

Uji Alelopati Beberapa Spesies Tanaman Penaung Terhadap Bibit Kopi Arabika (*Coffea arabica* L.)

A Study of Allelopathy of Some Shade Trees to Coffea arabica L. Seedlings

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Ringkasan

Berdasarkan pertimbangan sosial ekonomi, dewasa ini banyak pekebun kopi menggunakan tanaman ramayana (*Cassia spectabilis*) sebagai penaung, sedangkan di daerah tertentu tanaman kayu manis (*Cinnamomum burmani*), makadamia (*Macadamia integrifolia*), jati (*Tectona grandis*), serta johar (*Cassia siamea*) dimanfaatkan sebagai tanaman sela. Sebelum digunakan secara luas, kajian alelopati diperlukan untuk mendasari rekomendasi budi daya yang lengkap. Efek alelopati kelima spesies tersebut terhadap tanaman kopi Arabika diamati dengan metode Salisbury & Ross (1987), di rumah kaca Pusat Penelitian Kopi dan Kakao Indonesia. Bibit ditanam dalam polibeg 20 cm x 30 cm berisi campuran (v/v) tanah lapis olah, pasir dan pupuk kandang 1 : 1 : 1. Tiap polibeg berisi 5 kg media. Bibit makadamia, kayu manis, durian dan johar berumur sekitar satu tahun diperoleh dari cabutan, tinggi bibit sekitar 30 cm, sedangkan ramayana dari cabutan berumur sekitar 3 bulan dengan tinggi sekitar 50 cm. Bibit dipelihara selama satu bulan sebelum digunakan untuk perlakuan, sementara bibit kopi selama tiga bulan. Penyiraman menggunakan air rembesan eksudat akar sebanyak 200 ml dilakukan setiap dua hari. Sementara itu kontrol disiram dengan air sumur dengan frekuensi dan jumlah yang sama. Perlakuan media murni dimaksudkan untuk mengoreksi efek penambahan unsur hara dalam air siraman terhadap pertumbuhan kopi. Perlakuan diakhiri setelah bibit kopi berumur tujuh bulan. Variabel pengamatan meliputi tinggi bibit, diameter batang, jumlah daun dan bobot kering dari akar, batang dan daun. Kadar unsur hara mineral N, P, K, Ca, Mg serta pH air rembesan juga dianalisis di Laboratorium Tanah Pusat Penelitian Kopi dan Kakao Indonesia. Data pertumbuhan dianalisis menurut rancangan acak kelompok lima ulangan dan uji beda nyata menurut Tukey 5%. Hasil penelitian menunjukkan bahwa eksudat akar tanaman ramayana (*Cassia spectabilis*) dicurigai mengandung senyawa kimia yang berdampak alelopati cukup kuat terhadap pertumbuhan bibit kopi Arabika. Rerata variabel pertumbuhan bibit kopi terhambat sekitar 10,24% dibandingkan kontrol. Tanaman johar (*Cassia siamea*) dan durian (*Durio zibethinus*) juga menghambat pertumbuhan

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bibit kopi tetapi hasilnya bias dengan kadar hara dalam eksudat akar yang lebih rendah daripada kontrol. Di lain pihak tanaman Makadamia (*Macadamia integrifolia*) dan Kayu manis (*Cinnamomum burmani*) tidak menunjukkan alelopati terhadap tanaman kopi. Dengan demikian penggunaan tanaman ramayana dan johar sebagai tanaman penayang kopi, perlu dipertimbangkan secara lebih bijak. Sementara untuk tanaman durian perlu pengaturan tata tanam yang dapat memperkecil kompetisi serapan hara mineral.

Summary

Because of social economic judgment, many coffee planters nowadays grow Cassia spectabilis and in the certain regions used Cinnamomum burmani, Macadamia integrifolia, Tectona grandis and Cassia siamea as shade trees or intercrops. Before being used in large scale, allelopathy study is appropriate to be done because this effect is much more difficult to be overcome than competition as growing factor. Research on allelopathy of those species had been conducted in glasshouse of Indonesian Coffee and Cocoa Research Institute using Salisbury & Ross method. Leachate of Cassia spectabilis Cinnamomum burmani, Macadamia integrifolia, Tectona grandis and Cassia siamea, pure media (without plant) and control (well water) were used as treatments. Planting material of Cinnamomum burmani, Macadamia integrifolia, Tectona grandis and Cassia siamea were as seedlings of one year old, whereas C. spectabilis was 3 months old. Those materials were planted in polybags 20 cm x 30 cm and replicated five times. The media was a mixture of top soil, manure and sand 1 : 1 : 1 (v/v). After those species were maintained for one month and Arabica seedlings for three month old, watering of coffee seedlings then using leachate from shade trees media. Every two days, each seedling was applied with 200 ml. Control was applied with well water. Pure media was used to study the effect of nutrient supply contained in the leachate. The experiment was stopped at seven month old of the coffee seedlings. The result showed that C. spectabilis released chemicals which showed allelopathic effect to Arabica coffee, their growth was inhibited 10% to control. The growth decrement from Cassia siamea and D. zibethinus treatment mainly caused by lower mineral content in the leachate and indicated by weak allelopathic. On the other hand M. integrifolia and C. burmani did not show allelopathic to Arabica coffee. Thus, based on allelopathy aspect, it can be included that C. spectabilis and C. siamea were not recommended as shade trees or intercrops with Arabica coffee and for D. zibethinus its cropping pattern must be arranged so the mineral competition could be maintained minimum.

Key words : Allelopathy, *Coffea arabica*, *Macadamia integrifolia*, *Cinnamomum burmani*, *Cassia siamea*, *Cassia spectabilis*, mineral.