SUMMARY

The current increase in the average temperature of the earth's surface is caused by global warming. Global warming occurs due to the greenhouse effect caused by increasing concentrations of carbon dioxide (CO_2) and other atmospheric gases. The concentration of CO_2 in the atmosphere can decrease through absorption by forest vegetation and storing it in biomass. Therefore, plants or trees in the forest function as carbon storage and depositors. Almost half of the biomass in living things is carbon. The amount of carbon stored in plants depends on the plant's type, nature, and age. One type of tree that can be relied on as a carbon store is the Gunung Pancar Nature Tourism Park pine tree. The Pine Forest in the Gunung Pancar Nature Tourism Park is one of the forests that has a complex structure, so it has a relatively large carbon storage potential.

The purpose of this study was to determine the relationship between the age of pine trees and carbon storage and to determine at what age the highest carbon storage is in the Pine Forest of the Gunung Pancar Nature Tourism Park. The study used a survey method. Pine trees were grouped based on tree age, namely 10 years, 17 years, and 20 years. In each age group of pine trees, a 100-meter transect was made, and on the transect, a square measuring 10 m x 10 m was made alternately between the left and right of the transect. Pine tree data in trunk diameter at breast height was taken in a square measuring 10 m x 10 m. The parameters observed are tree population density and trunk diameter at breast height. Data were analyzed using Analysis of Variance (ANOVA) followed by Least Significant Difference (LSD) analysis with a 5% error rate. In addition, regression analysis was also carried out to determine the relationship between pine tree age and carbon stock and to determine the optimal age of pine stands in storing carbon. Variance analysis and regression analysis were carried out using SPSS software.

The results showed that the age of pine stands greatly affected biomass and carbon stocks at various ages studied. Pine stored the most extensive carbon stock at the age of 20 years, with an amount of 399,380 tons.ha-1, and at the age of 10 years, it had the lowest carbon stock, with an amount of 89,287 tons.ha-1. These results indicate that the age of pine stands has an exponential relationship pattern with the biomass and carbon stocks of pine stands.

Keywords: Biomass, Carbon stock, Pine stand