

## **Effect of Mixed Sowing Treatment of Green Manure Crops on the Change of Soil Properties and C/N ratio of Corn**

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### **[Introduction]**

Many green manure crops are used for the source of organic compound for soil fertility improvement. Especially, hairy vetch is one of the important green manure crops in Korea. It usually contains 10~13kg nitrogen, 2~4kg phosphate and 8~12kg potassium in a 2 tons of biomass. Therefore, it is recommendable for farmers to use green manure crops for substituting chemical fertilizers to reduce greenhouse gas or working expenses. This study was conducted to find optimum mixed sowing ratio of green manure crops to reduce chemical fertilizers as well as to increase the crop yield potential which will foster the utilization of green manure crops in the upland field in view of environment friendly agriculture.

### **[Materials and Methods]**

This study was conducted to find optimum mixed sowing ratio of green manure crops to reduce the use of chemical fertilizer as well as to increase the crop yield potential which will foster the utilization of green manure crops in the upland field in view of environment friendly agriculture. We have six different sowing ratio treatments(100:0, 75:25, 50:50(barley), 50:50(rye), oil cake, livestock excretion) including control(non-treatment). The sowing date of green manure crops was October 5<sup>th</sup> and harvested May 5<sup>th</sup> next year and surveyed soil properties with soil analysis instruments. After soil sampling, we cultivated corn as a succeeding plant of hairy vetch and barley and surveyed C/N ratio of corn plants on September 5<sup>th</sup> depending on the different sowing ratio treatments. The experiment was conducted at Suwon in Korea from 2015 to 2016

### **[Results and Discussions]**

According to the study, the mixed ratio, 100:0, of hairy vetch and green barley showed relatively higher pH, soil salinity, available phosphate content and exchangeable cation rather than other mixed ratio. In the 50:50 mixed ratio of hairy vetch and green barely total soil organic contents showed 22%, but in the other treatment ratio such as oil cake, livestock excretion. total soil organic contents were 13%, 14% respectively. In the mixed sowing treatment of oil cake, the C/N ratio showed highest as 63 and lowest as 41 in the hairy vetch 100 and barley 0 ratio treatment. but showed statistically no difference between those treatments. According to the result, the hairy vetch 100 and barley 0 ratio treatment is very useful to increase soil nitrogen content Otherwise, oil cake treatment is helpful to increase soil organic compound. We have to make policy to enhance the utility of green manure crops in the upland crops as well as faddy field for the soil fertility and crop yield production which will guarantee prominent quality of environment friendly agriculture products.

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