

## ABSTRAK

Produksi bawang merah di Brebes mengalami penurunan dari tahun 2013-2020, dari 12,39 t/ha menjadi 7,79 t/ha. Hal ini diakibatkan penurunan kesuburan tanah seperti kandungan C-organik dan ketersediaan sulfur yang rendah di lahan pertanaman bawang merah. Upaya mengatasi kendala tersebut dengan pemupukan pemberian bakteri pengoksidasi sulfur dan kompos daun bawang merah. Penelitian pertama dilaksanakan di tiga lokasi lahan pada pola tanam berbeda di Brebes, untuk memperoleh bakteri indigenous. Penelitian kedua dilaksanakan di *screen house* untuk memperoleh bakteri indigenous terbaik dalam mengoksidasi sulfur menjadi sulfat. Penelitian ketiga dilaksanakan di gudang bawang merah Gandasuli, Brebes bertujuan memperoleh kualitas kompos terbaik. Penelitian keempat dilaksanakan di *screen house* dengan media tanah pada polibag, bertujuan memperoleh dosis optimum sulfur dan kompos untuk pertumbuhan bawang merah. Penelitian kelima dilaksanakan dilahan sawah Brebes bertujuan memperoleh konsentrasi bakteri pengoksidasi sulfur dan dosis sulfur optimum untuk peningkatan pertumbuhan, hasil dan kadar alliin umbi bawang merah. Hasil penelitian menunjukkan bahwa terdapat tiga jenis bakteri indigenous yaitu *Klebsiella aerogenes*, *Klebsiella variicola* dan *Burkholderia cepacia*. Pemberian bakteri jenis *Klebsiella variicola* dengan lama inkubasi selama 3 hari memperoleh peningkatan jumlah kadar sulfat sebesar 69,11% lebih baik dibandingkan dengan perlakuan yang lain. Kualitas kompos daun bawang merah terbaik diperoleh melalui proses pengomposan alami. Hasil penelitian menunjukkan bahwa bobot umbi kering per rumpun maksimal 36,14 g/rumpun diperoleh melalui pemberian dosis sulfur 100 kg/ha dan kompos optimum 23,94 t/ha. Hasil analisis menunjukkan bahwa pemberian bakteri pengoksidasi sulfur  $2,05 \times 10^8$  cfu/mL pada tanah pertanaman bawang merah mampu meningkatkan kadar alliin 82,86 % dibandingkan dengan perlakuan tanpa pemberian bakteri (kontrol). Hasil umbi kering maksimal sebesar 15,33 t/ha diperoleh melalui pemberian bakteri pengoksidasi sulfur  $2,05 \times 10^8$  cfu/mL dan dosis optimum sulfur 64,25 kg/ha.

Kata kunci : bawang merah, bakteri, kompos, dosis, sulfur

## ABSTRACT

*The production of shallots in Brebes decreased from 2013-2020, from 12.39 t/ha to 7.79 t/ha. This is due to a decrease in soil fertility such as C-organic content and low sulfur availability in shallot plantations. Efforts to overcome these obstacles by fertilizing with sulfur-oxidizing bacteria and compost. The first research was carried out in three land locations on different cropping patterns in Brebes, to obtain indigenous bacteria. The second research was carried out at the screen house to obtain the best indigenous bacteria in oxidizing sulfur to sulfate. The third research was carried out at the Gandasuli shallot warehouse, Brebes with the aim of obtaining the best quality compost. The fourth study was carried out in a screen house with soil media in polybags, aiming to obtain the optimum dose of sulfur and compost for the growth of shallots. The fifth research was carried out in Brebes rice fields with the aim of obtaining the concentration of sulfur-oxidizing bacteria and the optimum dose of sulfur to increase the growth, yield and alliin content of shallot bulbs. The results showed that there were three types of indigenous bacteria, namely *Klebsiella aerogenes*, *Klebsiella variicola* and *Burkholderia cepacia*. The administration of *Klebsiella variicola* bacteria with an incubation period of 3 days obtained an increase in sulfate levels of 69.11% better than the other treatments. The best quality of compost is obtained through a natural composting process. The results showed that the maximum dry tuber weight per clump was 36.14 g/clump, obtained by giving 100 kg/ha of sulfur and 23.94 t/ha of optimum compost. The results of the analysis showed that the administration of  $2.05 \times 10^8$  cfu/mL sulfur-oxidizing bacteria in shallot planting soil was able to increase alliin levels by 82.86% compared to the treatment without bacteria (control). The maximum dry tuber yield of 15.33 t/ha was obtained by giving sulfur-oxidizing bacteria  $2.05 \times 10^8$  cfu/mL and the optimum dose of sulfur was 64.25 kg/ha.*

*Keywords: shallot, bacteria, compost, dose, sulfur*