

**UJI ANTAGONISME BAKTERI *Bacillus subtilis*, *Pseudomonas aeruginosa*,
DAN KOMBINASINYA TERHADAP PENYAKIT BERCAK DAUN PADA
TANAMAN KACANG TANAH**

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ABSTRAK

Salah satu penyakit yang kerap menyerang tanaman kacang tanah adalah bercak daun yang disebabkan oleh cendawan *Cercospora* sp. Secara umum dalam mengendalikan penyakit ini petani menggunakan fungisida kimiawi yang dapat berdampak negatif bagi lingkungan dan kesehatan. Penggunaan bakteri *Bacillus subtilis* dan *Pseudomonas aeruginosa* sebagai agen pengendali hayati dapat menjadi alternatif pengendalian cendawan *Cercospora* sp. Penelitian ini bertujuan untuk mengetahui potensi bakteri *Bacillus subtilis*, *Pseudomonas aeruginosa*, dan kombinasinya dalam menghambat pertumbuhan cendawan *Cercospora* sp. secara *in vitro* dan *in vivo*. Percobaan dilaksanakan pada bulan Maret sampai dengan Juni 2025 di Laboratorium Bioteknologi dan Screenhouse Fakultas Pertanian Universitas Siliwangi. Percobaan *in vitro* dan *in vivo* terdiri atas 5 perlakuan dan 5 ulangan. Percobaan *in vitro* dilaksanakan menggunakan Rancangan Acak Lengkap, sedangkan percobaan *in vivo* menggunakan Rancangan Acak Kelompok. Dari hasil pengujian *in vitro* dan *in vivo* didapatkan *Bacillus subtilis*, *Pseudomonas aeruginosa*, dan kombinasinya dapat menghambat pertumbuhan cendawan *Cercospora* sp. dengan perlakuan terbaik adalah bakteri *Bacillus subtilis* dan *Pseudomonas aeruginosa* secara tunggal. *Bacillus subtilis* dapat menghambat pertumbuhan cendawan *Cercospora* sp. hingga 53,96% sedangkan *Pseudomonas aeruginosa* sebesar 52,76% secara *in vitro*. Secara *in vivo* keparahan penyakit bercak daun perlakuan *Bacillus subtilis* memiliki nilai terkecil yaitu 30,27% dan *Pseudomonas aeruginosa* sebesar 36,13%.

Kata kunci: *Bacillus subtilis*, bercak daun, kacang tanah, *Pseudomonas aeruginosa*

ANTAGONISTIC TEST OF *Bacillus subtilis*, *Pseudomonas aeruginosa*, AND THEIR COMBINATION AGAINST LEAF SPOT IN PEANUT PLANTS

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ABSTRACT

One of the common diseases that affect groundnut plants is leaf spot, caused by the fungus *Cercospora* sp. In general, farmers manage this disease using chemical fungicides, which can negatively impact both the environment and human health. The use of *Bacillus subtilis* and *Pseudomonas aeruginosa* as biological control agents presents an alternative approach to inhibit the growth of *Cercospora* sp. This study aimed to evaluate the potential of *Bacillus subtilis*, *Pseudomonas aeruginosa*, and their combination in suppressing the growth of *Cercospora* sp. under in vitro and in vivo conditions. The experiments were conducted from March to June 2025 at the Biotechnology Laboratory and Screenhouse of the Faculty of Agriculture, Siliwangi University. The in vitro and in vivo In vitro and in vivo experiments consisted of 5 treatments and 5 replications. In vitro experiment was arranged in a Completely Randomized Design, while the in vivo experiment used a Randomized Block Design with five treatments and five replications. From the results of in vitro and in vivo tests, *Bacillus subtilis*, *Pseudomonas aeruginosa*, and their combination were found to inhibit the growth of *Cercospora* sp., with the best treatments being the single applications of *Bacillus subtilis* and *Pseudomonas aeruginosa*. *Bacillus subtilis* inhibited the growth of *Cercospora* sp. by up to 53.96%, while *Pseudomonas aeruginosa* inhibited it by 52.76% in vitro. In vivo, the severity of leaf spot disease was lowest in the *Bacillus subtilis* treatment (30.27%), followed by *Pseudomonas aeruginosa* (36.13%).

Keywords: *Bacillus subtilis*, leaf spot, Peanut plant, *Pseudomonas aeruginosa*