

## عنوان مقاله:

Adaptive Ecophysiological Characteristics of Leaves and Root Distribution of Robusta Coffee Saplings as Affected by Age of Rubber Trees under an Intercropping System

## محل انتشار:

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## خلاصه مقاله:

Robusta coffee has been grown traditionally in Southern Thailand. This study aimed to evaluate the adaptation in the growth development of sole Robusta coffee (*Coffea canephora*) saplings and rubber-Robusta coffee saplings intercropping (۸- and ۱۶-year-old rubber plantations) planted between the shaded and unshaded conditions. The results showed that capturing light by sole Robusta coffee saplings (۱۰۰%) was greater than those recorded in the ۸- and ۱۶-year-old rubber plantations (۹۳ and ۷۸.۲۲%) over the measurement period. Soil moisture content was markedly higher in both rubber sites (۶.۳۴ and ۷.۲۵%) throughout the growing season compared to the full sunlight condition. In addition to the rubber canopy, the Leaf Area Index (LAI) over the entire period varied from ۰.۳۵ to ۳.۲۹ and ۰.۳۸ to ۲.۳۳ for the ۸- and ۱۶-year-old rubber plantations, respectively. Results at ۱۸ months after growing also indicated that Robusta coffee saplings grown in full sunlight had higher values of new leaves, and canopy width also had higher values than those of the other two treatments based on rubber intercropping. Meanwhile, no significant differences in photosynthetic pigments (Chla, Chlb, Chla/Chlb, Chltotal, and Car) were observed between the ۸-year-old rubber plantations compared to the full sunlight coffee trees. For the root competition, there were significant differences in fine root length in the ۲۰ and ۴۰ cm layers, which were greatly found in ۱۸ months old coffee plants under direct sunlight. Meanwhile, the older rubber trees (۱۶ years) showed a high density of root spread penetrated to all soil depths compared to younger rubber trees (۸ years). Thus, these results indicated that the growth potential of Robusta coffee saplings was strongly limited by a combination of shaded and root competition conditions under rubber plantation. Changes in the leaf and root structural traits of Robusta coffee saplings under the conditions of rubber ecological plantations would be valuable for manipulating the efficient growth of coffee for long-term rubber-based intercropping systems.

## کلمات کلیدی:

Morpho-physiological traits, Root competition, Rubber ecosystems, Shade tolerance

## لینک ثابت مقاله در پایگاه سیویلیکا:

