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Bacterial variation response depending on cultivated plant

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Abstract Vegetables introduction in crops rotation is a practice used to improve the quality of soil. In this study the bacteria was isolated in laboratory condition from soil samples from plots cultivated both with legume and graminaee. For bacterial study was used nutrient medium Topping. The 7th experimental variants were: AS1 - *Avena sativa nigrum* (edafosphere); AS7 - *Avena sativa var. nigrum* (rhizosphere); M2 - *Pisum sativum* (edafosphere); M3 - *Pisum sativum* (rhizosphere); VS4 - *Vicia sativa,* (edafosphere); VS6 - *Vicia sativa* (rhizosphere) and AS5 – barley cultivated after vetch (rhizosphere).
In this study was observed beneficial influence of barley and vetch plants on bacterial community, fact demonstrated through significant increasing in interaction root - soil zone (M3, AS7).

Key words

bacterial community, barley, vetch, peas, eutricambosoil weak gleyed

After Kowalchuk et al. (2002) plants have a specific selective and reproducible effect on the bacterial population from rhizosphere. Also, it was observed that the biggest responsibility in bacterial population selection from soil it was the soil itself through its general characteristics, and microorganisms from rhizosphere influence plants to a great extend [2; 3].
There are already a number of studies which showed out biological processes variation on the cultivated plant [1; 5, 6; 7; 9].
As Kowalchuk et al. (2002) data showed, bacterial competition for nutrient resources from the zone influenced by the plants roots has a bigger importance for these, especially when plants diversity is pour.
In this study first objective targeted quantitative evolution of bacterial community from edafosphere and rhizosphere for a graminaee *Avena sativa var. nigrum,* in comparation with the same zones influenced by *Vicia sativa* (pods*)and Pisum sativum.* The second objective targeted the vetch role from soil for increasing bacterial biomass from soil cultivated with *Avena sativa var. nigrum.*

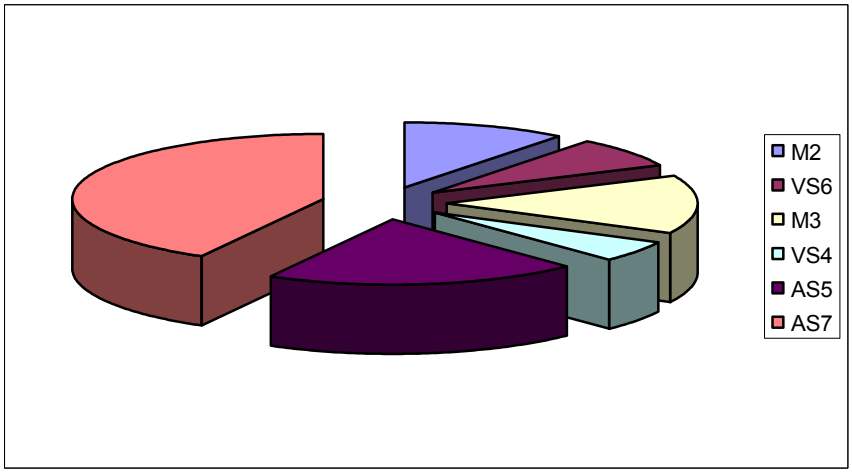
Material and Methods

Selective effect of fodder on bacterial structure was tested in field conditions, on eutricambosoil weak gleyed, from Ciacova.

The main experimental variants were: AS1- *Avena sativa var. nigrum* (edafosphere); AS7- *Avena sativa var. nigrum* (rhizosphere); M2-*Pisum sativum* (edafosphere); M3- *Pisum sativum* (rhizosphere); VS4- *Vicia sativa,* (edafosphere); VS6- *Vicia sativa* (rhizosphere); AS5-barley cultivated after vetch (rhizosphere).
Soil samples taken from edafosphere and rhizosphere of the three fodder plants, in the summer time, on a depth of 0-20 cm, were analyzed in laboratory conditions, on Topping nutrient medium, at 28ºC, after 24h and 48h from incubation [8].

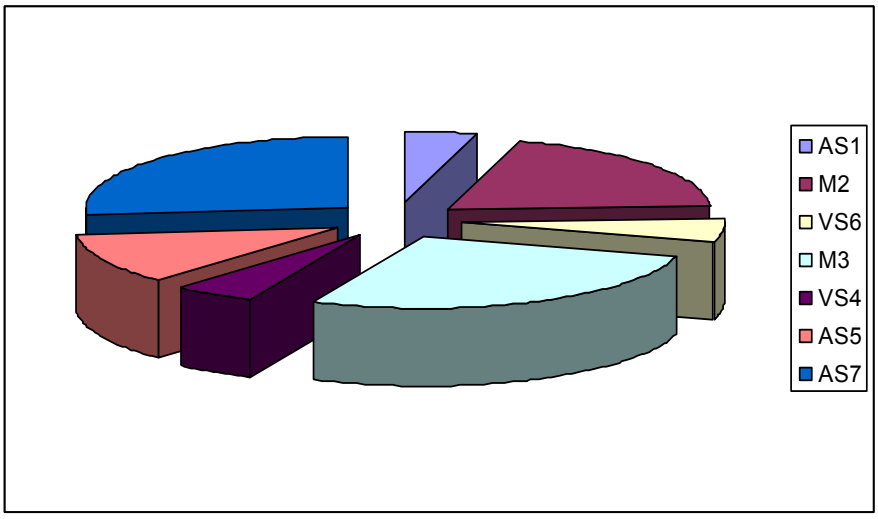
Results obtained

After Kowalchuk et al. (2002), the effect of plants on the rhizospheric bacterial community is very clear, especially in the interference of over ground macrophites with ground surface microorganisms.
Obtained results after 24h and 48h from incubation are showed in figure 1 and 2.
As figure 1 shows, after 24h of incubation could be seen a ascendant evolution of bacterial community in AS7 variant, followed by AS5 experimental variant. Between the others variants weren`t revealed significant differences.



AS1 - *Avena sativa nigrum* (edafosphere); AS7 - *Avena sativa var. nigrum* (rhizosphere); M2 - *Pisum sativum* (edafosphere); M3 - *Pisum sativum* (rhizosphere), VS4 - *Vicia sativa,* (edafosphere); VS6 - *Vicia sativa* (rhizosphere) si AS5 - barley grown after vetch (rhizosphere).

Fig'1 Bacterial community variation from the 7 variants, after 24h of incubation



AS1- *Avena sativa nigrum* (edafosphere); AS7 - *Avena sativa var. nigrum* (rhizosphere); M2 - *Pisum sativum* (edafosphere); M3 - *Pisum sativum* (rhizosphere), VS4 - *Vicia sativa,* (edafosphere); VS6 - *Vicia sativa* (rhizosphere); AS5 - barley grown after vetch (rhizosphere).

Fig. 2 Bacterial community variation from the 7 variants, after 48h of incubation

After 48 h of incubation it was observed bacterial community richness from M3 variant, followed by AS7 and M2. In variants AS1, VS6 and VS4 was observed a reduce number of bacteria.

Conclusions

On the experimental results it could be reached the conclusion that from the three used fodder plants peas and barley have a positive impact on bacterial community from soil. A significant quantitative increasing was in variants cultivated with peas (M3, M2), and in those cultivated with barley (AS7 and AS5), especially in rhizosphere.

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