

BLAŽEK, J.: Climatic demands of apple cultivars according to their evaluation by growers in CZ [Rajonizační požadavky odrůd jabloní podle hodnocení jejich pěstitelů v ČR] p. 15-28

Data obtained from 45 growers, who grow apple trees on more than 3 thousand hectares, equal approximately to a half of total their surface registered in the Czech Republic, were included into this study. In total data concerning 19 cultivars commercially important in apple orchards of the country were used. 'Golden Delicious' cv. was the most suitable for growing in the warmest areas. Cultivar 'Gala' obtained the top levels in climatic areas up to 400 m a.s.l. also 'Gloster' cv. was relatively well classified both in the warm and the medium altitudes. In the medium altitudes themselves 'Topaz' and 'Jonagold' were very well assessed. Cultivars 'Angold', 'Šampion', 'Bohemia' and 'Rubín' were the best ranked in colder regions of the country. 'Idared' cv. up to now generally largely widespread one in this country, is considered by its growers as less efficient. Considerable raising of M 9 rootstock share is a historical trend as in younger orchards it is higher than a half of total acreage. A density of the plantings at the same time is permanently increasing and in the latest period the space area is less than 7 m² per one tree.

Key words: apple-trees, cultivars, climatic factors, rootstock, economy of growing

MATĚJČEK, A.; PAPRŠTEIN, F.: Sensory evaluation of pear cultivar 'Lucasova' stored with apples in ULO atmosphere [Senzorické hodnocení plodů odrůdy 'Lucasova' skladovaných společně s jablem v ULO atmosféře]..... p. 29-33

Pear cultivar 'Lucasova' with apple cultivars 'Šampion', 'Jarka', 'Golden Delicious' and 'Gloster' were stored in six different conditions of ULO atmospheres. Storage temperature was maintained from 1 to 1,5 °C. Sensory evaluation was carried out 6 times (2 evaluations in February, April and June). The sensory parameters (flavour, flesh texture, flesh firmness, juiciness, acidity, aroma and overall taste) were evaluated according to 9 point evaluation scale. The results showed the best quality of pears stored in ULO atmosphere with the concentration of 2 % O₂ and 1 % CO₂, alternatively 1 % O₂ and 2 % CO₂. Contents of O₂ and CO₂ lower than 1 % did not improve the sensory parameters of evaluated fruits. The fruits of apple varieties showed a standard quality of sensory evaluation with recommended concentrations of gases as in separate storage in ULO.

Key words: ULO, sensory evaluation, pears, 'Lucasova', storage conditions

PAPRŠTEIN, F.; SEDLÁK, J.; SVOBODOVÁ, L.; POLÁK, J.; GADIOU, S.; ZEMAN, P.: Elimination of viruses from fruit woody species and long term observation of health status [Eliminace virů u ovocných dřevin a dlouhodobé sledování jejich zdravotního stavu] p. 35-44

The aim of this work was to eliminate viruses from the basic plant material of fruit woody species for the system of certification and long term observation of the health status. The elimination of viruses was carried out by in vitro thermotherapy and chemotherapy. Economically important apple, pear and sweet cherry cultivars were selected for sanitation. The presence of viruses and phytoplasmas in initial trees of selected cultivars was detected by ELISA and PCR testing before the beginning of thermotherapy and chemotherapy. Totally, we obtained 43 virus-free mericlones of two apple cultivars ('Idared', 'Šampion'), 46 virus-free mericlones of two pear cultivars ('Lucasova', 'Max Red Bartlett') and 9 virus-free mericlones of two sweet cherry cultivars ('Karešova', 'Rivan') in the framework of sanitation therapies after the first round of testing. The most virus-free mericlones (62) were obtained by in vitro chemotherapy. On the contrary, the least amount (13) was obtained by in vivo thermotherapy of rooted plants in containers. However, totally 38 % of pome fruit and 67 % of sweet cherry seemingly virus-free clones after the first round of testing were positive in retests for the same viruses as in the initial plants. In the case of this material, the treatment probably depresses the amount of viral particles temporarily below the threshold level of detection of used diagnostic methods. In the course of further cultivation, the virus recovered-up and re-accumulated to a level of detection. Obtained virus-free plants will be included in the established system of certification of initial plant material after repeated testing and long term observation.

