

RINGKASAN

Desa Baseh merupakan salah satu sentra produksi kapulaga di Banyumas. Budidaya kapulaga dibagi menjadi dua, yaitu sistem naungan dan tanpa naungan. Penelitian ini bertujuan untuk 1) mengetahui perbedaan populasi bakteri rizosfer tanaman kapulaga ternaungi dan tidak ternaungi, 2) mendapatkan isolat bakteri rizosfer tanaman kapulaga ternaungi dan tidak ternaungi yang berpotensi menjadi PGPR.

Pengambilan sampel tanah dilaksanakan di Desa Baseh, Kecamatan Kedungbanteng, Kabupaten Banyumas. Tahapan isolasi dan karakterisasi bakteri dilakukan di Laboratorium Agroekologi, Fakultas Pertanian, Universitas Jenderal Soedirman. Penelitian dilaksanakan pada bulan Mei - Agustus 2024. Pengambilan sampel tanah dilakukan secara komposit dengan teknik pengambilan secara diagonal. Bakteri diisolasi dari sampel tanah menggunakan metode cawan tuang pada medium *Nutrient Agar* (NA). Koloni bakteri yang tumbuh dihitung populasinya dengan metode TPC dan dikelompokkan berdasarkan karakter morfologi makroskopis meliputi ukuran, bentuk, elevasi, tepi, dan warna. Setiap karakter koloni bakteri dimurnikan pada medium NA. Isolat murni diuji karakter PGPR dan morfologi selnya berdasarkan pewarnaan gram & spora.

Hasil penelitian menunjukkan bahwa populasi bakteri rizosfer kapulaga dengan naungan 213×10^7 cfu/gram lebih tinggi daripada populasi bakteri rizosfer tanpa naungan 66×10^7 cfu/gram. Sembilan isolat bakteri didapatkan dari sampel naungan dan sembilan isolat bakteri sampel tanpa naungan. Enam isolat sampel naungan dan enam isolat sampel tanpa naungan memiliki karakter PGPR. Isolat bakteri rizosfer tanaman kapulaga memiliki karakter PGPR, yaitu penambat nitrogen (isolat N4, N6, N7, N12, TN3, TN7, TN8 dan TN11); pelarut fosfat (isolat N2, N6, N11, N12, TN2, TN6 dan TN7), penambat nitrogen dan pelarut fosfat (isolat N6, N12, dan TN7). Bakteri rizosfer tanaman kapulaga berpotensi mendukung pertumbuhan tanaman melalui karakter PGPR yang ditunjukkan.

SUMMARY

Baseh Village is one of the cardamom production centers in Banyumas. Cardamom cultivation is divided into two, shading system and without shade system. This study aims to 1) determine differences in population of rhizosphere bacteria of shaded and unshaded cardamom plants, 2) obtain isolates of rhizosphere bacteria of shaded and unshaded cardamom plants that have the potential to become PGPR.

Soil sampling was carried out in Baseh Village, Kedungbanteng District, Banyumas Regency. The isolation and characterization stages of bacteria were carried out at the Agroecology Laboratory, Faculty of Agriculture, Universitas Jenderal Soedirman. The research was conducted from May to August 2024. Soil sampling was done compositely with diagonal collection technique. Bacteria were isolated from soil samples using the pour cup method on Nutrient Agar (NA) medium. The growing bacterial colonies were counted using the TPC method and grouped based on macroscopic morphological characters including size, shape, elevation, edge, and color. Each bacterial colony character was purified on NA medium. Pure isolates were tested for PGPR characters and cell morphology based on gram & spore staining.

The results showed that the population of cardamom rhizosphere bacteria with shade 213×10^7 cfu/gram was higher than the population of rhizosphere bacteria without shade 66×10^7 cfu/gram. Nine bacterial Isolates were obtained from the shaded sample and nine bacterial Isolates from the without shaded sample. Six Isolates of the shade sample and six Isolates of the without shade sample have PGPR characters. Cardamom plant rhizosphere bacterial isolates have PGPR characters, nitrogen fixers (Isolates N4, N6, N7, N12, TN3, TN7, TN8 and TN11); phosphate solvents (Isolates N2, N6, N11, N12, TN2, TN6 and TN7), nitrogen fixers and phosphate solvents (Isolates N6, N12, and TN7). Cardamom rhizosphere bacteria have the potential to support plant growth through the PGPR characters shown.