# RINGKASAN

Penyakit yang dapat menurunkan produksi jagung adalah penyakit bulai. Pengendalian yang telah dilakukan dengan penggunaan pestisida kimia, akan tetapi usaha tersebut belum efektif dalam mengendalikan penyakit bulai. BIO P60 dan BIO T10 dapat dimanfaatkan sebagai biopestisida karena adanya metabolit sekunder. Penelitian ini bertujuan untuk mengetahui pengaruh pemberian BIO P60, BIO T10 dan fungisida secara tunggal dan gabungan dalam menekan penyakit bulai pada tanaman jagung varietas P21dan terhadap pertumbuhan serta produksi tanaman jagung varietas P21 di lapangan.

Penelitian telah dilaksanakan di Laboratorium Perlindungan Tanaman dan lahan pertanaman jagung, Desa Jatisaba, Kecamatan Purbalingga, Kabupaten Purbalingga, mulai Februari sampai dengan Juni 2016. Penelitian ini menggunakan Rancangan Acak Kelompok (RAK), dengan 3 ulangan dan 11 perlakuan yaitu kontrol; aplikasi BIO P60 untuk perlakuan benih dan disemprotkan ke daun; aplikasi BIO T10 untuk perlakuan benih dan disemprotkan ke daun; aplikasi BIO P60 disemprotkan ke daun; aplikasi BIO T10 disemprotkan ke daun; aplikasi fungisida *fenamidon* untuk perlakuan benih dan BIO P60 untuk disemprotkan ke daun; aplikasi fungisida *fenamidon* untuk perlakuan benih dan BIO T10 untuk disemprotkan ke daun; aplikasi fungisida *fenamidon* untuk perlakuan benih dan disemprotkan ke daun; aplikasi fungisida *fenamidon* disemprotkan ke daun; aplikasi fungisida *dimetomorf* untuk perlakuan benih; dan aplikasi fungisida *metalaksil* untuk perlakuan benih. Variabel pengamatan meliputi komponen patosistem (masa inkubasi, intensitas penyakit, dan laju infeksi), komponen pertumbuhan (perkecambahan, tinggi tanaman dan jumlah daun) dan komponen hasil (munculnya bunga petama kali, bobot basah dan kering buah per tongkol, jumlah tongkol, panjang tongkol, jumlah baris).

Hasil penelitian menunjukkan bahwa BIO P60 secara tunggal atau gabungan mampu menekan intensitas penyakit bulai sebesar 22,37-40,19%. Perlakuan BIO T10 secara tunggal atau gabungan mampu menekan intensitas penyakit sebesar 18,8-37,57% serta fungisida *fenamidon* sebesar 46,43-55,67%. Penundaan masa inkubasi BIO P60 sebesar 25,47–30,87%, BIO T10 sebesar 17,35-26,66% dan perlakuan benih dengan fungisida *fenamidon* sebesar 53,07-54,21%. Perlakuan dengan menggunakan BIO P60 secara tunggal atau gabungan mampu meningkatkan perkecambahan 10,77%, tinggi tanaman 25,08-27,89%, munculnya bunga pertama kali 6,04–6,72%, panjang tongkol 2,49-10,4%, jumlah tongkol 20,9% serta bobot basah 19,19-27,27% dan bobot kering tongkol 17,49–27,67%. Perlakuan BIO T10 secara tunggal atau gabungan mampu meningkatkan perkecambahan 10,42%, tinggi tanaman 2,88-22,7%, jumlah tongkol 10,92-19,08%, panjang tongkol 9,26-15,11%, bobot tongkol basah 24,29–31,43% dan bobot tongkol kering 25,94–32,19%.

# *SUMMARY*

*Downy mildew could decrease corn production. Control of the disease has been done by chemical pesticides, but it could not be effective. BIO P60 and BIO T10 could be used as a biopesticide because of their secondary metabolites. This researh aimed to know the effect of BIO P60, BIO T10 and fungicides alone or in combination to control the disease and on the growth and production of corn P21 variety in the field.*

*The research was carried out at the Laboratory of Plant Protection Faculty of Agriculture Jenderal Soedirman University and at corn fields, Jatisaba Village, Purbalingga Subdistrict, Purbalingga Regency, from February up to June 2016. Randomized block design (RBD) was used, with 3 replicants and 11 treatments, i.e. control; BIO P60 for seed treatment and sprayed to the leaves; BIO T10 for seed treatment and sprayed to the leaves; BIO P60 sprayed to the leaves; BIO T10 sprayed to the leaves; fenamidon fungicide for seed treatment combined with BIO P60 sprayed to the leaves; fenamidon fungicide for seed treatment combined with BIO T10 sprayed to the leaves; fenamidon fungicide for seed treatment and sprayed to the leaves; fenamidon fungicide sprayed to the leaves; dimetomorf fungicide for seed treatment; and fungicide metalaxyl for seed treatment. Variables observaed were patosistem components (incubation period, disease intensity and infection rate), growth components (germination, crop height and number of leaves) and yield components (the first flowering time, wet and dry weight of cob, the number of cobs, cob length, and number of rows).*

*Results of the research showed that BIO P60 alone or in combination could suppress the intensity of diseaseas 22.37-40.19%. BIO T10 alone or in combination and fungicide fenamidon could suppress 18.8-37.57% and 46.43-55.67% respectively. BIO P60, BIO T10 and fungicide fenamidon for seed treatments could delay incubation period as 25.47-30.87%; 17.35-26.66% and 53.07-54.21% respectively. BIO P60 alone or in combination could increase 10.77% germination, crop height 25.08- 27.89%, the first flowering time 6.04-6.72%, cob length 2.49- 10.4 %, the number of cobs 20.9%, wet and dry weight of cob as 19.19-27.27% and 17.49-27.67% respectively. BIO T10 alone or in combination could increase germination 10.42%, crop height 2.88-22.7%, the number of cobs 10.92-19.08%, cob length 9.26-15.11%, wet and dry weight of corncob as 24.29-31.43% and 25.94-32.19% respectively.*