Key words: apple, pear, sweet cherry, in vitro, in vivo, thermotherapy, chemotherapy

DRAHOŠOVÁ, H.; BLAŽKOVÁ, J.; HLUŠIČKOVÁ, I.: Using of foliar fertilising in sweet cherry orchards [Využití listových hnojiv ve výsadbách třešňí]..... p. 45-60

The objective of this trial was to evaluate the influence of foliar fertilizers on the content of nutrients in leaves, growth, fruit quality and yield of sweet cherries on dwarf rootstocks. Cultivars 'Burlat', 'Vanda', 'Starking Hardy Giant', 'Summit' and 'Kordia' on dwarfing rootstocks Gisela 5, P-HL-A, P-HL-B and Tabel Edabriz were evaluated in an experimental orchard established in 1998. In addition to the basic fertilization, three foliar fertilizing variants were applied: urea, full ration of foliar fertilizers and half amount of fertilizers plus lignohumate. Application of additional foliar fertilizers had positive influence on the tree growth and the yield amount. The trees attained the highest yields after using urea. Application of lignohumate with half amount of fertilizers as well as urea spraying had positive influence on the fruit size. Trees on the Gisela 5 rootstock had the highest yield efficiency and in the leaves the highest content of N, Ca and P.

Key words: sweet cherry, dwarf rootstock, foliar fertilising

KLOUTVOROVÁ, J.; KNĚZÁČEK, L.; KUPKOVÁ, J.; NÁMĚSTEK, J.: Evaluation of efficacy of some biocontrol agents against fungal diseases on apples [Hodnocení účinnosti vybraných pomocných prostředků proti houbovým chorobám jabloní] p. 61-69

*Efficacy of the three biocontrol agents (VitiSan, Myco-Sin VIN, HF-Mycol) against apple scab and powdery mildew was tested in field trials in 2009-2010. Preparations were applied repeatedly on the same trial plots. Influence of these preparations on inhibition of spore germination of *Venturia inaequalis* was evaluated in laboratory tests as well. Degree of damage by apple scab on leaves varied between 50.1-58.3 in treated variants (untreated control 70.8-71.1). Occurrence of powdery mildew was between 23.7-27.0 (untreated control 37.2). Spore germination was inhibited most effectively by VitiSan.*

*Key words: *Venturia inaequalis*, apple scab, VitiSan, Myco-Sin VIN, HF-Mycol*

KOSINA, J.: Chemical thinning of pears (preliminary results) [Chemická probírka u hrušní (předběžné výsledky)] p. 71-78

The aim of this study was to find a possibility of reducing the fruit set at pears by means of chemical thinning of fruitlets. Tests were established in RBIP Holovousy with cultivars 'Conference' and 'Charneuse' in years 2009-2010. Preparations based on NAA – naphthaleneacetic acid (Rhodofix, Agrostim Forte), ethephon (Ethrel), BA - 6-benzyladenine (Maxcel, Globaryll 100) and tank mix application of BA + NAA were tested. All experimental treatments of chemical thinning including hand thinning increased the weight proportion of fruits >65 mm, fruit size and reduced total yield per tree. The chemical thinning influenced positively the return bloom especially with the ethephon treatment at the 19 mm fruit diameter stage. The best effect on increasing fruit size was seen with treatment of tank mix Rhodofix (10 ppm NAA) + Maxcel (100 ppm BA) at the 10-11 mm fruitlet diameter stage.

Key words: pear, fruitlet, fruit size, thinning

NÁMĚSTEK, J.; PRAŽÁK, M.; LITSCHMANN, T.; KNĚZÁČEK, L.; PROSA, S.: Effect of drip irrigation with fertigation on pear crops [Vliv kapkové závlahy s fertigací na výnos hrušní] p. 79-88

Variants with different irrigated doses with fertigation were evaluated at pear orchard variety 'Lucas'/MA from 2004 to 2010. This experiment took place in planting established in 1999 in farmers' cooperation Dolany. Four experimental variants were evaluated: 1) non – irrigated control, 2) drip irrigation of 1,6 l/h output, 3) drip irrigation of 2,3 l/h output, 4) drip irrigation of 3,5 l/h output. Each variant had twenty trees at four repetition, then together eighty trees for evaluation. Irrigation was automatic. A special fertilizer (Kristalon violet) was supplied by the irrigation once a week in concentration 3 g/tree/1 dose. There were ten application of Kristalon during vegetation. The crops (kg/tree), weight of 100 fruits, mass defect and rotting of fruit during storage were monitored at each variant. The highest crops (30,8 kg/tree) were recorded at variant with drip irrigation of 3,5 l/h output, with maximum supply of water with fertilizer Kristalon.

