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Bacillus megaterium). The whole genome sequences were determined using Illumina and PacBio technology and the taxonomy identity was defined using Multiple Locus Sequences Analysis (MLSA) and Average Nucleotide Identity (ANI). A comparative genomic analysis was processed in order to identify the plant growth promoting mechanism of these strains. Known secondary metabolite and general PGP pathways were searched first using the GeM-Pro algorithm. This pathway search upon the six strains and available genomes from *B. velezensis* and *P. megaterium* groups expose some of the possible mechanisms in growth promoting and biocontrol. Additional potential pathways were searched using the antiSMASH platform resulting in potential new pathways for *P. megaterium* and *B. velezensis* isolated strains. Another comparative genomic analysis with these new pathways was performed with the available genomes with the aim of finding the exclusive genes that correspond with the differential plant growth promoting phenotypes. As result, we found exclusive pathways in the *P. megaterium* strains involving Non-Ribosomal Peptide Synthases (NRPS) and Polyketide Synthase (PKS) that were not detected in the non redundant nucleotide GenBank database. Secondly, thanks to the PacBio technology, we confirm that these gene clusters are coded in two different plasmids. This may suggest that these are recently acquired gene clusters as a result of adaptation to the environment.

MI-P009-100

EXPERIMENTAL MODEL EFFLUENT BIOSENSOR OF THE SALI RIVER BASIN

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In the Salí-Dulce river basin, the main collector is the Salí river, which during its passage through Tucumán receives effluents from diverse industries. Previous studies determined that this basin is considered one of the most polluted in the country. Within this water system, the Colorado River constitutes a tributary basin of the Salí with a smaller surface area, but with a high pollutant load. In this research, the incidence of water collected in influents and effluents of industries that discharge their contents to the Colorado River was studied in the fertilization and embryonic development of the anuran amphibian *Rhinella arenarum* (characteristic of the NOA region). To collect the water, as an essential measure during the harvest, a study of the area was carried out and the intake points were located in the tributary beds of the Colorado River. In the waters pH, electrical conductivity, and total phosphorus content were analyzed, and employing *in vitro* fertilization tests, the fertilization percentages and the analysis of embryos in different stages of their development were determined. Using a geolocation application, the satellite area and location of the industries involved with the effluents to be analyzed, the complete route of the Calimayo stream, and the points where the different water samples were taken from the Calimayo and San Miguel streams (tributaries that discharge into the Colorado river). The water samples were collected: MA1 (influent that supplies the paper industry from the Lules river), MA2 (effluent from the paper mill), MA3 (effluent from Citrícola San Miguel through the San Miguel stream), and MA4 (effluent from the paper mill and de Arcor-Misky by the Calimayo stream). MA2 and MA4 presented turbidity, abundant brown foam on the surface, industrial solid waste, and a strong irritating odor in the respiratory mucosa, similar to the hydrogen sulfide chemical. The MA1 and MA3, unlike the previous ones, were clear and odorless. The parameters of pH, conductivity, and phosphorus of the MA presented values within the standards. The MA2 reported conductivity and total phosphorus values above the standard. In all MA, the fertilization percentages remained similar to the control with 10% Ringer's solution (R10): R10: 97%; M1: 97%; M2: 97%, M3: 98%, and M4: 100%. The embryos developed in R10, M1, and M3 did not show changes in the stages analyzed: 14 (neural groove) and 17-18 (caudal bud and muscular response). However, in MA2 and MA4, the embryos exhibited significant changes from stage 14, most of which were delayed in gastrula. Others showed signs of degradation. These embryos remained arrested and undeveloped at stages 17-18. Later studies continue with the analysis of the waters and the components that affect normal embryonic development.

MI-P010-129

INOCULATION OF A METALOPHYTIC PLANT WITH ARBUSCULAR MYCORRHIZAL FUNGI FROM LEAD CONTAMINATED SOILS

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The city of Córdoba is one of the most polluted cities in Argentina, with a large number of industrial plants located in urban and suburban areas. At 18 km from the capital of Córdoba is the town of Bouwer, considered one of the areas most affected by heavy metal contamination. An acid battery recycling factory dedicated to the recovery of lead (Pb) operated irregularly between 1984 and 2005. The smelter emitted Pb into the air and leaved a large amount of slag, used by neighbors to fill and level land. This caused numerous cases of Pb poisoning. Given the health risks and residence times of pollutants, it is necessary to apply remediation measures such as phytoremediation. For example, the indigenous plant B. pilosa, is a metalophytic plant species adapted to the climatic conditions and the soil of the area. The same behavior has been observed with native Arbuscular Mycorrhizal Fungi (AMF), which are important to be used as inoculants in remediation programs. Therefore, is important to select AMF species adapted to these contaminated sites. In the present work, the inoculation of B. pilosa seedlings with native AMF spores from Bouwer was evaluated. Seeds of B. pilosa collected in the field were sterilized and rinsed with sterile water.

