

**PERTUMBUHAN DAN TANGGAPAN ANATOMIS TANAMAN CABAI  
KERITING (*Capsicum annuum* L.) TERHADAP CEKAMAN NaCl  
RENDAH PADA AWAL FASE VEGETATIF**

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**Intisari**

Cekaman garam adalah suatu kondisi tanah dengan konsentrasi garam larut dalam jumlah yang berlebih dan berakibat buruk bagi pertumbuhan tanaman. Sejumlah tanaman pertanian mampu bertahan hidup di daerah berkadar garam tinggi. Penelitian ini bertujuan untuk mengetahui pertumbuhan dan tanggapan anatomis cabai keriting yang diberi cekaman NaCl rendah pada awal fase vegetatif, serta menentukan berapa konsentrasi yang optimal pada pertumbuhan tanaman cabai keriting. Penelitian dilaksanakan di kebun penelitian Sawitsari, Laboratorium Struktur Perkembangan Tumbuhan, dan Laboratorium FALITMA Fakultas Biologi UGM. Desain penelitian menggunakan Rangkaian Acak Lengkap dengan perlakuan variasi cekaman NaCl rendah. Variasi perlakuan cekaman NaCl rendah terdiri dari kontrol disiram dengan air (G0), NaCl awal 50 mM+ lanjutan 150 mM (G1), NaCl awal 75 mM+ lanjutan 150 mM (G2), NaCl awal 100 mM+ lanjutan 150 mM (G3), NaCl awal 125 mM+ lanjutan 150 mM (G4), dan NaCl awal 150 mM+ lanjutan 150 mM (G5). Parameter yang diamati yaitu pertumbuhan tanaman (tinggi tanaman, panjang internodus, jumlah daun, panjang akar dan biomassa); anatomi daun (tebal palisade, bunga karang, dan daun), akar (tebal korteks, berkas pengangkut, diameter akar), dan batang (berkas pengangkut); dan biokimia (kadar prolin akar dan klorofil daun). Data kuantitatif yang diperoleh dianalisis menggunakan ANOVA dan dilanjutkan uji DMRT pada tingkat kepercayaan 95%. Data struktur anatomi akar, daun dan batang dianalisis secara deskriptif. Hasil penelitian menunjukkan bahwa perlakuan cekaman NaCl rendah pada awal fase vegetatif menaikkan tinggi tanaman, jumlah daun, panjang internodus, panjang akar, biomassa tajuk akar, diameter akar, berkas pengangkut batang, dan kandungan klorofil daun tertinggi pada G1, tebal korteks akar paling tinggi pada G3, tetapi menurunkan kadar prolin akar terendah pada G1, diameter stele terendah pada G3, tebal palisade, bunga karang, dan tebal daun paling tipis pada G1 dibandingkan G5. Jika dibandingkan dengan kontrol, semua parameter yang diukur pada perlakuan NaCl rendah menunjukkan penurunan kecuali tebal palisade, bunga karang, tebal daun, panjang akar dan kadar prolin akar. Konsentrasi cekaman NaCl rendah pada awal fase vegetatif yang optimal untuk pertumbuhan tanaman cabai keriting pada perlakuan NaCl adalah awal 50 mM+lanjutan 150mM (G1).

Kata kunci: cekaman NaCl, cabai, pertumbuhan, tanggapan anatomis, fase vegetatif

## **GROWTH AND ANATOMICAL RESPONSES OF CURLY PEPPER PLANTS (*Capsicum annum L.*) TO LOW OF NaCl STRESS AT EARLY VEGETATIVE PHASE**

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### **Abstract**

Salt stress is a condition of the soil with high concentration of soluble salts and it causes bad growth for plants. Only few crops can survive in soil with high salt concentration. This study aimed to determine the growth and anatomical responses of curly pepper plants given with low of NaCl at early vegetative phase, as well as to determine the optimal concentration for the growth of curly pepper plants. The experiment was conducted at the research farm of Sawitsari, Laboratory of Plant Structure and Development, and Laboratory of FALITMA Faculty of Biology UGM. This Research was designed in Completely Randomized Design (CRD) with variation of low NaCl treatment. Variation of treatment were water as control (G0), early NaCl 50 mM+ advanced 150 mM (G1), early NaCl 75 mM+ advanced 150 mM (G2), early NaCl 100 mM+ advanced 150 mM (G3), early NaCl 125 mM+ advanced 150 mM (G4), and early NaCl 150 mM+ advanced 150 mM (G5). The parameters observed were the anatomical parameters of leaves (the thickness of palisade, spongy mesophyll and leaves), roots (the thickness of cortex, and vascular bundle, roots diameter), and stem (vascular bundle thickness); growth of plants (plant height, internodes length, leaves number, root length, and plants biomass); biochemical parameters (roots proline and leaves chlorophyll content). Quantitative data were analyzed using ANOVA followed by DMRT at a significant level of 5%. Anatomical structure of roots, leaves and stems were analyzed descriptively. The result showed that low of NaCl stress at early vegetative phase treatment increased the plant height, leaves number, internodus length, root length, root and stem biomass, chlorophyll content, highest root diameter and stem vascular bundle in G1, meanwhile the highest thickness of root cortex was found in G3. The treatment reduced prolin content in G1, root stele diameter in G3, the thinnest palissade, spongy mesophyll, and leave were found in G1 compare with G5. If the treatments were compared with control, all parameters measured at low of NaCl treatment showed reduction except palissade, spongy mesophyll, leave thickness, root length and root proline content. The optimal concentration of salt for the optimal growth of curly pepper plants was a treatment with NaCl 50 mM+ advanced 150 mM (G1).

Keywords: NaCl stress, pepper, growth, anatomical response, vegetative phase