Key words: pear tree, drip irrigation, fertigation, crops

LÁNSKÝ, M.; KLOUTVOROVÁ, J.; KNĚZÁČEK, L.; NEČESANÝ, V.; URBANOVÁ, J.; HAJŠLOVÁ, J.: Effect of surfactants and foliar fertilisers on residue degradation of some selected fungicides [Vliv pomocných látek a listových hnojiv na rozklad reziduí u vybraných fungicidů]..... p. 89-100

In years 2008 - 2010, fungicide preparations Syllit 65 WP, Delan 700 WDG, Thiram Granuflo and Zato 50 WG were applied on apple cultivars 'Melrose', 'Golden Delicious' and 'Idared'. Surfactants Agrovital, Break-Thru S 240, Silwet L-77 and foliar fertiliser Campofort Garant Ca were added to these fungicides. Fungicides and mixture of fungicides with surfactants (or fertiliser) were applied with Tifone Vanguard sprayer (in 400 l water per ha). Samples of apple fruits were taken after

preharvest interval and analyses of amount of pesticide residues were performed. Following analyses were performed after 5-6 month of storage. The maximum residue limit set for tested active ingredients was not exceeded in any sample. However, the amount of pesticide residues stayed above the limit 0.01 mg/kg set for baby food. Although degradation of pesticides by addition of surfactant was delayed only in several cases, the use of surfactants cannot be recommended for late preharvest treatments.

Key words: apples, fungicides, surfactants, fungicide residues, baby food

DRAHOŠOVÁ, H.; BLAŽKOVÁ, J.; HLUŠIČKOVÁ, I.: Evaluation of cherry fruit cracking [Hodnocení praskání plodů třešně] p. 101-113

The objective of this trial was to evaluate the influence of calcium spraying on sweet cherry cracking reduction. The foliar fertilizers Wuxal SUS Kalcium and Kalkosol 25 were chosen for testing. The sprays were applied repetitively until ten days before harvest. Cherry cultivars with different cracking susceptibility were included in the trials. Weight, firmness and percentage of cracked fruit were evaluated. The results varied every year but there was no significant influence of the spraying to the fruit cracking reduction.

Key words: cherry, fruit cracking, calcium chloride, calcium oxide

BLAŽEK, J.; PIŠTĚKOVÁ, I.: Results from fruit evaluation after long-time storing of new plum cultivars [Výsledky hodnocení dlouhodobého skladování nových odrůd slivoní] p. 115-127

For the evaluation the following promising cultivars were selected: 'Elena', 'Haganta', 'Hanita', 'Jojo', 'Presenta', 'President', 'Topgigant' and 'Tophit'. A majority of assessed cultivars can be stored in temperature 1 °C without any problems for a period of 30-40 days. For longer time until 60 days from harvest were the most suitable cultivars 'Presenta' and 'Elena'. The least weight losses during storage had cultivars 'Presenta' and 'President'. In case of early ripening cultivars ('Hanita', 'Topgigant') the best storable were fruits harvested at the beginning harvest maturity. With the latest ripening cultivars is better to use somewhat later term of the harvest.

Key words: plums, stocking, cultivar, fruit quality, weight losses, fruit rotting

LUDVÍKOVÁ, H.; SUCHÁ, J.; KŘIVOHLÁVKOVÁ, L.; JELKMANN, W.: Diagnostics of Little cherry disease (LChD) [Diagnostika maloplodosti třešně (Little cherry disease-LChD)] p. 129-133

The survey concerning detection of viral disease LChD (Little Cherry Disease) started in VŠÚO Holovousy s.r.o. in 2007. The Little Cherry Disease is caused by viruses from the genus Closterovirus (Closteroviridae family). The positive control (LChD-infected plants) was obtained from Germany and transformed into the viral germplasm collection in VŠÚO Holovousy s.r.o. Symptomatic trees were selected and tested by RT-PCR method. Different parts of plants were sampled from suspected trees to observe the dynamics of virus detection during the growing season. According to obtained results, young leaves from sprouted buds, blossoms and leaves sampled in autumn represented the optimal plant material for LChD detection. Prunus avium cultivar Canindex is considered to be the best woody indicator for LChD detection.

Key words: Little cherry disease (LChD), RT-PCR detection, localization in the plant, dynamics of occurrence, woody indicator 'Canindex'

KORBA, J.; ŠILLEROVÁ, J.; PAPRŠTEIN, F.; SEDLÁK, J.: Selection of virulent bacterial strains of Erwinia amylovora for artificial inoculation of fire blight on pome fruit [Výběr virulentních bakteriálních kmenů Erwinia amylovora pro testování umělé infekce spály na jádrovinnách] p. 135-142

Selection of most virulent strains of Erwinia amylovora was carried out for the needs of testing of fire blight artificial infection on old and local pome fruit cultivars. Virulence was evaluated on the basis of artificial inoculations on Crataegus x monogyna and Pyrus ussuriensis shoots. Fifteen strains were tested and 6 (the most virulent) were used in a mixed suspension for resistance testing. Strains with a stable long-term high virulence level and the strains with the highest virulence in the year of isolation were represented in the collection of tested isolates. After evaluation, strains 743, 725, 383, DITA, 1617 and 8/95 were selected for artificial inoculation.

