Rapid monitoring of Ca and K in plants by X-ray fluorescence spectrometry method

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Abstract Literature contains numerous data on the distribution of minerals in soil and plants from spontaneous flora or cultivated in different geographical areas, as well as a series of mineral analysis techniques. The aim of this study was to determine the concentrations in K and Ca of *Cirsium arvense*, *Agropyron repens* and *Medicago sativa* using x-ray fluorescence spectrometry. This study was conducted on a cambic chernozem, in seven location in Dumbravita (Timis County) area. The tested plants accumulated Ca and K differently. The mineral content of whole plants are expressed on a dry matter basis. In *Cirsium arvense* and *Medicago sativa* total calcium content is higher than total potasium content but in *Agropyron repens* the ratio is reversed.The average values of the content of Ca (mg/kg d.w.) has a downward trend: *Cirsium arvense*> *Medicago sativa*> *Agropyron repens*. The trend for K (mg/kg d.w.) is: *Medicago sativa*> *Agropyron repens*> *Cirsium arvense.* Comparing our results, obtained by using x-ray fluorescence spectrometry with literature, the values are similar, so we consider that this method can be used for a rapid monitoring of the mineral contents in forages, but it is necessary to make other researches in future on this theme.

Key words

Cirsium arvense, Medicago sativa, Agropyron repens, elemental analysis

Preliminary studies on the production capacity of triticale (*Triticosecale Wittmack*) grains under the influence of fertilization and varieties

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Abstract Cereals (wheat, triticale, rye, barley, oats, corn, sorghum, millet, rice, etc.) represents the group of plants growing importance to human existence and activity. As a general rule, triticale combines the high potential of wheat production and quality with disease resistance and tolerance to environmental factors stepchildren (including soil) from rye. Due to advances in genetic improvement of triticale varieties have been developed commercially viable (the production potential and high stability) competitive with other cereals and even corn, especially for hilly areas with infertile soils and low pH. New varieties of triticale is higher or equal to other cultures for grain yield, biomass production and forage for human food, animal feed or industrial forage crop triticale. Recent research shows that the protein energy ratio is generally higher in forage triticale obtained from than the traditional concentrated fodder. Triticale has higher protein value of wheat, being rich in

Key words

triticale, variety, fertilisation

potassium, phosphorus, sodium, magnesium and zinc. The main objective of the research was to contribute to establishing the structure of sorts of triticale (*Triticosecale Wittmack*), leading to obtain economically efficient crops and traits of superior quality. To achieve the objectives of the work were studied the folowing triticale varieties: Cascador,Titan, Stil and Gorun. The experience is two-factor type. The fertilization degree was: N0P0K0, N80P60K60 and N160P60K60. Our results show that grain yield in triticale varies by the influence of factors in the study (variety and fertilization). Interaction kind - fertilizer strongly influence production in experience. Analysis of results shows that the highest grain yields are obtained by Stil triticale variety in variant fertilized with N160P60K60 - 5934kg/ha. It appears that on average the experimental cycle, the highest values of the mass of 1000 grains were registered by varieties of triticale Stil and Titan. Hectoliter mass registered values ranging between 68 kg/hl - 74 kg/hl. Having only one year of research results we can not yet draw conclusions knowing that triticale generally react differently to the climatic conditions of the year of culture.

Comparative evaluation of antioxidant capacity of herbal plants by different methods

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Abstract Crude extracts of herbs and spices are being increasingly researched as natural food preservatives because they retard oxidative degradation of lipids and thereby improve the quality and nutritional value of food. Antioxidant potential of plant extracts was analyzed by four different methods: **ABTS** (2,20azinobis-(3-ethylbenzthiazoline-6-sulfonic acid)), **DPPH** (1,1-diphenyl-2-picrylhydrazyl radical), **FRAP** (ferric reducing/antioxidant power) and **CUPRAC** (cupric reducing antioxidant capacity) expressed as TEAC. The total phenolics were measured using a Folin–Ciocalteu assay. Five herbs widely used as spices, *Salvia officinalis, Origanum vulgare, Rosmarinus officinalis, Thymus vulgaris and Mentha piperita* were evalueted.

Key words

spices, antioxidant capacity, phenolic compounds, Lamiace

Apples Total Antioxidant Capacity, Water and Mineral Content

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Abstract Apples play an important role in a healthy diet. They are rich in antioxidants, vitamins and minerals and beneficial to the body. Apples are among the most extensively consumed fruits in different countries being widely used fresh or in processed forms, such as juice. Apples are rich in antioxidants and fiber and it's well known that foods rich in antioxidants help protect from disease attack and slow the aging process.
The aim of this paper is to presents a complex study regarding moisture

Key words

apple fruits. concentrated juice, healty diet

content, total antioxidant capacity and mineral content of two apple varieties: Golden and Jonathan as well as concentrated apple juice.
The high water content (86.56 - 86.84 %) as well as high total antioxidant capacity and minerals recommend apples and apple juice for hydrating the body and to satisfy nutrient recommendations.