Seedlings were grown in hydroponic cultures enriched with Hoagland solution without phosphate. After 3 weeks, the seedlings were separated into 2 treatments: 1) added a Hoagland solution plus 1 mM Pb (NO3)2 and 2) added a Hoagland solution plus 1 mM NH4NO3. Thus, plants with Pb and without Pb were obtained to continue the experiment. After that, B. pilosa were inoculated with AMF (300-400 spores) from Bouwer: control site (Pb: 25 µg g-1) and a site with Pb (Pb: 7027 µg g-1). Each treatment had five repetitions and the plants were developed under controlled greenhouse conditions for 150 days. After that, the arbuscular mycorrhizal colonization was evaluated by roots staining, observed, and counted under microscope. Arbuscular mycorrhizal fungi structures were observed in B. pilosa roots. Besides, a higher percentage of colonization (30%) was registered in plants with Pb and inoculated with AMF from the site with Pb compared to the rest of the treatments. This preliminary study show that AMF isolated from contaminated sites potentially increased the arbuscular mycorrhization in B. pilosa seedlings with Pb inside.

MI-P011-130

USE OF COMMERCIAL FUNGAL INOCULANTS FOR THE CONTROL OF *Nacobbus celatus*

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Several species of plant-parasitic nematodes are responsible for causing considerable damage in agriculture. In Argentina, *Nacobbus celatus* (previously identified as *N. aberrans*) is widely distributed. It is a polyphagous species and produces galls on the host roots. In the last years, the search for biological control alternatives to replace chemical nematicides has increased, with emphasis on the use of rhizospheric organisms, including arbuscular mycorrhizal fungi (AMF) and *Trichoderma* spp. AMF establish a symbiotic association with 80% of terrestrial plants, conferring direct benefits, such as the absorption of nutrients (mainly phosphorus). On the other hand, AMF provide protection against soil pathogens, including plant-parasitic nematodes; the same antagonistic effect is also observed with *Trichoderma* spp. Commercial inocula of both microorganisms are available on the market, but their efficiency on local nematode populations is unknown. Considering a nematode population, an experiment was performed on tomato plants by applying two commercial inocula at the recommended doses: *Rhizophagus intraradices* (1 cc) and *T. atroviride* (dosis 2×10^6/ml). Treatments were: control, nematode, nematode + AMF, nematode + *T. atroviride*, nematode + AMF + *T. atroviride*. Inoculations were carried out at transplanting. Each treatment had five replicates; plants were grown under controlled conditions in a greenhouse for 60 days. After this time, the number of root galls induced by the nematode was counted. In comparison with the control, individual application of AMF and *T. atroviride* significantly reduced galls by 76% and 43%, respectively. The combined inoculation of the two fungi decreased the number of galls by 48%. The results show that the two commercial inocula have the potential to reduce *N. celatus* damage. Since the AMF-*T. atroviride* combination showed to be less efficient than the individual application of AMF, a possible antagonist effect of *T. atroviride* on AMF remains to be analysed.

MI-P012-272

ISOLATION AND IDENTIFICATION OF INDIGENOUS ATRAZINE-DEGRADING BACTERIAL STRAINS FROM BALCARCE, ARGENTINA

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Agricultural intensification and replacement of conventional tillage (CT) with no till (NT) management -in which weed control is exclusively chemical- has escalated the application of several herbicides. In Argentina, approximately 46% of the agricultural area is under NT, and the excessive pesticide application threatens the sustainability of the soil resource. Atrazine is a selective herbicide for maize and sorghum crops, widely used in Argentina. Extensive use of atrazine resulted in its frequent detection in Buenos Aires province streams. The high levels of atrazine detection in water is of great concern to human health as, through toxicological studies, atrazine has raised as a possible carcinogen, an endocrine disruptor and a teratogenic agent. In recent years, several studies have demonstrated the participation of soil microorganisms in the degradation of S-triazines. The use of microorganisms or other biological agents to recover soil and water has been referred to as ´bioremediation´. However, the main disadvantage for the bioremediation of soils contaminated with s-triazine is the lack of appropriate indigenous microbial strains, adapted to particular soils and environmental conditions were they will be used. The aim of the present work was to isolate and identify indigenous atrazine-degrading microbial strains for future bioremediation purposes. Soil samples were collected from the surface soil layer (0–10 cm) of five agricultural sites with a history of atrazine application from Balcarce, Buenos Aires. To obtain indigenous atrazine-degrading bacteria, an enrichment technique was performed. Briefly, 500 g of soil was kept during 8 months at 28 °C and once a month, atrazine was applied to a final concentration of 0.5 Kg x ha^{-1}. At the end of the atrazine loading period, bacterial strains capable of use atrazine as the only source of carbon and nitrogen were isolated. For the identification of isolated bacterial strains, PCR amplification and sequencing of the 16S RNA gene was performed. The resulting sequences were deposited in the Genbank database and compared to other sequences