Key words: pome fruit cultivars, fire blight, Erwinia amylovora, virulence, bacterium

KOSINA, J.: Growth and yield of three plum cultivars on selected rootstocks [Růst a plodnost tří odrůd slivoní na vybraných podnožích] p. 143-149

In the period 1999-2010 clonal plum rootstocks Fereley, Ishtara, Pixy, GF 655/2 and St. Julien A were investigated in the experimental orchard of RBIP Holovously using scion cultivars 'Stanley', 'Cacanska leptica' and 'Valjevka'. The following traits were evaluated: trunk cross-section area, total yield per tree, yield efficiency, fruit size, suckering. The highest accumulated yields (1999-2010) and the highest yield efficiency were observed with all scion cultivars on Fereley and Ishtara. Pixy showed the lowest productivity with all scion cultivars. The total accumulated yield for trees trained as a central leader tree was higher than for trees trained as a spindle. The yield efficiency was higher for spindles than for trees trained to a central leader. The growth vigour of Fereley and Ishtara was similar to control (GF 655/2). The rootstock Pixy grew significantly weaker than GF 655/2 with scion cultivars 'Cacanska leptica' and 'Valjevka'. The growth vigour of trees trained as a central leader was larger than those trained as a spindle. Rootstocks had no significant effect on fruit size. Trees on GF 655/2 produced the highest number of suckers. Based on our results, Fereley seems to be a promising plum rootstock.

Key words: plum, rootstock, yield, growth, suckers

SEDLÁK, J.; PAPRŠTEIN, F.: Micropropagation of sweet cherry cultivars [Mikropropagace odrůd třešně] p. 151-157

The objective of this study was to develop suitable methods for rapid in vitro shoot multiplication and rooting of two sweet cherry cultivars ('Karešova', 'Rivan'). Six proliferation MS media containing 1, 2 and 4 mg·l⁻¹ BAP (6-benzylaminopurine), 0.5 and 1 mg·l⁻¹ TDZ (thidiazuron) or 10 mg·l⁻¹ 2iP (6-(g,g-dimethylallylamino) purine) were tested. For the two cultivars, the effect of two growth regulators in different concentrations on proliferation is shown. Multiplication rates varied depending on the genotype and medium used. The highest multiplication rate was obtained for cultivar 'Rivan' that produced 3.1 ± 0.1 shoots (longer than 10 mm) on MS medium containing 2 mg·l⁻¹ BAP. The lowest multiplication rate (1.2 ± 0.1) was obtained for cultivar 'Rivan' on MS medium containing 10 mg·l⁻¹ 2iP. Three auxins IBA (indole-3-butyric acid), IAA (indole-3-acetic acid) and NAA (1-naphthaleneacetic acid) in concentration 1 mg·l⁻¹ were tested for rooting of cultivar 'Rivan'. The best result of rooting (40 %) was obtained for auxin IAA.

Key words: explant, Prunus avium, in vitro, multiplication, sterilization

SEDLÁK, J.; PAPRŠTEIN, F.: Verifying of phenotypic stability of pome fruit plants after sanitation procedure [Ověření fenotypové stability jádrovin po ozdravovacím procesu] p. 159-165

The aim of this work was to observe, on a long term basis, the phenotypic stability of selected virus free plants of apple 'Idared' and pear 'Lucasova' after thermotherapy. The observation was aimed at 12 (for apple) and 8 (for pear) important characters of shoots and leaves according to classifier for examined fruit species. In the case of three pear clones (22, 49, 53) and one apple clone (19 L), any important phenotype differences from control plants were not noted after sanitation procedure. Phenotypic abnormality was observed only in the case of one character (leaf shape) with two clones of 'Idared' (1 and 6) treated by higher temperature 39 °C. The observed abnormality was incidence of rounded leaves, which are untypical for the cultivar. These untypical leaves, which were noted in the first year in the case of all six plants of 'Idared' clones (1 and 6), grew as the first after transfer to ex vitro conditions. All other leaves, which were formed during the course of vegetation succession and in subsequent years of growing in ex vitro conditions, had all characters identical with the original cultivar. We suppose that temporary incidence of untypical leaves could have been caused by specific in vitro culture conditions (higher humidity and growth regulators in used medium) and that it was not mutation.

