S14.216

Biostimulators Obtained from Biological Raw Materials Affect the Flowering and Yielding of Apple Trees

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In 2007-2009, several foliar biostimulators – BioFeed Grow, BioFeed Quality, Ausma and Glukos K and soil-applied biostimulators – BioFeed Basis and Bioilsa were evaluated in terms of their effect on flowering and yielding of Polish scab-resistant apple cultivars 'Free Redstar' and 'Melfree', grown on M.9 rootstock. The experiment was carried out in the Institute's Experimental Orchard, on a light clayey podsolic soil with a medium level of nutrient content. The control and standard treatments were represented by plots without (control – 0) and with standard mineral NPK (8.83g ammonium nitrate + 6.94g granulated triple superphosphate + 7.7g potassium sulphate per tree). Doses of the soil-applied biostimulators (per tree) were: 2.4g Bioilsa and 4.0g BioFeed Basis. Concentrations and frequency of application of foliar biostimulators were: 3 × 2% BioFeed Grow 60 ml/3 l per 12 trees (12, 10 and 8 weeks before harvest) + 3 × 2% BioFeed Quality 60 ml/3 l per 12 trees (6, 4 and 2 weeks before harvest); 3 × 0.1% Ausma 3 ml/3 l per 12 trees (9, 6 and 3 weeks before harvest); 4 × 0.5% Glucos K 7.5 ml/1.5 l per 12 trees (8, 6, 4 and 2 weeks before harvest). There was no significant influence of treatments on the tree growth, regardless of the treatment trees of 'Melfree' were more vigorous than these of 'Free Redstar', however leaves of 'Free Redstar' contained more chlorophyll and their flowering was more abundant. Foliar biostimulators were very effective in promoting of flowering and yielding of both cultivars in comparison to both controls. The most effective was the mixture of two foliar biostimulators – BioFeed Grow + BioFeed Quality. Enrichment of this treatment with the standard NPK fertilization or the soil-applied biostimulators did not improve flowering intensity and yielding of both cultivars.

S14.217

Effect of Plant Preparations on Lettuce Yield

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Plant preparations are of usual use in organic horticulture. Herbal teas and broths are considered to be plant growth stimulating and disease suppressive. However, scarce scientific support is available. The aims of this work were to evaluate the effect of onion (*Allium cepa*) and nettle (*Urtica dioica*) preparations on the growth of lettuce crops. The experiments were carried out in the Experimental Organic Orchard of the Faculty of Agronomy, University of Buenos Aires. The assays were planned as completely randomised blocks, with 6 replications per treatment. Lettuce (*Lactuca sativa*) cv. Criolla was sown in continuous rows (3 kg seeds/ha) in each 1 m² minimum tillage experimental unit. Manual thinning out was required to reach an optimum number of plants per area. Onion and nettle preparations were obtained as follows. Broths were prepared by boiling 1 kg of chopped bulbs or leaves, respectively, in 10 l of water during 20 min, fermenting during 15 days, filtering and adding water to complete 10 l. Teas were prepared by chopping 1 kg of bulbs or leaves, respectively, adding 10 l of water, fermenting during 15 days, filtering and adding water to complete 10 l. Each preparation was applied to the corresponding experimental units 3 times per week, during the whole crop cycle. Controls were treated with water. The number of leaves per plant, leaf area, and fresh and dry leaf weights were quantified. No differences among treatments were observed for the number of leaves per plant and for leaf dry weight. Plots treated with onion tea showed the highest leaf area values and fresh leaf weight. Variations in chemical components of the different plant preparations, specially referred to electrical conductivity, could at least partially explain these results.

S14.218

Organic Production of Lettuce and Swiss Chard in Response to Different Levels of Vermicompost Tea

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Lettuce (Iceberg-type) and Swiss Chard were established on December 15, 2008, on 5m² biointensive beds, previously fertilized with 60 t/ha of commercial compost, at a distance of 30 cm between plants. The plants were treated with 0, 10 or 20% vermicompost tea, four times, from January 27, 2009 to the end of February, having 3 replicates (beds) per treatment in a randomly complete design. Harvesting of both crops was from March to April. The yield of Lettuce was 21.6, 41.3 and 50.1 t/ha, with 0, 10, and 20% vermicompost tea, respectively; while Swiss Chard yield was 51, 73.4 and 76.8 t/ha, with the same levels of vermicompost tea. From these results we conclude that the organic production of Lettuce and Swiss Chard, using 60 t/ha of compost, can be improved by spraying the plants with vermicompost tea at 20% for Lettuce and at 10% for Swiss Chard.

