

**MODEL OF NITROGEN DISTRIBUTION IN RICE CULTIVATION
(*Oryza Sativa*) USING SRI (System of Rice Intensification) METHOD**

By :
Andra Tersiana Wati
13/353708/PTP/01291

Abstract

Nitrogen is an essential macro nutrient for the plant growth. Fertilization is one of the method to added nitrogen for plant nutrition. Therefore, an efficient fertilization is important to the rice cultivation. This study aimed to describe nitrogen distribution and availability in root zone of rice plant under System of Rice Intensification (SRI). This study was conducted in the greenhouse of Biophysics Laboratory, Faculty of Agricultural Technology UGM. Silt loam soil was used for plant media and rice variety (IR-64) was planted on the experimental pot with size of 30 x 30 cm² and 40 cm height. Experiments were conducted in two irrigation method : conventional and minimum water standing of the system of rice intensification (SRI) and two fertilization methods : organic and chemical fertilizer combined with manure. Movement of nitrat was observed based its movement in the root zone. Mathematical modelling was also applied through prediction of nitrate concentrations. This study resulted that concentration and distribution of nitrate in the different root zone (5 cm and 15 cm) was not significantly different. Combination fertilization with the depth of 15 cm, resulted that nitrate availability pattern between flooded irrigation and water efficient irrigation system shows a coincide pattern. The prediction result of nitrate concentration shows a tendency that is similar to the observation result of nitrate concentration.

Keywords : *organic fertilizer, nitrate distribution, water efficient irrigation, system of rice intensification (SRI)*

**MODEL SEBARAN NITROGEN PADA BUDIDAYA PADI (*Oryza sativa*)
DENGAN METODE SRI (*System Of Rice Intensification*)**

Oleh :

Andra Tersiana Wati

13/353708/PTP/01291

Intisari

Nitrogen merupakan unsur hara makro yang esensial bagi pertumbuhan tanaman. Salah satu upaya penambahan nitrogen bagi tanaman adalah melalui pemupukan. Oleh karena itu, metode efisiensi pemupukan sangat penting dalam budidaya padi. Penelitian ini bertujuan untuk mendeskripsikan model gerakan NO_3^- dalam zona perakaran tanaman padi sistem SRI (*System of Rice Intensification*). Penelitian dilakukan di *screen house* Fakultas Teknologi Pertanian UGM. Tanah bertekstur *silty loam* digunakan untuk media tanaman dan varietas IR-64 ditanam pada pot percobaan berdiameter 30 cm dan tinggi 40 cm. Eksperimen dilakukan dengan dua cara metode irigasi : irigasi konvensional dan *System of Rice Intensification* (SRI) dan dua cara pemupukan : pupuk organik dan kimia yang dikombinasikan dengan pupuk kandang. Gerakan NO_3^- diamati berdasarkan pergerakan di zona perakaran. Analisis gerakan NO_3^- dilakukan dengan menggunakan model matematika melalui prediksi konsentrasi nitrat. Hasil penelitian menunjukkan bahwa dua perlakuan irigasi pada kedalaman 5 cm dan 15 cm tidak mengalami perbedaan yang signifikan. Pada perlakuan dengan pemupukan kombinasi kedalaman 15 cm pola ketersediaan nitrat antara irigasi tergenang dan *macak-macak* menunjukkan pola yang berimpit. Konsentrasi nitrat hasil prediksi menunjukkan kecenderungan mirip dengan konsentrasi nitrat pengamatan.

Kata kunci : pupuk organik, distribusi nitrat, *system of rice intensification* (SRI), efisiensi irigasi