Key words: apple, pear, thermotherapy, characters, in vitro

KLOUTVOROVÁ, J.; URBANOVÁ, J.; KNĚZÁČEK, L.; HAJŠLOVÁ, J.: Monitoring of pesticide residues in strawberry in model regimes of treatments in 2009 [Sledování reziduí pesticidů v jahodníku v modelových systémech ošetření v roce 2009]..... p. 167-171

Amount of pesticide residues in strawberries after model treatment was evaluated in field trials in 2009. In these trials, degradation of 19 active ingredients was tested in sum. Commercial pesticides were applied from 7 to 44 days before harvest, and then analyses of pesticide residues in fruit were performed. Except propargite, the concentration of all active ingredients declined deeply below MRLs although some of them stayed above limit 0.01 mg/kg set for baby food.

Key words: pesticide residues, strawberry, MRL, baby food

OUŘEDNÍČKOVÁ, J.; KNĚZÁČEK, L.; SILOVSKÁ, I.: Control of blackcurrant against the black currant gall mite *Cecidophyopsis ribis* (Westwood, 1896) [Ochrana rybízu proti vlnovníkovi rybízovému *Cecidophyopsis ribis* (Westwood, 1896)] p. 173-186

Black currant gall mite is one of the major pest of currants. The dangers and harm caused by this microscopic mite lies in the transmission of the Blackcurrant reversion associated virus. Due to the way of its life, the protection is problematic. The effectiveness of the miticide Sanmite 20 WP (pyridaben), introduction of predatory mites Typhlodromus pyri (at two locations with different level of infestation by C. ribis) and combination of these methods of protection was tested in these experiments. Efficacy of Sanmite WP 20 in each year varied and infestation gradually grew. The effectiveness of the predatory mite T. pyri in Holovously was also variable, but the infestation was the lowest of all tested variants. Introduction of T. pyri in the planting of a lower initial infestation level proved to be very effective. The combination of Sanmite 20 WP application and introduction of T. pyri did not demonstrate superior efficacy compared to these methods tested alone.

Key words: black currant gall mite, Sanmite 20 WP, pyridaben, Typhlodromus pyri

SEDLÁK, J.; PAPRŠTEIN, F.: Elimination of blackcurrant gall mite from planting material by non chemical treatment [Eliminace vlnovníka rybízového ve výsadbovém materiálu nechemickou cestou] p. 187-193

The aim of this work was testing of suitable methods for blackcurrant gall mite elimination from planting material by thermotherapy in warm water bath. Eight variants varying in temperature and treatment time (temperature from 40 to 55 °C, treatment time 5 or 30 minutes) were tested. Based on the preliminary results, temperature 45 °C and 30 minutes treatment time seemed to be a suitable method. It is concluded that higher temperatures (50 °C and more) especially in combination with longer treatment time (30 minutes) could not be used due to higher mortality of treated black currant cuttings. Further, we recommend removing of galls infected by pest in the case of warm-water therapy of cuttings from blackcurrant gall mite infected plantation.

Key words: ribes, temperature, cutting, shoot, treatment, Cecidophyopsis ribis

SEDLÁK, J.; PAPRŠTEIN, F.; ŠPAK, J.; PŘIBYLOVÁ, J.; SVOBODOVÁ, L.: Sanitation of currant cultivars [Ozdravování odrůd rybízu] p. 195-201

The aim of this work was to determine the health status of primary resources of red currant cultivars 'Detvan', 'Rubigo', 'Vitan' and white currant cultivar 'Orion' and research of thermotherapy in 39 °C as a method of sanitation from viral diseases. BRV (Black currant reversion virus) in primary resources of 'Detvan', 'Vitan', 'Orion' and GVBaV (Gooseberry vein banding associated virus) in primary resources of 'Rubigo', 'Vitan', 'Orion' were detected by PCR. The detection of GVBaV is the first experimental proof of this virus on the territory of the Czech Republic. Phytoplasmas were not present in PCR tested plants. SLRSV (Strawberry latent ringspot virus) was detected by ELISA testing in the bush of red currant cultivar 'Detvan'. Based on the preliminary results of testing, one clone of red currant cultivar 'Rubigo' was sanitized from GVBaV, one clone of red currant cultivar 'Detvan' from mixed infection of two viruses SLRSV and BRV and two clones of white currant cultivar 'Orion' from mixed infection of two viruses BRV and GVBaV. Both clones of red currant cultivar 'Vitan' remained infected with one of two viruses (BRV or GVBaV), which were detected in initial bush before the beginning of thermotherapy. Sanitation and testing of currant cultivars used in the project will be carried out in the following years.

