

RINGKASAN

Pengembangan tanaman kentang selama ini berada di dataran tinggi, dan menimbulkan dampak yang kurang baik terhadap lingkungan. Sehingga diperlukan alternatif untuk mengatasi hal tersebut menggunakan teknik pemuliaan tanaman yaitu induksi mutasi dengan mutagen sinar gamma. Penelitian ini bertujuan untuk 1). Mengetahui pengaruh radiasi sinar gamma terhadap pertumbuhan dan produksi tanaman kentang. 2). Mengetahui pengaruh radiasi sinar gamma terhadap variabel kualitatif tanaman kentang. 3). Mengetahui mutan - mutan yang unggul dari segi produksi dan sifat ketahanan terhadap penyakit.

Penelitian dilaksanakan dari bulan November 2014 sampai dengan bulan Maret 2015, bertempat di lahan percobaan Desa Karang Tengah, Kecamatan Baturraden, Kabupaten Banyumas. Ketinggian lahan percobaan adalah 388 (m dpl). Penelitian menggunakan rancangan bersekat (*Augmented Design*) dengan rancangan dasar Rancangan Acak Kelompok (RAK) menggunakan 3 varietas kentang sebagai pembanding yaitu Atlantik, Granola, dan Tedjo MZ dengan 4 perlakuan. Perlakuan yang di coba meliputi: 0 (kontrol), 15, 25, dan 35 Gy dengan ulangan hanya pada kontrol. Variabel yang diamati meliputi persentase tanaman hidup, waktu tumbuh tanaman, tinggi tanaman, jumlah batang, diameter batang, jumlah daun, susunan daun, warna daun, frekuensi daun menyimpang, berbunga atau tidak, warna mahkota bunga, diameter umbi, bentuk umbi, warna kulit umbi, warna daging umbi, jumlah umbi, bobot total umbi per tanaman, rerata bobot umbi, bobot tanaman segar, bobot tanaman kering, kebiasaan tumbuh, dan umur panen.

Data yang diperoleh dianalisis dengan uji F, apabila berbeda nyata dilanjutkan dengan uji LSI (*Least Significant Increase*). 1). Hasil penelitian dari perlakuan radiasi sinar gamma 15, 25, dan 35 Gy yang menunjukkan keunggulan dari segi pertumbuhan yaitu pada variabel persentase tanaman hidup, tinggi tanaman, diameter batang, dan jumlah daun, sedangkan dari segi produksi pada variabel bobot total umbi per tanaman dan rerata bobot umbi. 2). Perlakuan radiasi sinar gamma memberikan pengaruh yang berbeda dengan tanaman kontrol pada variabel bentuk daun, frekuensi daun menyimpang, kebiasaan tumbuh, bentuk umbi, dan sifat ketahanan terhadap penyakit. 3). Mutan yang memberikan keunggulan dalam segi ketahanan terhadap penyakit, bobot total umbi per tanaman, dan bobot umbi adalah mutan D1-A11, D2-A11, D2-A4, D1-G1, D1-G2, D3-G11, D3-G12, dan D2-M11.

SUMMARY

The development of the potatoes crop had been in the highlands, and cause unfavorable impact on the environment. So that needed an alternative to overcome this using plant breeding techniques that induced mutation by mutagen gamma rays. This research was aimed to 1). Knowing the influence of gamma radiation to the growth and yield of potato. 2). Knowing the influence of gamma radiation to the qualitative variables potato plants. 3). Knowing mutants that are superior in production and disease resistance.

The research was conducted from November 2014 to March 2015, in located experimental field of Karang Tengah village, Baturraden subdistrict, Banyumas Regency. The altitude of experimental field was 388 (m asl). This research design was used (Augmented Design) with the basic design of a randomized block design (RAK) used three varieties of potatoes as a comparison, namely the Atlantic, granola, and Tedjo MZ with four treatments. The treatments tested were four radiation levels of gamma rays, namely 0 (control), 15, 25, and 35 Gy with repetition only in control. Observed variabels were the percentage of live plants, grow a plant, plant height, number of stems, stem diameter, number of leaves, leaf arrangement, leaf color, leaf frequency deviates, flowering or not, the color of petals, diameter tuber, tuber shape, tuber skin color, flesh color tuber, tuber number, total weight tuber plant, average tuber weight, plant fresh weight, plant dry weight, growth habit, and time of harvest.

The dates analyzed by F test, if there was obvius diverge continued by Least Significant Increase (LSI) test. 1). The results showed that gamma irradiation treatment 15, 25, and 35 Gy affected gives in terms of growth is at a variable percentage of plant life, plant height, stem diameter, and number of leaves, while in terms of the production of the variable total weight of tubers plant and mean tuber weight. 2). The treatment of gamma-ray radiation give different effect to the control plants variable leaf shape, leaf frequency deviates, growth habit, tuber shape and disease resistance. 3). The mutants which gives advantages in terms of disease resistance, the total weight of tuber plants, and the mean tuber weight is a mutant D1-A11, D2-A11, D2-A4, D1-G1, D1-G2, D3-G11, D3-G12, and D2-M11.