

RINGKASAN

Jagung manis merupakan komoditas bernilai tinggi dengan permintaan yang terus meningkat seiring pertumbuhan penduduk dan perkembangan industri pangan. Data menunjukkan bahwa impor jagung manis di Indonesia terus meningkat dari tahun ke tahun. Sementara itu, produksi nasional yang masih berfluktuasi menyebabkan pasokan jagung manis belum stabil, sehingga ketergantungan terhadap impor semakin besar. Hal ini mencerminkan bahwa tingginya kebutuhan pasar memiliki ketidakseimbangan antara permintaan dan produksi domestik. Oleh karena itu, diperlukan upaya peningkatan produksi, salah satunya melalui pemanfaatan lahan marginal seperti tanah Ultisol. Tanah Ultisol dalam pemanfaatannya memiliki beberapa kendala seperti tingkat kemasaman yang tinggi ($\text{pH} < 5,5$), sehingga meningkatkan kelarutan unsur Al, Fe, dan Mn, sementara ketersediaan unsur hara esensial seperti fosfor (P) menjadi rendah. Solusi untuk mengatasi kendala pada tanah Ultisol dapat dilakukan upaya perbaikan kesuburan tanah melalui pemberian amelioran, seperti FABA (*Fly Ash Bottom Ash*) dan mineral *wollastonite*.

Pengambilan sampling dilakukan di *Screen house* Fakultas Pertanian Universitas Jenderal Soedirman dan analisis dilaksanakan di Laboratorium Tanah dan Sumberdaya Lahan Fakultas Pertanian Universitas Jenderal Soedirman Mei-Oktober 2025. Penelitian menggunakan Rancangan Acak Kelompok (RAK) dengan dua faktor dan tiga ulangan. Faktor pertama dosis FABA yang terdiri atas empat taraf. Faktor kedua mineral *wollastonite* yang terdiri atas empat taraf. Variabel pengukuran meliputi diameter batang, jumlah daun, bobot tongkol dengan kelobot, bobot tongkol tanpa kelobot, P-Total, P-Tersedia, dan serapan P. Hasil pengukuran dianalisis menggunakan ANOVA pada taraf 5%, jika terdapat perbedaan nyata maka dianalisis dengan DMRT pada taraf 5%.

Hasil penelitian menunjukkan bahwa pemberian *Fly Ash Bottom Ash* (FABA) pada berbagai dosis tidak memberikan pengaruh nyata terhadap seluruh variabel pengamatan, sedangkan mineral *wollastonite* tidak berpengaruh nyata terhadap P-total, jumlah daun, dan diameter batang, tetapi berpengaruh nyata terhadap P-tersedia, serapan P, serta bobot tongkol. Secara umum, FABA cenderung menurunkan P-total (20%), P-tersedia (2,44%), dan serapan P (11,11%), dengan peningkatan kecil pada bobot tongkol berkelobot (2%) namun menurunkan bobot tanpa kelobot (1,34%). Sebaliknya, *wollastonite* menurunkan P-total lebih besar (53%), tetapi mampu meningkatkan P-tersedia (23,2%), serapan P (50%), serta secara signifikan meningkatkan bobot tongkol berkelobot (110%) dan tanpa kelobot (90,61%).

SUMMARY

Sweet corn is a high-value commodity with increasing demand along with population growth and the development of the food industry. Data shows that sweet corn imports in Indonesia continue to increase from year to year. Meanwhile, national production that is still fluctuating causes the supply of sweet corn to be unstable, so that dependence on imports is getting bigger. This reflects that the high market demand has an imbalance between domestic demand and production. Therefore, efforts to increase production are needed, one of which is through the use of marginal land such as Ultisol land. Ultisol soil in its use has several obstacles such as high acidity levels ($pH < 5.5$), thus increasing the solubility of the elements Al, Fe, and Mn, while the availability of essential nutrients such as phosphorus (P) is low. A solution to overcome obstacles in Ultisol's soil can be made to improve soil fertility through the application of amelioration, such as FABA (Fly Ash Bottom Ash) and wollastonite minerals.

Sampling was carried out at the Screen House of the Faculty of Agriculture, Jenderal Soedirman University and the analysis was carried out at the Soil and Land Resources Laboratory, Faculty of Agriculture, Jenderal Soedirman University May-October 2025. The study used a Group Random Design (RAK) with two factors and three replicates. The first factor is the FABA dose which consists of four levels. The second factor is the mineral wollastonite which consists of four levels. The measurement variables included stem diameter, number of leaves, weight of cobs with cobs, weight of cobs without cobs, P-Total, P-Available, and absorption P. Measurement results were analyzed using ANOVA at the level of 5%, if there was a real difference, they were analyzed with DMRT at the level of 5%.

The results showed that the administration of Fly Ash Bottom Ash (FABA) at various doses did not have a real effect on all observation variables, while the mineral wollastonite had no real effect on P-total, number of leaves, and stem diameter, but had a significant effect on P-availability, P absorption, and cob weight. In general, FABA tended to decrease P-total (20%), P-available (2,44%), and P absorption (11,11%), with a small increase in the weight of the bundled cob (2%) but a decrease in the weight of the bundled cob (1,34%). In contrast, wollastonite lowered total P-greater (53%), but was able to increase P-available (23,2%), P uptake (50%), as well as significantly increase the weight of cobs with (110%) and without cobs (90,61%).