Key words: Ribes, virus, shoot, in vitro, therapy

PIŠTĚKOVÁ, I.; BOČEK, S.; ODSTRČILOVÁ, L.; SALAŠ, P.; SASKOVÁ, H.: Influence of biological antifungal products Supresivit and Polyversum on harvest and health condition of organic strawberries [Vliv biologických fungicidních přípravků Supresivit a Polyversum na sklizeň a zdravotní stav jahodníku v simulované ekologické produkci] p. 203-211

The effect of two biological fungicides Supresivit (Trichoderma harzianum) and Polyversum (Pythium oligandrum) on yield and health condition of organic grown strawberries cv. 'Elsanta', 'Honeoye' and 'Symphony' was assessed in two different soil and climatic sites in the Czech Republic was assessed in 2008-2009. Biofungicides applications did not significantly influenced yield and frequency of plants affected by soil-borne pathogens, as well as the biofungicides did not significantly decrease the percentage of fruits infected by the fungus Botryotinia fuckeliana. Significant number of plants diseased by soil-borne pathogens was observed in cv. 'Honeoye' and 'Elsanta', while cv. 'Symphony' showed significantly higher resistance. 'Honeoye' had significantly lower percentage of fruits damaged by gray mould.

Key words: strawberries, organic growing, biological fungicides, harvest, pathogens

OUŘEDNÍČKOVÁ, J.: Efficacy of some selected products against the strawberry blossom weevil (Anthonomus rubi, Herbst, 1795) [Účinnost vybraných přípravků proti květopasu jahodníkovému (Anthonomus rubi, Herbst, 1795)] p. 213-222

Strawberry blossom weevil is very well known and regularly occurring pest of strawberry. It is locally important pest, but occurs throughout Europe. Around 50-80 % of flower buds can be destroyed under the heavy damage. Only products that are not in accordance with integrated production rules are registered in the Czech Republic to control this pest. For these reasons, the experiments were carried out in RBIP Holovousy to test the efficacy of NeemAzal-T/S (azadirachtin), Calypso 480 SC (thiacloprid), Spintor (spinosad) and Novodor (*Bacillus thuringiensis*, ssp. *tenebrionis*). The best results were achieved with insecticide Calypso 480 SC and Spintor, where the efficiency was around 90 %. The efficiency of NeemAzal-T/S was around 50 % whereas Novodor wasn't effective.

Key words: *Anthonomus rubi*, azadirachtin, thiacloprid, spinosad, *Bacillus thuringiensis*, ssp. *tenebrionis*

KOSINA, J.; BAUDYŠOVÁ, M.: **Propagation of less known fruit crops by cuttings** [Množení méně známých ovocných plodin řízkováním] p. 223-229

In years 2008-2010, a possibility of propagation of cornelian cherry (*Cornus mas* L.), honeysuckle (*Lonicera kamtschatica* (Sevast) Pojark) and sea-buckthorn (*Hyppophae rhamnoides* L.) by cuttings was investigated in RBIP Holovousy. Rooting of softwood cuttings of cornelian cherry ranged from 32 % to 95 %. The middle of June was a suitable period for taking of cuttings. Cultivars of honeysuckle were best propagated in the second and third decade of May and the rate of rooting ranged from 30 % to 85 %. The softwood cuttings rooted under mist on a greenhouse bench with bottom heat. It is recommended to propagate sea-buckthorn by hardwood cuttings using local heating of bases. Timing of collection of cuttings is from January to the beginning of March. The rooting success of sea-buckthorn cultivars ranged from 17 % to 93 %. Male cultivar 'Polmix' showed poor propagation ability by hardwood cuttings (rooting rate 4 %-8 %). We recommend treating of both softwood and hardwood cutting with growth regulator (2500 ppm IBA).

Key words: cornelian cherry, honeysuckle, sea-buckthorn, rooting, propagation

SEDLÁK, J.; PAPRŠTEIN, F.: **Sterilization of initial explants and multiplication of apple rose in *in vitro* culture conditions** [Sterilizace počátečních explantátů a množení růže dužnoplodé v podmínkách *in vitro* kultur] p. 231-236

The aim of this work was to develop suitable methods for sterilization of initial explants and *in vitro* cultivation of apple rose. Mercuric chloride (0.15 %) and sodium hypochlorite (0.5 %) were tested as sterilization solutions. Six proliferation MS media containing 1, 2 and 4 mg·l⁻¹ BAP (6-benzylaminopurine), 0.5 and 1 mg·l⁻¹ TDZ (thidiazuron) or 10 mg·l⁻¹ 2iP (6-(g,g-dimethylallylamino) purine) were tested for initiation of multiplication. The highest multiplication rate (3.7 ± 0.3) was obtained on MS medium with 2 mg·l⁻¹ BAP. The use of phytohormone TDZ was not successful. There were low multiplication rates and an excessive callus formation on the surface of the whole explant noted on media with TDZ. A low multiplication rate was also observed in the case of phytohormone 2iP.

