

RINGKASAN

Jagung manis (*Zea mays* Saccharata Sturt.) merupakan salah satu komoditas hortikultura yang memiliki nilai ekonomi tinggi dan banyak diminati oleh masyarakat. Peningkatan permintaan jagung manis menuntut adanya teknologi budidaya yang mampu meningkatkan pertumbuhan dan hasil tanaman, salah satunya melalui pemupukan yang tepat. Pupuk NPK berfungsi menyediakan unsur hara makro esensial yang diperlukan tanaman untuk pertumbuhan optimal. Pupuk silika (Si) yang merupakan *beneficial elements* untuk tanaman jagung, berperan dalam memperkuat jaringan tanaman, meningkatkan ketahanan terhadap cekaman lingkungan, serta mendukung proses fisiologis tanaman. Sementara itu, pupuk NPK berfungsi menyediakan unsur hara makro esensial yang diperlukan tanaman untuk pertumbuhan optimal. Penelitian ini bertujuan untuk (1) mengetahui pengaruh pupuk silika dan pupuk NPK terhadap pertumbuhan dan hasil tanaman jagung manis, serta (2) menentukan dosis pupuk silika yang paling efektif dalam meningkatkan pertumbuhan dan hasil jagung manis.

Penelitian dilaksanakan pada bulan Maret hingga Juli 2025 di Desa Rempoah, Kecamatan Baturraden, Kabupaten Banyumas dengan menggunakan Rancangan Acak Kelompok (RAK) non faktorial yang terdiri atas 10 perlakuan dan 3 ulangan. Perlakuan meliputi kombinasi konsentrasi pupuk silika 0–200% dan pupuk N-P-K 75–100%. Variabel yang diamati meliputi tinggi tanaman, diameter batang, jumlah daun, warna daun, luas daun, panjang tongkol, diameter tongkol, bobot tongkol berkelobot, bobot tongkol tanpa kelobot, bobot tongkol per satuan luas, bobot kering tanaman, dan bobot akar kering. Data dianalisis menggunakan uji F dan dilanjutkan dengan DMRT pada taraf 5%.

NPK adalah unsur esensial, diperlukan untuk pembentukan klorofil, energi, pertumbuhan akar, dan regulasi metabolisme. Tanpa NPK, tanaman tidak dapat tumbuh dan berproduksi, bahkan bisa mati. Silika bukan esensial, tetapi bersifat menguntungkan karena memperkuat tanaman dan meningkatkan ketahanan terhadap stres. Tanpa silika, tanaman tetap hidup, hanya hasil dan ketahanannya menurun. Hasil penelitian menunjukkan bahwa pemberian pupuk N-P-K + pupuk silika memberikan pengaruh nyata terhadap variabel warna daun, panjang tongkol, diameter tongkol, luas daun, dan bobot tongkol per petak. Sementara itu, tinggi tanaman, diameter batang, jumlah daun, bobot akar kering, bobot tongkol berkelobot, bobot kelobot, dan bobot kering tanaman menunjukkan pengaruh tidak nyata. Perlakuan terbaik diperoleh pada dosis 100% N-P-K + 200% silika (perlakuan H) yang menghasilkan bobot tongkol berkelobot tertinggi (0,43 kg) dan dibandingkan perlakuan A (kontrol), perlakuan H meningkatkan bobot tongkol sebesar 11,55%. Dengan demikian, kombinasi dosis N-P-K penuh + silika tinggi dapat direkomendasikan sebagai perlakuan paling efektif dalam meningkatkan pertumbuhan dan hasil jagung manis.

SUMMARY

*Sweet corn (*Zea mays Saccharata* Sturt.) is one of the horticultural commodities with high economic value and strong consumer demand. Increasing demand for sweet corn requires cultivation technologies that can enhance plant growth and yield, particularly through proper fertilization. NPK fertilizer provides essential macronutrients required for optimal plant growth, while silica (Si), which is considered a beneficial element for maize, plays a role in strengthening plant tissues, improving tolerance to environmental stresses, and supporting various physiological processes. This study aimed to (1) determine the effect of silica and NPK fertilizers on the growth and yield of sweet corn, and (2) identify the most effective silica dosage in improving the growth and yield of sweet corn.*

The research was conducted from March to July 2025 in Rempoah Village, Baturraden District, Banyumas Regency, using a non-factorial Randomized Block Design (RBD) consisting of 10 treatments and three replications. The treatments included combinations of silica fertilizer concentrations ranging from 0–200% and N-P-K fertilizer dosages ranging from 75–100%. The observed variables included plant height, stem diameter, number of leaves, leaf color, leaf area, ear length, ear diameter, husked ear weight, dehusked ear weight, ear weight per unit area, plant dry weight, and dry root weight. Data were analyzed using the F-test followed by Duncan's Multiple Range Test (DMRT) at the 5% significance level.

NPK are essential nutrients required for chlorophyll formation, energy production, root development, and metabolic regulation. Without NPK, plants cannot grow or produce properly, and may even die. Silica is not essential, but it is beneficial because it strengthens plants and enhances their tolerance to stress. Without silica, plants can still survive, but their yield and resilience are reduced. The results showed that the application of N-P-K and silica fertilizers had significant effects on leaf color, ear length, ear diameter, leaf area, and yield per plot. Meanwhile, plant height, stem diameter, number of leaves, dry root weight, husked ear weight, husk weight, and plant dry weight were not significantly affected. The best treatment was obtained at a dosage of 100% N-P-K combined with 200% silica (Treatment H), which produced the highest husked ear weight (0.43 kg). Compared to Treatment A (control), Treatment H increased ear weight by 11.55%. Therefore, the combination of a full N-P-K dose with a high silica dose can be recommended as the most effective treatment for improving the growth and yield of sweet corn.