.23%) and *Asystasia intrusa* (15.39%), and followed by *Brassica* sp and *Ageratum conyzoides* of 12.01% and 11.12%, respectively. It was in accordance to Sastroutomo (1990) explained that agricultural lands always undergo environmental disturbance in the form of cultivation by humans and after the agricultural activities completed, various plants will emerge, grow, compete, and develop in the early and mid-phase of succession. The species will emerge and go one after another until it reaches climax where the species that form a community will be uniform although it will not 100% similar to species from the origin vegetation before the agricultural activities begin.

IV. CONCLUSION

1. The summed Dominance Ratio (SDR) of weeds in the three observation blocks was *Borreria alata* (13.23%), *Asystasia intrusa* (15.39%), and followed by *Brassica* sp and *Ageratum conyzoides* of 12.01% and 11.12%, respectively.
2. Weed diversity between one, two, and three strata was relatively high with a coefficient value below 75%.

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