Leafy Vegetables, Important Sources of Microelements

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Abstract In this paper, we present the distribution of some microelements in fresh leafy vegetables: dill, parsley, celery, lettuce, and spinach. Experimental results obtained through atomic absorption spectrometry show that vegetable leaves contain important amounts of essential microelements: Fe, Mn, Zn, Cu, Co, Ni, and Cr. Ponderated mean values of the concentrations of microelements in the produce analysed expressed in mg/kg of fresh produce point to the following descending trend: Fe (18.30-114.00 mg/kg) > Zn (5.81-21.00 mg/kg) > Mn (1.68-9.90 mg/kg) > Cu (1.12-1.90 mg/kg) > Co (0.59-1.28 mg/kg) > Ni (0.20-0.65 mg/kg)> Cr (0.10-0.77 mg/kg). Preliminary data suggest that we may use the analysed vegetable leaves as a supplementary source of microelements.

Key words

leafy vegetables, microelements, AAS, mineral supplementary sources

Aspects regarding wheat genotypic response to PGR treatments applied *in vivo*

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Abstract Genotype response to plant growth regulators (PGR) application both *in vivo* and *in vitro* stages proved to be of significant importance among many factors affecting wheat haploid production efficiency. In practical breeding each hybrid F1 generation contains a particular gene combination and respectively a specific endogenous PGR composition. Moreover, environmental factors, especially the temperature variation inside greenhouse, seem to be a limitative factor for caryopsis and embryo formation.
This paper present a study regarding the reevaluation of two plant growth regulator treatments, coded A_2 and C_1, applied *in vivo* on wheat haploid production efficiency.

Key words

PGR, hormonal treatment, DH technology

Research concerning the effect of temperature on pollen germination capacity from several grape cultivars grown in Timisoara Didactic Station area

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Abstract The aim of this research was to evaluate the effect of temperature on pollen germination capacity in grapevine, since the temperature is a major climatic factor that determines the onset and intensity of physiological and biochemical processes. Burgund mare, Muscat Ottonel, Muscat Hamburg and Coarnă neagră cultivars were chosen for research. Researches were carried out between 2011 - 2013 in the Experimental Didactic Station from Timisoara. Changing the temperature from 8-9^{0}C to 15-16°C had a statistically strong positive influence on pollen germination capacity. In Muscat Ottonel cultivar, temperature had the highest influence on pollen germination.

Key words

grapevine, pollen, germintion, temperature

Germination of pollen from several grape varieties depending on interactions: variety - temperature - period of germination

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Abstract Research aimed to pursuing the interaction effects from: cultivar - temperature - period of pollen germination for cultivars: Burgund mare, Muscat Ottonel, Coarnă neagră and Muscat Hamburg. Samples of pollen were collected from vineyard and have been germinated under controlled laboratory environment. Observations were carried out in 2011-2013. Research results shows that treatment time had the highest contribution to the variability of pollen germination, followed by temperature limits, while the cultivar contribution was considerably lower. The cultivar Burgund mare registered a higher germination capacity among the other cultivars.

Key words

grapevine, cultivar, pollen, germination, temperature, duration

The herbicides and hand weeding effectiveness upon weed degree and productions in plum tree orchard belonging Timisoara Didactic Station

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Abstract Researches were conducted in the orchard belonging to Timișoara Didactic Station, in conditions of 2013 year, to Stanley plum variety. Trees belonging to the studied plum varietiy were planted in spring 1997, at a distance of 5 m between rows and 4 m between trees in place, ensuring a density of 500 trees / ha, considering that they are XVI year. Grafting was done on wax cerry. Management system chosen was palmettes free cultivation technology is the usual one for all plum orchard, the difference being the use of different systems of soil maintenance.

The experiment is monofactorial type, aiming at different soil maintenance systems that can positively or negatively influence the production and quality in fruits.

The intensive orchards, all efforts are directed towards ensuring optimal growth conditions of trees, soil and the following works to protect trees against pests and diseases is running flawlessly. Soil should always be kept clean of weeds and without crust, by hoeing as often repeated by one and work lines.

