

RINGKASAN

Sawi Putih (*Brassica pekinensis*) adalah jenis sayur daun yang banyak dibudidayakan petani yang kebutuhannya setiap tahun mengalami peningkatan. Hal yang dapat dilakukan untuk meningkatkan produktivitas sawi putih adalah melalui pemberian unsur Nitrogen. Tujuan dilaksanakannya penelitian ini antara lain (1) mengetahui pengaruh formula pupuk N *slow release* terhadap pertumbuhan dan hasil tanaman sawi putih, (2) mengetahui formula pupuk N *slow release* yang tepat untuk memperoleh pertumbuhan dan hasil tanaman sawi putih yang optimal.

Penelitian dilaksanakan di lahan terbuka dengan menggunakan media tanah pada polibag di Desa Kebumen Kecamatan Baturraden Kabupaten Banyumas pada bulan September 2018 sampai Januari 2019. Perlakuan yang dicoba yaitu 5 formula pupuk N-lepas lambat berbahan lokal urea, biomassa *Azolla microphylla*, asam humat, montmorillonit, dan gondorukem dengan formula yaitu: (i) F₁ (60% Urea, 10% *Azolla microphylla*, 10% Montmorillonite, 10% Gondorukem, 10% Asam humat), (ii) F₂ (70% Urea, 10% *Azolla microphylla*, 10% Montmorillonite, 10% Gondorukem), (iii) F₃ (70% Urea, 10% *Azolla microphylla*, 10% Montmorillonite, 10% Asam humat), (iv) F₄ (70% Urea, 10% *Azolla microphylla*, 10% Gondorukem, 10% Asam humat), (v) F₅ (70% Urea, 20% *Azolla microphylla*, 10% Montmorillonite) ditambah satu kontrol dengan pupuk NPK (F₀). Rancangan yang digunakan adalah Rancangan Acak Kelompok Lengkap (RAKL) dengan empat kali ulangan.

Hasil penelitian menunjukkan bahwa pupuk formula N *slow release* tidak berpengaruh nyata pada semua variabel. Hujan yang turun hampir setiap hari menyebabkan penyinaran matahari pada tanaman sawi putih menjadi kurang lama sehingga memengaruhi proses fotosintesis tanaman, dan menyebabkan produksi fotosintat menjadi terhambat. Suhu dan kelembaban yang tidak sesuai dengan syarat tumbuh tanaman sawi putih juga menjadi penyebab tanaman sawi putih tidak dapat tumbuh dengan optimal. Kondisi iklim yang dikehendaki oleh tanaman sawi putih adalah daerah yang memiliki suhu malam hari 15,6 °C dan siang harinya 21,1 °C serta penyinaran matahari antara 10-13 jam per hari, sedangkan pada saat penelitian lingkungan memiliki suhu 29,93 °C pada siang hari dan 27,03 °C pada sore hari. Kelembaban yang sesuai untuk pertumbuhan tanaman sawi putih adalah 80-90%, sedangkan rata-rata kelembaban udara pada saat penelitian hanya 67-75%. Selain faktor lingkungan, dosis pupuk urea sebanyak 100 kg/ha diketahui belum mampu menyuplai kebutuhan N tanaman sawi putih dan harus ditingkatkan menjadi 200 kg/ha.

Lima macam pupuk formula N *slow release* memang memberikan hasil yang tidak nyata pada semua variabel ukur, namun pupuk formula N *slow release* masih bisa berpotensi melampaui hasil perlakuan kontrol (F₀). Perlakuan terbaik untuk variabel panjang tanaman adalah F₃; jumlah daun, bobot tajuk tanaman segar, bobot tajuk tanaman kering, bobot tanaman segar, dan bobot tanaman kering adalah F₅; serta bobot akar segar dan bobot akar kering adalah F₂.

SUMMARY

Chinese cabbage (Brassica pekinensis) is a leaf vegetable widely cultivated by farmers which the needs every year have been improving, while production has not increased. Something to do to increase the production is by giving Nitrogen nutrient. This research was aimed to know: 1) the effect of five slow release fertilizer nitrogen formulas to the growth and production of chinese cabbage, and 2) the best of five slow release fertilizer nitrogen formulas to get the best result of chinese cabbage's growth and development.

The research was conducted from September 2018 to January 2019 on the fields with soil media in polybag, in Kebumen Village, Baturraden District, Banyumas. The treatment trial was of five nitrogen fertilizer formulas by local ingredients such as urea, Azolla microphylla biomass, humic acid, montmorillonite, and gum rosin with that formula: (i) F₁ (60% Urea, 10% Azolla microphylla, 10% Montmorillonite, 10% Gum rosin, 10% Humic acid), (ii) F₂ (70% Urea, 10% Azolla microphylla, 10% Montmorillonite, 10% Gum rosin), (iii) F₃ (70% Urea, 10% Azolla microphylla, 10% Montmorillonite, 10% Humic acid), (iv) F₄ (70% Urea, 10% Azolla microphylla, 10% Gum rosin, 10% Humic acid), and (v) F₅ (70% Urea, 20% Azolla microphylla, 10% Montmorillonite), and was added with single control NPK fertilizer (F₀). The design used is a Complete Randomized Block Design (CRBD) with four replicates.

The results showed that the five slow release fertilizer nitrogen formulas were not significantly affected to all observation variables. The rain that falls almost every day causes the sun's radiation on chinese cabbage to be less long so that it affects the process of plant photosynthesis, and causes the production of photosynthates were inhibited. Temperature and humidity which didn't match with the chinese cabbage growing requirements also cause the plant to can't grow optimally. Climatic condition desired by chinese cabbage are areas that have a night temperature of 15.6 °C and daytime of 21.1 °C and solar radiation between 10-13 hours per day, while at the research time was held on temperature showing results about 29.93 °C during the day and 27.03 °C in the afternoon. The appropriate humidity for the growth of chinese cabbage is 80-90%, while the average humidity of the air at the research time was only 67-75%. In addition to environmental factors, the dose of urea fertilizer as much as 100 kg / ha is known can't supply the chinese cabbage needs of N and must be increased to 200 kg / ha.

Five slow release fertilizer nitrogen formulas were not significantly affected to all observation variables, but it still exceed the control treatment results (F₀). The best treatment for plant length variable is F₃; number of leaves, fresh weight of plant, and dry weight of plant is F₅; and fresh weight of root and dry weight of root is F₂.