

**Edi Suriaman, 2012, Exploration and Potential Test of Endophyte Bacteria Diazotroph Producing Indole Acetic Acid (IAA) from Shallot Plant (*Allium ascalonicum* L ) Cultivar Bima, THESIS, Guided Dr. Ir. Tini Surtiningsih, DEA., and Dr. Ni'matuzahroh. Department of Biology, Faculty of Science and Technology, Airlangga University, Surabaya.**

### ABSTRACT

The aims of this research to know abundance population and diversity of endophyte bacteria diazotroph (fixation nitrogen) from shallot plant (*Allium ascalonicum* L. cv. Bima), which can be producing indole acetic acid (IAA) compounds, and its potential to enhance the growth of shallot. This research is exploratory to detection total endophyte bacteria diazotroph in *A. ascalonicum* with *Most Probable Number* (MPN) method, and experimentally to determine the potential production of IAA by endophyte bacteria, and their potential in promoting growth shallot performed with 11 treatments and 6 replications. Observed variables for the characterization of endophyte bacteria diazotroph consist of morphology colony, cells bacteria and physiology. Observed variables to potential assay of IAA is the produced IAA concentration by bacteria at a variety of tryptophan concentration, as well as plant growth variables measured were root length, plant height, fresh weight (root and leaf), biomass (roots and leaves). The data were analyzed as descriptive quantitative and qualitative, and ANOVA with significance 5% and followed by Duncan. This research showed in *A. ascalonicum* L., contained endophyte bacteria diazotroph which indicated by pellicle formation turns white on JNFb (*James nitrogen free bromthymol blue*) semi solid medium. Isolation showed there were 8 species of bacteria have been found that have similarity with *A. paspali* (97,2%), *B. mycooides* (1) (92,1%), *P. pseudomallei* (92,3%), *B. mycooides* (2) (94,4 %), *B. mycooides* (3) (93,6 %), *P. cepacia* (94,2%), *Bacillus circulans* (93,9%), dan *B. Alvei* (93,4 %). All species of endophyte bacteria diazotroph have the ability to produce IAA. The maximum concentration of IAA produced by each bacterial species is *P. pseudomallei* (14 mg/L), *A. paspali* (11,7 mg/L), *B. alvei* (9,38 mg/L), *P. cepacia* (9 mg/L), *B. mycooides* (3) (6,13), *B. circulans* (5,75), *B. mycooides* (2) (5,38 mg/L), and *B. mycooides* (1) (4,56). All endophyte bacteria diazotroph significantly to enhance the growth of shallot than control negative. *A. paspali* is bacteria that can increase most of shallot plant growth parameters significantly, as the length of the root is  $(15,117 \pm 4,74 \text{ cm})$ , the plant height is  $26,22 \pm 5,8 \text{ cm}$ ; fresh weight and root biomass each is  $0,819 \pm 0,33$  dan  $0,074 \pm 0,02 \text{ g}$ ; as well as fresh weight and leaf biomass each is  $3,815 \pm 0,61$  dan  $0,243 \pm 0,08 \text{ g}$ .

**Key word** : *exploration, identification, endophyte bacteria, diazotroph, indole acetic acid (IAA) Shallot (Allium ascalonicum L.).*