S14.219

Effect of Organic Nutrition on the Performance of Betel Vine (*Piper betle* L.) cv. Ambadi

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Betel vine (*Piper betle* L.) is a perennial creeper belonging to the family *piperaceae*, cultivated in India for its leaves used mainly for mastication. Field experiment was conducted at Arabhavi, Gokak taluk, Dist. Belgaum, Karnataka, India during 2005-2007 to study the effect of different nutritional sources on growth, yield and quality of betel vine cv. Ambadi. The experiment was laid out as RBD consisting thirteen treatments replicated thrice. Treatment combination included organic manures viz. FYM, Neem cake, Vermicompost, Sheep manure and Pressmud, while the recommended dose of fertilizer (RDF) for betel vine was 200: 100: 100 kg NPK per ha. Foliar spray of vemiwash @ 25% was done at monthly intervals. Farmers practice consisted of application of FYM (15t/ha) and and groundnut cake (0.50 t/ha). Application of FYM (25 t/ha) along with RDF recorded higher growth and yield attributes resulting in significantly higher annual leaf yield (588.55 leaves /vine) followed by Farmer's practice + foliar spray of vermiwash @ 25% (540.17 leaves /vine) and FYM (25t/ha) + 2 tonnes per ha of neem cake (512.07 leaves/vine) compared to the lowest in the treatment consisting of existing farmers practice alone (279.28 leaves/vine). Maximum leaf size was in the treatment consisting of Farmer's practice + foliar spray of vermiwash @ 25% (127.30cm²) followed by FYM (25 t/ha) along with RDF (117.30 cm²) and FYM (25t/ha) + 2 tonnes per ha of neem cake (108.48cm²) while it was minimum in the treatment consisting of existing farmers practice alone (78.27 cm²). Organic nutrition not only produced bigger leaf but also recorded higher leaf yield indicating scope for sustainable farming.

S14.220

The Study of Different Levels of Vermicompost and Phosphorus on Growth and Development and Some Elements Absorption in Tomato Transplants

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An investigation was conducted on the effects of vermicompost as an organic and

substitute media for fertilizers was down during year 1386 in FUM. Vermicompost applied at five levels (0, 10, 25, 50, 100%) and phosphorus at two levels with 3 replications on each treatment, as Factorial Design based on completely Randomized Block. The results indicated that seed germination was earlier in 25% vermicompost. The transplant diameter, length and its chlorophyll were higher in 50% vermicompost in compare to control. LAI was highest in 25%. Zn at 100% and Fe, Cu and Mn at 50% vermicompost had highest absorption by transplants. Phosphorus absorption increased by levels of vermicompost. The first flowering was earlier in 25% vermicompost. First fruit were in 25 and 50% vermicompost.

S14.221
Melon Crop with Use of Organic Compost

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The study was carried out at experimental station of Bebedouro, in Petrolina, PE, Brazil, to evaluate the effect of organic compost on melon crop. The treatments were five kids of organic compost that contained in their formulations napier grass, coconut bagasse, castor-oil plant tart, manure goat, potassium sulphate, thermophosphate. The total and commercial yields and fruit characteristics (soluble solids content, total acidity, pH weight a pulp firmness) were evaluated. The highest yield obtained with organic compost were 27.13; 26.58; 26,45 tons-ha^{-1} composed by: 77% of coconut bagasse + 20% of manure + 3% thermophophate; 50% napier grass + 40% manure + 10% castor-oil plant tart and 50% napier grass + 40% goat manure + 10% castor-oil plant tart, respectively. The organic compost did not affect significantly the fruit chemical characteristics, such as soluble solids content, total acidity and pH. The organic management caused weight loss and reduced pulp firmness during storage.

S14.222
Effect of the Organic Fertilization, Mineral Fertilization and Furrow Irrigation System for Ridges, with Treated and Served Water, in a Lettuce Crop (*Lactuca sativa* L.)

