DIVERSITY OF PEST AND DISEASES COMMONLY FOUND IN AGROFORESTRY SYSTEM AT GUNUNG WALAT EDUCATIONAL FOREST

By

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Abstract

Agroforestry system becomes an important instrument in managing the degraded forest and surrounded by the farmers. Pest and diseases occurrence in agricultural crops and forest plantation is important to be investigated in order to maximize the benefits. Pest and disease inventory was done in three types of canopy opening (opened, semi open and closed) and based on commodity approach, since the farmers planted several agricultural crops. Inventory was done in transition period from rainy season to dry season.

The result showed that the occurrence of pest and disease depend on the type of canopy opening. The disease occurrence was higher in close canopy, while pest occurrence was higher in semi open canopy. It is important to conduct the same study in the transition period from dry to rainy season.

Keywords : pest and diseases, diversity, agroforestry

Introduction

Gunung Walat Educational Forest is located at 400 = 700 m above sea level. Therefore one of the main functions of the forest is water catchment's area conservation. However, most of the farmers surrounding the forest are much depend on the forestland for earning them self. Forest encroachment is therefore to be one of problems in managing the forest. Total forbidden to the farmers in entering the forest area is almost impossible.

The second function of the forest is education for both students and rural people. The agroforestry demonstration plots in Gunung Walat Forest are

being conducted. The farmers surrounding the forest are allowed to cultivate certain beneficial crops in degraded forestland. In such away, we do hope the farmer's income wi8ll increase and the water catchments will be conserved.

It is one of the common problems that pests and diseases attack annual crops. Therefore it is important to study the diversity pests and diseases of the crops under agroforestry system.

Materials and Methods

The occurrence of insect pests and diseases on different crops grown in agroforestry system has been investigated in explorative manners. This investigation is based on commodities and as much as possible in relation to their forest stand condition types : open, semi open and close canopies. Typical specimen and / or insect pest were also collected for further proper identification in the laboratory.

The pest and diseases inventory was done in June 2004, at transition period of rainy season and dry season.

Results And Discussion

Insect pests and diseases found during this period of investigation is presented in Table 1.. The result showed that the occurrence of pest and disease depend on the type of canopy opening. The disease occurrence was higher in close canopy, while pest occurrence was higher in semi open canopy.

It is notified that some of the very common insect pests and diseases on such agricultural crops were positively emerging, since those agricultural crops were planted three years ago, it is believed that outbreak won't be of threatening at least in the near future nevertheless, periodic monitoring is a necessity.

It is important to conduct the same study in the transition period from dry to rainy season to have more comprehensive data.

Conclusion

Pest and diseases are commonly found in Agroforestry system at Gunung Walat Educational Forest. Their occurrence was affected by the canopy opening.

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Table 1 List of insect pests and diseases of crops under three different canopy types recorded in agroforetry systems at Gunung Walat Educational Forest.

No	Crop		Symptom	Causal Agent	Level of Canopy Opening					
	English Name	Scientific Name			Open		Semi Open		Closed	
					Pest	Disease	Pest	Disease	Pest	Disease
1	Agathis	*Agathis dammara*	1. No significant insect feeding damage was found	Unidentified agent	-		+		-	
			2. Leaf spot	*Glosporium sp*				+		+
2	Banana	*Musa paradisiaca*	1. Rooled leaf	*Erionota thrax*, Hesperidax: Lepidoptera	-		+		+	
			2. Scabby appearance	*Nacoleia octasema*, Pyralid: Lepidoptera	-		+		+	
			3. Tunneling in the stem	*Cosmopolites sordidus*, Curculionid: Coleoptera	-		+			
			4. Leaf spot	*Pestalotia sp*		+				+
			5. Leaf anthracnose	*Colletotricum musae*						+
			6. Blood disease	*Pseudomonas solanacearum*						+
3	Cananga	*Cananga odoratum*	1. Leaf spot	*Colletotricum canangae*						+
4	Cardamon	*Elettaria cardamom*	1. Very nible insect feeding scars on the leaves	Unidentifield agent	-		+		+	
			2. Leaf spot			+				+

				Pestalotia sp						
5	Casava	*Manihot esculenta*	1. Feeding scars on roots and basal parts of stem, by grubs 2. Leaf spot 3. Bakterial blight	Melolontid larva Coleoptera *Oidium* *manihostis, Xantomonas campestris*	+ 	 + +	+ 	 + +	+ 	
6	Coffee	*Coffea Arabica C. Robusta*	1. Sap sucking scale insect on the shoot 2. Twig borring 3. Large leaf spot and twig disease 4. Leaf rust 5. Split kanker 6. Sooty mold 7. Steam kanker 8. Black root rot	*Coccus viridis*, Coccid : Homoptera *Xyleborus sp*, Curculionid : Coleoptera *Colletotrichum coffeanum* *Hemileia vastatrix* *Calonectria coffeicola* *Cephaleuros coffeae* *Corticium salmonicolor* *Rosellina bunodes*	+ + 	 + 	+ + 	 	+ + 	 + + + + +
7	Elephant grass	*Pennisetum purpureum*	1. Very nible spots on the stem 2. Leaf spot	Unidentified agent *Pyricularia sp*	+ 	 	- 	 	+ 	 +
8	Mangium	*Acacia mangium*	1. Feeding scars on the leafes	Psychid : Lepidoptera	+		-		-	
9	Nilam	*Pogostemon cablier*	1. Weaven leaves by Lepidoperan larva 2. Dark mildew	Pyralid larva : Lepidoptera *Irenina*	+ 	 	+ 	 	- 	 +

				anastomusans						
10	Pine aple	*Ananas comosus*	1. Discolouration	Nutrient deficiency	+		-		-	
11	Salaca	*Salacca edulis*	1. Leaf windowing 2. Leaf spot	Unidentified *Cephaleuros sp, Pestalotia sp*	- 	 +	-		+	
12	Schima	*Schima walichi*	Sup sucking damge on young leaves	Aphid : Homoptera	-		-		+	
13	Sereh	*Cymbopogon citratus*	1. Leaf rust	*Puccinia citrata*						+
14	Sengon	*Paraserianthes falcataria*	1. Defoliation 2. Sap sucking 3. Leaf mold	*Eurema hecabe* *Pseudococcid* : Homoptera *Ceratophorum albizae* *Diplodia sp*	+ +		- -	 +	- -	 + +
15	Taro	*Colocasia esculanta (L)*	1. Feeding scars on root 2. Leaf blight	Melolontid larva : Coleoptera *Phytophthora calocaseae*	-		+		-	 +
	Total occurances				9	6	11	4	9	17