Key words: explant, *Rosa*, micropropagation, growth regulators, shoot

MATĚJÍČEK, A.; KAPLAN, J.: **Comparison of sensoric parameters of seventeen elderberry cultivars** [Porovnání senzoričských ukazatelů sedmnácti kulturních odrůd bezu černého] p. 237-241

There were 17 elderberry cultivars ('Albida', 'Allesö', 'Aurea', 'Bohatka', 'Dana', 'Haschberg', 'Heidegg 13', 'Körsör', 'Mammut', 'Pregarten', 'Riese aus Voßloch', 'Sambo', 'Sambu', 'Samdal', 'Sampo', 'Samyl', 'Weihenstephan') observed. Evaluated sensoric parameters were fruit shape, appearance, juiciness, odour, aroma, and overall taste. Total of points detected the best and the worst evaluated cultivars. The results of sensoric parameters showed the best evaluated cultivars 'Dana' and 'Heidegg 13' as well as cultivar 'Bohatka' with lower points for aroma and overall taste. Highly evaluated was also cultivar 'Haschberg' exceeded in fruit odour, and cultivar 'Samdal' exceeded in overall taste of fruits. Very good results showed well-balanced cultivar 'Weihenstephan', cultivar 'Sambo' with highly pointed odour of fruits, and cultivars 'Riese aus Voßloch' and 'Pregarten', which exceeded in fruit appearance. Also good results showed cultivars 'Sampo' (exceeded in fruit appearance), 'Mammut' (exceeded in fruit aroma), and 'Allesö' (well-balanced).

Key words: elderberry, cultivars, sensoric parameters

VESPALCOVÁ, M.; GRULICHOVÁ, H.; MATĚJÍČEK, A.; KAPLAN, J.: **Elderberry as a source of important flavonoid rutin** [Bez černý (*Sambucus nigra* L.) jako zdroj významného flavonoidu rutinu] p. 243-251

Elderberry is still not a certified fruit in the Czech Republic, however, elderberry production orchards have been started. Elderberry branches left after cutting are a valuable source of a pharmaceutical matter – flavonoid rutin, which could be used for food supplement or pharmaceutical production. Therefore, this paper is focused on determining rutin and its

aglycone quercetin in waste branches and leaves of selected elderberry cultivars ('Albida', 'Bohatka', 'Dana', 'Haschberg', 'Körsör' and wild elderberry). Flavonoids were extracted by a new technique called PSE (pressurized solvent extraction), and determined by high performance liquid chromatography. The highest amount of rutin was determined in wild elderberry leaves – 5.58 mg/g, among the cultivars it was 2.28 mg/g in 'Haschberg' cultivar leaves. Least rutin was contained in 'Körsör' cultivar leaves – 0.13 mg/g. Analyzing dry grinded branches, the highest rutin content was found in colourless 'Albida' cultivar – 2.33 mg/g, the lowest content 0.07 mg/g was determined in wild elderberry branches. Content of quercetin was insignificant both in leaves and branches of all cultivars except for the wild elderberry (0.24 mg/g). From this we may conclude, that most of the valuable matters in elderberry occurs in form of rutin, which can be easily isolated by the PSE technique. Our assumption that waste elderberry branches are valuable and usable source of pharmaceutically significant matter has been proved.

Key words: elderberry, rutin, quercetin, branches, leaves

BLAŽEK, J.; KŘELINOVÁ, J.: Selected characteristics of columnar apple cultivars bred in RBIP at Holovousy [Vybrané charakteristiky odrůd jabloní sloupcového růstu vyšlechtěných ve VŠÚO v Holovousích] p. 253-265

Three cultivars of columnar growth were assessed in 2003-10 in comparison to original 'McIntosh Wijcik' in several experimental orchards established in 1998 and in r. 2003. The most vigorous were trees of 'Kordona', that on the rootstock J- TE- E reached average high of 5,96 m. Not too much slower grew trees of 'Cumulus', whereas relatively the weakest was 'Herald' being approximately comparable to 'McIntosh Wijcik'. Trees of all assessed cultivars were very well spurred, practically without any influence of the rootstock used. Density spurs correlated with distance of internode. The density of spurs correlated to the length of internodes. The length spurs were increasing with tree age and depended upon cultivar and rootstock as well as certain tendency to side branching. The side branching was relatively the highest on 'Herald' and relatively rare on 'Kordona'. The side branching was very limited on the rootstock M9. Total productivity of trees was in larger or smaller extent influenced by their biennial pattern of their cropping. The highest mean yield per tree equal to 9,8 kg had 'Cumulus' on the rootstock J- TE- E, that correspond to the area harvest of 24,5 t · ha⁻¹. Shelf life of fruits within assessed cultivars fluctuated approximately from December to the end of February. 'Kordona' cv. had the shelf life relatively the longest. Total quality of fruits was highest in 'Herald'. All cultivars were completely free of scab. Regarding powdery mildew the most susceptible was 'Cumulus', medium susceptible was 'Kordona' and at least susceptible was 'Herald'.