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The present work was developed in the Environment Center Study/UNESP in a protected environment, with the objective of studying the effect of the organic fertilization, mineral fertilization and furrow irrigation system for ridges, with treated and served water, in a lettuce crop (*Lactuca sativa* L.), evaluating the nitrate and sodium contents in leaf tissue and coliforms in the percolated water. The experimental statistical design was in a randomized block design consisted of 30 ashestos boxes with volume of 500 L and a superficial area of 1 m^2, filled with soil previously sieved. The treatments were characterized by the association between fertilizers and contaminated and treated water. The seeded with lettuce was realized three times. Water collectors had been installed at 15, 30 and 60 cm of depth. Two water collections had been carried through in each cultivation, 35 days after transplanting and at harvest, to verify the nitrate and sodium contents and coliforms. The leaf tissue sampling was collected at the end of each cultivation for chemical analyses. The average content of nitrate and sodium in the percolated solution indicated that the contamination slowly advances in depth in agricultural soils and in areas of disposal of organic and inorganic residues. The microbiological analyses of the water carried through at 60 cm of depth had not presented fecal coliforms contamination. The fertilized treatment with poultry litter presented the biggest values of nitrate.

S14.223
Yield and Nitrogen Uptake of White Cabbage (*Brassica oleracea* var. *capitata*) with Organic and Inorganic Fertilisers

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Fertilisers can be used to control the nutritional value of vegetables used for human consumption as may not only influence the yield and quality of vegetable crops but also the chemical composition of the marketable product. To improve fertilisation recommendations in organic agriculture based on the understanding of the effects of organic versus inorganic nitrogen (N) fertilisers, the response of white cabbage to the application of increasing rates of mineral N fertiliser (0, 90 and 180 kg·ha^{-1}) in combination with increasing rates of an organic fertiliser (0, 20 and 40 t·ha^{-1}) from the composting process of the solid fraction (SF) of dairy cattle slurry, was assessed in the summer season at NW Portugal. Cabbage yield was strongly related to mineral N application, with N recovery rates over 70%, but it was not associated to SF compost application, except for treatments without mineral N fertilisation, where cabbage dry matter yield increased ($P < 0.05$) from 7.4 t·ha^{-1} in the control treatment to 9.4 t·ha^{-1} with the application of 40 t·ha^{-1} of compost whilst N uptake increase was 64 kg·ha^{-1}. N utilization efficiency decreased with the highest rate of mineral N application compared to nil N application and the N physiological efficiency was higher for 90 kg N·ha^{-1} compared to 180 kg N·ha^{-1}. The highest rate of compost application was associated to a longer period of compost degradation because compost N mineralisation rates decreased from 20 t·ha^{-1} to 40 t·ha^{-1} during early cabbage growth. This investigation showed that SF compost had a high rate of N mineralisation after soil application and that its fertilising effect increases when N availability from mineral fertilisation decreases. Therefore, SF composts may have increased application as a soil fertiliser on low input farming systems such as organic farming.

S14.224
Effect of Bio-Fertilizer and Organic Manures on Yield and Quality of Guava cv. Red Fleshed

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An experiment was conducted on 4 year old guava trees during 2007-08 to study the "Effect of Bio-fertilizer and organic manures on yield and quality of guava cv. Red Fleshed". Average maximum fruit yield for the rainy and winter season crop was 38.23 kg/tree and 19.03 kg/tree respectively, with 250g Azotobactor + 20 kg FYM/tree. Vermicompost (20kg/tree) had significantly higher yield over control and was recommended as 3rd best treatment among all regarding the yield. Highest fruit weight 198.2g and 299.2g, fruit length 5.9cm and 7.19cm and fruit breadth 7cm and 7.41cm for rainy and winter season crop, respectively, were obtained with the application of Phosphobacterin (50ml/tree), which was, however at par with that obtained with VAM (10 kg/tree). Highest TSS (16.07 OB and 17.9 0B) for rainy and winter season crop, respectively, as well as Vitamin C (189.57 mg/100g) was obtained with the application of VAM. Acidity was not influenced by the application of bio-fertilizer. However, acidity was highest (0.54%) under FYM treatment. From the present study, it can be concluded that the application of bio-fertilizer was more effective than organic manures in enhancing fruit growth parameters in guava in both seasons. When bio-fertilizers were grouped together, P-solubilizers were found to have more beneficial influence on fruit physico-chemical characteristics of guava cv. Red Fleshed as compared to N-fixers.

S14.225
Production of Organic Cucumbers under Different Fertilization and Soil Mulching

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