

Abstract

We investigated the effect of point of mulch placement and use of leaf mulches from plants inoculated with rhizobia on growth, nitrogen concentration and content of barley, and soil nitrate and pH changes. Mulches placed on soil surface enhanced barley heights and vegetative biomass in all leaf types used. However, nitrogen concentration was relatively higher in both barley vegetative plants and ears of barley grown in mixed mulches of both inoculated and uninoculated leaves. Mixing mulch types with soil caused a quick nitrate release within the first four weeks, which sharply dropped before week 6. Placing mulches on the soil surface resulted to a gradual nitrate release over the study period. Further, soil pH in all mulch treatments decreased within the first four weeks. Results from this study indicated that point of mulch placement was more effective than rhizobia inoculation of mulch on barley growth, nitrogen concentration and content, soil nitrate and pH changes. The results for nitrate levels revealed that it might be necessary for farmers to understand nitrogen requirements of crop so as to know where to place mulches. Results on pH revealed that care should be taken when mulching crops that are sensitive to small changes in pH.