Key words: apple tree, cultivars, columnar tree growth, yields, fruit characters, storage life, diseases

BLAŽEK, J.: 'Herald' - a new apple cultivar of columnar tree growth habit with resistance to diseases ['Herald' - nová odrůda jabloně sloupcového charakteru růstu s odolností proti chorobám] p. 267-270

This cultivar with a preliminary designation HL 5 arose after the crossing of cultivars 'Florina' and 'Telamon'. The application for registration and for legal protection within CZ was submitted in 2007. The vigour of trees is medium and they have typical columnar growth habit that is suitable for extremely dense plantings arranged like vertical cordons. Fruits are slightly above medium size (137-198 g) and their shape varies from widely conical to globularly flattened. The base - colour of the skin is yellow – green, and up to 90 % of the surface area is over coloured by bright red mainly in washed performance. The skin is rather thick and firm. Fruits are medium resistant to bruising. The taste is acidulated sweet, pleasantly aromatic, and in its proper stage excellent. The cultivar is resistant against scab and only very slightly susceptible to powdery mildew. Yields are precocious, very high but bearing pattern has a tendency to become easily biennial. The time of harvest ripening is late and fruits are storable until the spring months. Trees require fruit set regulation using hand thinning or other treatments. This cultivar is primarily recommended to small producers, who manage only a limited surface area or intend to use these trees as part of an ornamental garden. On the whole, this is an easy growing cultivar, with minimal requirements for plant protection and tree pruning. Therefore, it is also suitable for ecological systems of fruit growing.

Key words: apple-tree, cultivar, resistance to scab, columnar growth, ecology

BLAŽEK, J.: Apple cultivar 'James Grieve Super Compact' [Nová podzimní odrůda 'James Grieve Super Compact'] p. 271-274

This variety arose as a selection from clonal material of 'James Grieve' cv. obtained after gamma rays treatment. It has been registered and legally protected in CZ since 2011. The growth of trees is very weak, their productivity is regular and quality of fruits is the same as in the original cultivar. The length of shoots is 50-70 % shorter than in the original cultivar. For practical growing of the variety rootstocks M 26 and MM 106, spindle tree forms and spacing within 3 x 1 m to 4 x 1,5 m are recommended depending on the rootstock used and particular locality. Both tree training and tree pruning are very simple

and easily done. Harvest time varies from the end of August to the middle of September, according to the year and local conditions but it is about a week later than the original cultivar. Fruits are ready for eating 14 days after harvest and they are storable till the end of October; but those ones from higher altitudes are storable much longer. In a cold storage they are ready to be used through January.

Key words: apple, cultivar, 'James Grieve Super Compact', description, evaluation

BLAŽEK, J.: New resistant apple 'Cumulus' with columnar growth of trees [Nová rezistentní odrůda jabloně 'Cumulus' sloupcového charakteru růstu] p. 275-278

This cultivar arose in RBIP in Holovousy after the crossing of cultivars 'Selena' x 'McIntosh Wijcik'. The application for registration and plant variety protection within CZ was submitted in 2006. Trees are characterized by a columnar growth habit and are suitable for extremely dense planting trained like vertical cordons. Fruits are of above medium size (155-212 g) and their shape is regular, globular or globularly flattened. The base colour of the skin is yellow - green and most of the fruit surface area is covered by brightly red over colour. The flesh is white in colour, fine in its consistency and in juiciness. The taste is acidulated sweet, well flavoured, and generally very good. The cultivar is resistant to scab and suffers slightly by powdery mildew. Productivity is precocious, high, but with a strong tendency for biennial bearing. Regarding the time of maturity for the harvest – it is late and the shelf life is comparable to that of 'Golden Delicious'. Trees require regulation of fruit set level by hand thinning or by other ways of treatment. On the basis of current experience this cultivar should be recommended primarily to small growers, who possess only limited area of land. On the whole, this is an easy growing cultivar, with minimal requirements for plant protection and tree pruning. Therefore, it is also suitable for ecological systems of fruit growing.

Key words: apple-tree, cultivar, resistance to scab, columnar growth, ecology