

## RINGKASAN

Tanaman peria (*Momordica charantia* L.) merupakan anggota famili *Cucurbitaceae* yang memiliki ciri khas dengan rasanya yang pahit. Teknik budidaya peria yang mudah dan tidak tergantung pada musim menyebabkan tanaman ini tersedia hampir setiap saat. Salah satu teknik budidaya yang intensif untuk meningkatkan produksi peria adalah penggunaan mulsa. Pada sektor pertanian, kebutuhan air merupakan salah satu faktor pembatas yang menentukan kuantitas dan kualitas produktivitas tanaman. Ada berbagai cara pemberian air irigasi yang tujuannya sama, namun cara pemberian air irigasi tersebut disesuaikan dengan kondisi lingkungan dan kebutuhan air tanaman. Penelitian ini bertujuan untuk mengetahui pengaruh penggunaan mulsa organik dan sistem irigasi serta interaksinya terhadap iklim mikro dan pertumbuhan tanaman peria, sehingga dapat membantu untuk pemilihan penggunaan mulsa organik dan sistem irigasi yang tepat guna serta mendukung dalam peningkatan produksi peria.

Penelitian ini dilaksanakan di lahan terbuka Jurusan Teknologi Pertanian, Kecamatan Purwokerto Utara, Kabupaten Banyumas, Jawa Tengah dan Laboratorium Teknik Pengolahan Pangan dan Hasil Pertanian (TPPHP), Fakultas Pertanian, Universitas Jenderal Soedirman pada bulan Juli-November 2023. Perlakuan yang diberikan pada penelitian ini terdiri dari 2 faktor yaitu perlakuan mulsa organik meliputi mulsa alang-alang dan mulsa jerami padi, serta perlakuan sistem irigasi meliputi irigasi konvensional irigasi tetes dan irigasi *sprinkler*. Variabel yang diamati dalam penelitian ini yaitu 1) iklim mikro yang meliputi suhu udara, kelembapan udara, intensitas cahaya matahari, kelembapan tanah dan pH tanah, 2) pertumbuhan tanaman meliputi tinggi tanaman, jumlah daun, panjang buah, diameter buah, bobot basah buah, dan bobot kering buah. Data dianalisis menggunakan uji *Analysis of Variance* (ANOVA), uji *Kruskal-Wallis*, dan uji lanjut DMRT 5% apabila terdapat perbedaan yang signifikan.

Hasil penelitian menunjukkan bahwa perlakuan mulsa organik tidak berpengaruh nyata terhadap variabel iklim mikro dan pertumbuhan tanaman peria. Sedangkan, perlakuan sistem irigasi berpengaruh nyata terhadap kelembapan tanah dan pH tanah. Namun perlakuan sistem irigasi tidak berpengaruh nyata terhadap variabel pertumbuhan tanaman peria. Interaksi antara perlakuan mulsa organik dan sistem irigasi berpengaruh nyata terhadap pH tanah, namun tidak berpengaruh nyata terhadap variabel pertumbuhan tanaman peria. Nilai terbaik diperoleh pada interaksi perlakuan M3I3 (mulsa jerami padi dan irigasi *sprinkler*). Kondisi iklim mikro di sekitar lahan budidaya tanaman peria, suhu udara di lokasi penelitian yaitu pada kisaran 21,2–43,7°C, kelembapan udara berada pada kisaran 34–96%, dan intensitas cahaya matahari berada pada kisaran 77–9900 lux. Kemudian untuk kelembapan tanah berada pada kisaran 4–10%, dan pH tanah berada pada kisaran 4,5–6,4. Penggunaan mulsa organik dan sistem irigasi yang tepat guna terhadap pertumbuhan dan hasil budidaya tanaman peria, yaitu pada mulsa jerami padi serta penggunaan jenis irigasi *sprinkler*.

## SUMMARY

*The bitter melon plant (*Momordica charantia* L.) is a member of the Cucurbitaceae family which is characterized by its bitter taste. Bitter melon cultivation techniques are easy and do not depend on the season, making this plant available almost all the time. One intensive cultivation technique to increase bitter melon production is the use of mulch. In the agricultural sector, water requirements are one of the limiting factors that determine the quantity and quality of crop productivity. There are various ways of providing irrigation water with the same goal, but the method of providing irrigation water is adjusted to environmental conditions and plant water needs. This research aims to determine the effect of using organic mulch and irrigation systems and their interactions on the microclimate and growth of bitter melon plants, so that it can help in choosing the use of organic mulch and irrigation systems that are appropriate and support increasing bitter melon production.*

*This research was carried out in open fields at the Agricultural Technology Department, North Purwokerto District, Banyumas Regency, Central Java and the Food and Agricultural Product Processing Engineering Laboratory (TPPHP), Faculty of Agriculture, Jenderal Soedirman University in July-November 2023. The treatment provided in this research consists of 2 factors, namely organic mulch treatment including reed mulch and rice straw mulch, and irrigation system treatment including conventional irrigation, drip irrigation and sprinkler irrigation. The variables observed in this research are 1) microclimate which includes air temperature, air humidity, sunlight intensity, soil moisture and soil pH, 2) plant growth including plant height, number of leaves, fruit length, fruit diameter, wet weight, and dry weight. Data were analyzed using the Analysis of Variance (ANOVA) test, Kruskal-Wallis test, and 5% DMRT further test if there were significant differences.*

*The research results showed that organic mulch treatment had no significant effect on microclimate variables and the growth of bitter melon plants. Meanwhile, irrigation system treatment has a significant effect on soil moisture and soil pH. However, the irrigation system treatment did not have a significant effect on the growth variables of bitter melon plants. The interaction between organic mulch treatment and the irrigation system had a significant effect on soil pH, but had no significant effect on the growth variables of bitter melon plants. The highest value was obtained in the interaction of treatments M3I3 (rice straw mulch and sprinkler irrigation). The microclimate conditions around the bitter melon cultivation area, the air temperature at the research location is in the range of 21.2–43.7°C, the air humidity is in the range of 34–96%, and the intensity of sunlight is in the range of 77–9900 lux. Then soil moisture is in the range of 4–10%, and soil pH is in the range of 4.5–6.4. The use of organic mulch and an appropriate irrigation system for the growth and results of bitter melon cultivation, namely rice straw mulch and the use of sprinkler irrigation.*