

RINGKASAN

Sistem Irigasi Sprinkler Model *Butterfly Rotary* (SMBR) Tipe MS318A merupakan paket teknologi irigasi sederhana dan ekonomis yang dewasa ini banyak dikenal dan digunakan oleh para petani dataran tinggi tropis untuk mengairi tanaman sayuran termasuk kentang pada musim kemarau. Namun, kinerja Sistem Irigasi tersebut terutama terkait dengan keefektifan suplai/debit air dan penjadwalan irigasinya belum secara mendalam diketahui dan dipublikasikan. Penelitian ini bertujuan untuk: (1) menguji kinerja Sistem Irigasi SMBR Tipe MS318A melalui identifikasi suplai/debit, sebaran, keseragaman, dan laju aplikasi air curah yang dikeluarkan, serta (2) memperoleh kapasitas dan penjadwalannya yang optimum pada lahan tumpangsari kentang atlantik dan teh dengan variasi jenis mulsa.

Penelitian dilaksanakan di Desa Pandansari, Kecamatan Paguyangan, Brebes Jawa Tengah dengan percobaan menempatkan Sprinkler Model *Butterfly Rotary* (SMBR) Tipe MS318A di demplot kentang atlantik pada lahan berukuran 3,5 m x 3,5 m dengan penggunaan mulsa plastik (MP), mulsa jerami (MJ), dan tanpa mulsa (TM). Variabel yang diukur meliputi suplai/debit air, sebaran, keseragaman, dan air yang tertampung. Analisis kinerja sprinkler melalui kolerasi antara variabel-variabel diatas dengan data kadar air tanah dan kebutuhan air tanaman pada masing-masing demplot, serta hasilnya ditampilkan secara grafis.

Hasil penelitian menunjukkan bahwa pengukuran kinerja Sprinkler Model *Butterfly Rotary* (SMBR) Tipe MS318A menghasilkan kinerja yang optimum dengan debit air sebesar 0,66 liter/detik menghasilkan sebaran air curah sprinkler 5 meter, koefisien keseragaman (CU) 94,03%, distribusi keseragaman 51,87% dengan laju aplikasi sebesar 27,154 mm/jam. Kapasitas irigasi menggunakan Sprinkler Model *Butterfly Rotary* (SMBR) Tipe MS318A sebesar 274,60 mm dengan interval waktu 4 hari sekali tercapai secara optimum pada demplot tumpangsari teh dengan perlakuan mulsa jerami (MJ). Hasil penelitian diharapkan dapat memberikan manfaat untuk acuan penelitian lanjutan, serta sebagai salah satu dasar pertimbangan guna pengembangan sistem pertanian kentang yang berkelanjutan.

SUMMARY

Sprinkler Irrigation System of Butterfly Rotary Model (SMBR) and MS318 Type is a simple and economically-cheap irrigation package, which is currently becoming well-known and applied by farmers in tropical high agricultural areas to irrigate vegetables crops including potato in dry season. However, the performances of the irrigation system especially those related to the affectivity of the water supply/debit and scheduling have been comprehensively unknown and published yet. This research was aimed: (1) to evaluate the performances of [S-MBR-MS318A Type] Irrigation System through identification on supply/debit, distribution, uniformity, and application rate of the outputted sprinkled water; and (2) to obtain the optimum capacity and scheduling for the application on the potato-tea intercropping plots with various mulching.

Research was conducted in Pandansari village, Paguyangan district, Brebes regency, Central Java province trial placing Butterfly Rotary Sprinkler Model (SMBR) MS318A Type in potato Atlantic plots on land measuring 3,5 mx 3,5 m with use of plastic mulch (MP), rice straw (MJ), and no-mulch (TM). The variables measured were supply/debit, distribution, uniformity, and water being stored. Analysis performance the sprinkler through the correlation between the variables in the data on the water content of soil and crop water needs of each pilot project, and the results are displayed graphically. The analysis performance the sprinkler through of correlation between variables to the soil wetness and crop water requirements of each plot, and the results was presented graphically.

The results showed that the performance Sprinkler Irrigation System of Butterfly Rotary Model (SMBR) MS318 Type produce optimum performance with an suplay/debit of 0,66 liters/sec generate sprinkler distribution of bulk water 5 meters, uniformity coefficient (CU) 94.03%, 51,87% distribution uniformity with an application rate 27,154 mm/hour. The capacity of 274,60 mm with scheduling interval of 4 days was optimally achieved on the intercropping plot with Rice-Straw Mulch (MJ) treatment. The results are expected to provide benefits to benchmark advanced research, as well as one of the basic considerations for the development of sustainable potato farming system.