Key words

plum tree, hand weeding, herbicides, weeding degree, fruits production

The behavior of some local walnut biotypes in Banat – Romania

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Abstract The walnut tree is an important fruit tree specie due kernel quality and for other features of tree. The kernel is a very concentrated food, with a rich chemical composition, used in fresh consumption, in confectionery, in oiling fine, varnishes and others.

The green walnuts are higher content in vitamin C and they are used to preparation of sweetness, fine liqueurs an for other products.

The leaves, shoots, bark are used for tannin extraction, for some dyes being used in farmsteads staining of clothing.

The wood is very appreciate in furniture industry, manufacturing of arts object and for other purposes. From raw sap, leaf infusions prepared compresses for rheumatic pain.

The fruit tree is ornamental, ward off flies and mosquitoes being it is indicated to planting around the house.

For expansion of orchards on large surfaces is necessary to studying the

Key words

walnut, biotypes, germoplasm, biometrics

behaviour of walnut biotypes in Banat to establish the best range of varieties. Previous researches was made by many researchers (1,2,3,4,5).

Influence of pre-emergent crop on yield and biometric and weight indices in grain maize

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Abstract Pre-emergent crop plays a particular role in reducing weeding, which results in better yields. Monocultural grain maize yielded 70.50 q/ha. The highest increases in yield compared to monoculture were after soy and sunflower, i.e. 10.15 q/ha and 6.90 q/ha, respectively. Length of maize cobs had close values ranging between 18.75 cm (after winter wheat) and 19.90 cm (after soy). The number of grains/maize cob depends on cob size and it ranges between 463 (after winter wheat) and 532 (after soy). In monoculture, the number of grains/cob was 504. Total cob weight oscillated between 179.36 g (after winter wheat) and 195.16 g (after soy). Total weight of maize grains/cob ranged between 127.19 (in monocultural grain maize) and 153.10 (after soy). Hectolitric weight had values between 77.10 kg/hl (in monocultural grain maize) and 78.95 kg/hl (after sunflower). Mass of 1,000 grains oscillated between 348 g (after winter wheat) and 387 g (after sunflower).

Key words

grain maize, pre-emergent crop, absolute yield, relative yield, biometric indices, weight indices

Recovery and physico-chemical characterisation of grape seed oil

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Abstract In this study, the oil content and some physico-chemical properties of crude oil obtained by solvent extraction from seeds of three grape cultivars were investigated. Two wine grape cultivars (Merlot and Pinot Noir) and one table grape cultivar (Chasselas Doré) were used for seeds recovery. Further, the grape seeds were conditioned and subjected to hexane extraction. The grape seeds oil content was in the range 13-15.5%, depending on the grape cultivar. The values obtained for physical characteristics (relative density and refractive index) as well as chemical properties (free fatty acids, acid value, saponification value, iodine value, peroxide value and unsaponifiable matter) were similar to those of other vegetable oils used for human consumption. Our resuts highlight that the grape seed oil could be used as an important source for recovery of high quality edible oil.

Key words

grape seed oil, hexane extraction, physico-chemical properties

Sweet Potato Research for Enhancing Food and Nutrition Security in Nepal

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Abstract Sweet potato [*Ipomoea batatas* (L.)Lam],world's seventh most important and underexploited food crop is grown throughout the mid hills and terai region for kitchen garden purpose in Nepal. Vitality and potentiality of this crop in the food security of small and marginal farmers could not be ignored and overlooked and maximum advantage of this crop need to be explored. It is good sources of vitamins, minerals, micronutrients as well as dietary fiber. Orange flesh sweet potatoes (OFSP) are additionally enriched with β-carotene, the precursor of Vitamin A. Maximum genetic diversity of sweet potato in on- farm conservation of Nepal. Farmers have been growing only local landraces since long time in Nepal due to unavailability of any appropriate high yielding, nutrient enriched, commercial and standard variety of sweet potato and no any systematic research was carried out by the concern office of agriculture research and development in past. With this in view, National Potato Research Programme (NPRP) had been started research on sweet potato since 2009 AD .For the initiation of sweet potato research, 21 orange fleshed sweet potato clones were brought from International Potato Centre (CIP) and three local genotypes collected from eastern part of country were multiplied and tested under preliminary and Initial evaluation trial (IET) at Khumaltar, Pokhara and Tarahara during 2009/10 to 2011/12. Ten outstanding orange fleshed along with two check genotypes selected from IET were further verified as a coordinated varietal trial (CVT) from 2012/13 to 2013/14 at RARS, Tarahara, ARS, Pokhara , ARS, Surkhet and RARS, Parwanipur. Results from several on-station studies conducted during the year of 2009/10 to 2013/14 demonstrated that five outstanding sweet potato genotypes, namely CIP 440015,CIP 440267, CIP 440328, CIP 440021 and CIP 440012, are superior for their growth and yield characteristics. These five promising genotypes were promoted for Coordinated farmers' field trials(CFFT) and are being tested and compared at farmers field level from 2014/15. Germplasm collection and maintenance of local as well as exotic genotypes is continued and altogether 79 different sweet potato genotypes have been maintained under field conditions. In addition to this, other points like coordination between research and extension, prioritization, awareness on it's nutritional importance, farmers motivation, enhancing collaboration and linkage with stakeholders, facilities for molecular and nutritional characterization are equally important.

