

13th International Conference on

Structural and Molecular Biology: Techniques & Market Analysis

October 22-23, 2018 | Ottawa, Canada

Ability of endophytic fungi on improvement characteristics *Lolium Perenne* under stress condition

Vahid Jajarmi and Kolahdoozian A
Islamic Azad University, Iran

Iran is located in the dry and semi-dry region. In this condition, producing forage in landrace is very important. The presence of Endophyte fungi in a plant leads to resistance to a range of biotic and abiotic stresses. Plant growth gets better by producing a range of different types of metabolites by fungal endophytic. Fungal endophytes produce a range of alkaloids such as loline, peramine, ergovalin, and lolitrem that protect the host (plant) against insects. They belong to genus *Epichloe* (Clavicipitaceae), which reside in the leaf sheath of many cool-season grass families of poaceae such as *Lolium perenne*. In this study, more than 60 fresh plant materials (Natural samples) of *Lolium perenne*, were collected from the native rangelands in the north of Iran (Golestan state). To insure the presence of fungal endophyte in the fresh samples, leaf sheaths were stained with Rose Bengal. The genomic DNA was also extracted from the isolates to confirm the identity of fungi by ISSR marker. The results of the present study showed that the endophyte fungi belonged to *Neotyphodium*. In 2015, a field experiment design was carried out in a split-plot based on the randomized complete block in Research farm Bojnord Azad University. The main factor (A) were: normal irrigation (65mm evaporation), moderate stress (irrigation after 95mm evaporation) and high stress (irrigation after 115mm evaporation), factor (B) were included: *lolium perenne* infected by endophyte and *lolium perenne* free endophyte. The stress conditions reduced all traits and this reduction was significantly lower in endophyte-infected genotypes. In other words, under the stress condition, endophyte-infected samples had higher physiological characteristics such as leaf area index, crop growth rate, CGR, SPAD chlorophyll, tillers number, dry weight, crown, leaf length, and wet weight. The most protein and leaf proline and carotenoid and chlorophyll ratio a/b belonged to *lolium perenne* infected by endophyte in moderate stress. Glucose and Fructose are produced in symbiotic plants more than free fungi. Endophytic fungi stimulate secondary metabolites in response to drought tolerance such as loline alkaloid. It can be concluded that the endophytes in normal and stress conditions can help increase the traits effective on physiological characteristics. Under nutrient-limited conditions, endophyte decreases the metabolic cost on the host grass.

vahid_jajarmi@yahoo.com