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The influence of some plants from graminaee and vegetables on actinomicaetae quantitative evolution

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Abstract The actinomicaetae represents a microbial group that are interesting for several domains, including agriculture. These microorganisms were isolated from a eutricambosoil weak gleyed, from Western Romania. Soil samples were taken from experimental barley fields (edafosphere/AS1, rhizosphere /AS7), peas fields (edafosphere/M2, rhizosphere M3), vetch in pods (edafosphere/VS4, rhizosphere /VS6) and barley cultivated after vetch used as green fertilizer (edafosphere/AS5).
After 7 days incubation period, in conditions of pour humidity, there was a significant increase of actinomicaetae from M2 and AS1 variants.

Key words

actinomicaetae, Avena sativa nigrum, Vicia sativa, Pisum sativum, eutricambosoil weak gleyed

Plants, through root exudats, have a strong effect on soil microbial activity [11], and microorganisms bring benefits to the plants [4].
Although the microbial diversity isn't well known, the soil represents the biggest reservoir of biodiversity [3; 14].
Some authors observed that microorganisms have a essential role in terrestrial ecosystems function because of the macrophytes feedback impact on soil microbiota [1, 17].
For terrestrial ecosystems the main source of organic material with great effect on soil organisms and especially on those from rhizosphere have plants [6; 16].
After Jonas and colab (2004), exudates secreted by roots represents between 1% and 10% from assimilated carbon.
In the present paper studies followed actinomiceatae quantitative evolution as a response to cultivated graminaee and legumes influence.

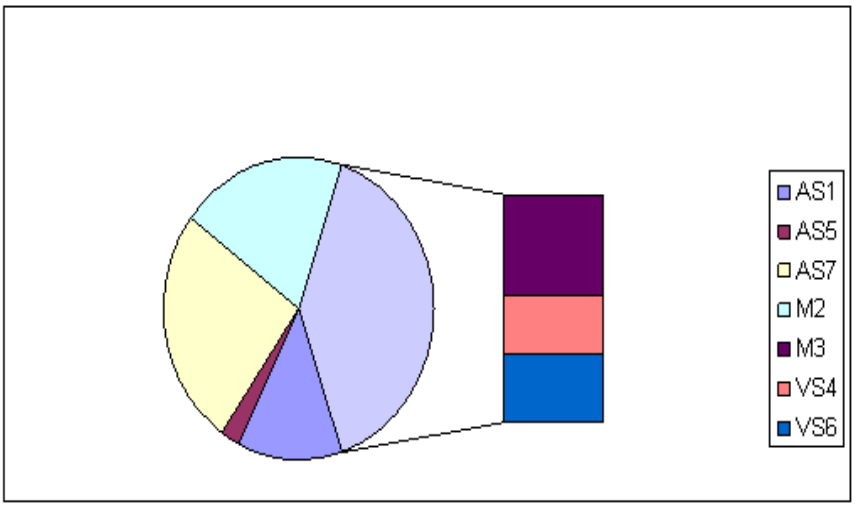
Material and Methods

The interest microbial group was isolated from a eurotricambosoil weak gleyed, with a very pour humidity factor, from Ghilad, Timis county.

Soil samples were taken in the summer time at 0-20cm depth from barley cultivated plots (*Avena sativa nigrum,* edafosphere/AS1 and rhizosphere /AS7), peas (*Pisum sativum,* Amical variety from France, edafosphere/M2 and rhizosphere /M3), vetch in pods (*Vicia sativa,* edafosphere/VS4, rhizosphere /VS6) and barley cultivated after vetch, which was incorporated in soil (edafosphere/AS5).
All 7 soil samples were processed in laboratory conditions.
After the humidity degree of each soil sample was investigated, were assembled the experiments in order to determine the quantity of actinomicaete [13].
The specific nutrient medium for actinomicaetae study was Gause no.1, optimal growth temperature was 28^0C and incubation time 3 days, respectively 5 days.

Results obtained

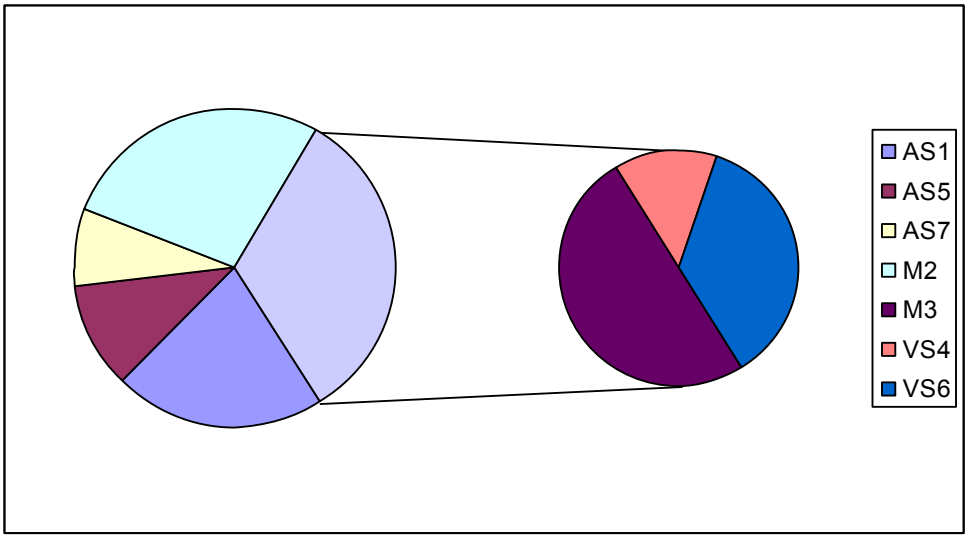
Many studies indicated that plants have a great influence on bacterial community from influence plant zone [2; 8; 12], effect that is possible to be determined by species, plant age, depth of root system, root exudates and their composition as well as type of soil [9, 10; 5; 15].
The results obtained after incubation period from working protocol are presented in figure 1 and 2.



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 Quantitative evolution of actinomicaetae after 3 days of incubation

As figure 1 shows, there weren't great differences between experimental variants AS1, VS4 and VS6 regarding actinomiceatae number. The greatest number of actinomicaetae was in AS7 variant, the plot where the first cultivated plant was vetch, and the smallest number of actinomicaetae was in AS5 variant. There were no significant differences between M2 and M3 variants.



AS1- *Avena sativa nigrum* (edafosphere); AS7- *Avena sativa 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. 2 Quantitative evolution of actinomicaetae after 7 days of incubation

As compared to the reduce incubation period (3days), after 7 days of incubation was observed an increase more or less noticeable of actinomicaetae in all experimental variants. The most significant increasing was observed in M2 variant, followed immediately by AS1. The smallest increasing of actinomicaetae was in the AS7 variant. The smallest number of actinomicaetae was isolated in VS6 variant (figure 2).

Conclusions

Although the humidity was very reduced, after 3 days of incubation was highlighted a significant influence of vetch (incorporated in soil) on actinomicaetae from AS7 variant, compared with other studied variants. After 7 days of incubation significant positive modification were observed in peas plot, in the area without root plants influence. After 7 days of

incubation there was a quantitative increasing of actinomicaetae, decreasing from variants M2 and AS1.
Comparing with the other studied variants, M3, VS4 and VS6 registered a no significant increasing of actinomicaetae.
On the obtained results, on the type of soil studied in this paper, we can recommend to introduce a rotation of peas and barley cultivated plants.

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