Key words

evaluation, food security, germplasm, promising genotypes, research, sweet potato, variety

Influence of fertilisation and weed control methods on weeding in the maize hybrid Fundulea 376

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Abstract *Chenopodium album*, *Setaria glauca*, *Sorghum halepense*, *Convolvulus arvensis*, *Amaranthus retroflexus*, *Xanthium strumarium*, *Echinochloa crus-galli*, *Sinapis arvensis*, *Digitaria sanguinalis* were the prevailing weeds. In 2005, the number of weeds in the control variant (b_1) was 72.03 weeds/m². The largest number of weeds/m² (99.17) was in the variant b_4 ($N_{135}P_{135}K_{135}$). The efficacy of weed control methods materialised in the significant diminution of the weeding rate, i.e. from 224.76 weeds/m² in the variant c_1 (no herbicide, no till) to 46.60 weeds/m² in the variant c_6 (2 mechanical weeding + 2 manual weeding). In 2006, in the maize hybrid Fundulea 376, in the control variant, there were 55.15 weeds/m². Weeding rate in the variant c_1 (no herbicide, no till) reached 193.00 weeds/m². Depending on the weed control method, the number of weeds oscillated between 37.54 weeds/m² in the variant c_6 (2 mechanical weeding + 2 manual weeding) and 51.57 weeds/m² in the variants b_1 and c_4 (Gardoprim 4 l/ha + Icedin Super 1 l/ha). Weeding rate in the control variant was 35.25 weeds/m². The number of weeds decreased to 159.92 weeds/m² in the variant c_1 (control variant) to 15.40 weeds/m² in the variant c_6 (2 mechanical weeding + 2 manual weeding).

Key words

grain maize, maize hybrid, chemical and organic fertilisers, herbicides, weeds, mapping, statistic processing

The influence of cadmium in morphological development at *Allium sativum* L.

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Abstract Cadmium (Cd) is one of the most toxic environmental pollutants affecting morphological development the various organisms. The present experiment was conducted to test the effect of cadmium (Cd) on on root system and foliar system growth of *Allium sativum* L. (garlic). The selected bulbs was treated with 1, 3, and 6 ppm cadmium. Almost all selected growth parameters were sensitive to all or at least high doses of Cd. In the present study, the plant biomass decreased significantly on treatment with higher doses of Cd. The leaf number and leaf area was negatively correlated with the concentration of cadmium.

Key words

cadmium, *Allium sativum*, root system, foliar system

Morphological aspect for the grain pollen of *Alopecurus pratensis* and *Dactylis glomerata*

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Abstract The objective of this study was to compare and studied in the most important species of the Poaceae family in the city of Timişoara (*Dactylis glomerata* and *Alopecurus pratensis*). The identification of pollen grains most often is based on light microscope analysis which used easily observed pollen features and other characteristics of the surface of the pollen grain. The results presented here are important for improving our understanding of Poaceae reproduction biology. Knowledge of reproduction biology, particularly pollen viability and quality, is critical for the newly developed.

Key words

pollen grain, *Dactylis glomerata, Alopecurus pratensis*

Effect of lead on the growth of *Coriandrum sativum* L.

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Abstract Impact of lead, a commonly heavy metal resulting from industrialization in all fields nowadays, on growth and development of *Codriandrum sativum* L. has been studied. The seed and the seedling were treated with three different concentrations of lead 10 ppm, 50 ppm and 100 ppm during the experiment. The control sample was exposed to distilled water. Various parameters studied were germination percentage, mitotic index, growth in height, length and width of the leafs. The heavy metal inhibited germination of the seeds and cell division as well the growth of the plans. The mitotic index was found to be declining with increasing concentrations of the lead. This heavy metal presence in the environment of *Codriandrum sativum* L causes aberrations at both morphological and cytologic levels.

Key words

lead , *Codriandrum sativum* L., germination percentage, mitotic index