

PENGARUH CEKAMAN KEKERINGAN DAN APLIKASI PUPUK NITROGEN TERHADAP RESPONS KETAHANAN TEMLAKAU (*Nicotiana tabacum* L. ‘KEMLOKO 2’)

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INTISARI

Tembakau (*N. tabacum* L.) merupakan tanaman model dan tanaman industri yang penting terhadap perekonomian Indonesia. Perubahan iklim mengakibatkan ketidakstabilan cuaca termasuk ketersediaan air. Kondisi kekeringan berdampak terhadap banyak proses metabolisme, fisiologis, dan penyerapan nutrisi sehingga menjadi faktor pembatas produktivitas serta kualitas tanaman tembakau. Nitrogen merupakan makronutrien penting yang dibutuhkan tanaman dan diduga berperan terhadap penyerapan air pada kondisi kekeringan. Penelitian ini bertujuan untuk mempelajari respons ketahanan tembakau pada kondisi ketersediaan air yang berbeda dan variasi pemberian pupuk nitrogen. Varietas tembakau yang digunakan yaitu ‘Kemloko 2’. Variasi ketersediaan air meliputi 100%, 75%, dan 50% kapasitas lapang. Variasi perlakuan dosis pupuk urea yaitu 0,6 g; 1,2 g; dan 1,8 g yang secara berurutan menunjukkan dosis defisiensi, normal, dan lebih. Penelitian dilakukan dengan metode Rancangan Acak Kelompok dengan 5 ulangan. Parameter pertumbuhan tanaman diamati secara kualitatif. Respons ketahanan berupa kadar air nisbi, *elektrolyte leakage* (EL), aktivitas MDA, H₂O₂, aktivitas enzim SOD, CAT, APX, dan antosianin diamati setelah perlakuan cekaman kekeringan dan aplikasi pupuk urea. Tanaman tembakau ‘Kemloko 2’ yang menerima cekaman kekeringan secara umum mengalami penurunan kadar air nisbi, peningkatan EL, MDA, H₂O₂, SOD, CAT, APX, dan antosianin sering berkurangnya kapasitas lapang. Pemberian dosis terbaik terhadap tanaan tembakau ‘Kemloko 2’ adalah pada dosis 1,2 g/polybag.

KATA KUNCI: kekeringan, ketahanan, nitrogen, pupuk, tembakau.

EFFECT OF DROUGHT STRESS AND APPLICATION OF NITROGEN FERTILIZER ON RESISTANCE RESPONSES OF TOBACCO (*Nicotiana Tabacum* L. ‘KEMLOKO 2’)

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ABSTRACT

Tobacco (*N. tabacum* L.) is a model and industrial crop that is important to the Indonesian economy. Climate change results in weather instability including water availability. Drought conditions affect many metabolic, physiological, and nutrient absorption processes, limiting the productivity and quality of tobacco plants. Nitrogen is an important macronutrient needed by plants and is thought to play a role in water absorption under drought conditions. This research aims to study the response of tobacco resistance to different water availability conditions and variations in nitrogen fertilizer application. The tobacco variety to be used is ‘Kemloko 2’. Variations of water availability include 100%, 75%, and 50% field capacity. The treatment variations of urea fertilizer doses are 0.6 g; 1.2 g; and 1.8 g which respectively showed deficiency, normal, and excess doses. The research was conducted using a complete randomized group design with 5 replications. Parameters observed included plant growth were done qualitatively. Resistance responses such as relative water content (RWC), SOD enzymes activity of SOD, CAT, and APX, MDA activity, H₂O₂, electrolyte leakage, and anthocyanin were observed after drought stress treatment and urea fertilizer application. The ‘Kemloko 2’ tobacco plant subjected to drought stress exhibited a decline in KAN, EL, MDA, H₂O₂, SOD, CAT, APX, and anthocyanins frequently accompanied by a drop in field capacity. The best doses applied to the ‘Kemloko 2’ tobacco is the sufficient doses of 1,2 g/polybag.

KEYWORDS: drought, fertilizer, nitrogen, resistance, tobacco.