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BOOK OF ABSTRACTS

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Content

METHOD / DESIGN:

Three variations of pasta samples were formulated. The first variation was made from 100% rice (Rp), the second one was rice based with 5% of pea flour and the third one was pea based with 5% rice. Proximate composition, physical, textural and colour properties, and cooking quality of samples were examined. Pasta colour was measured by using Konica Minolta colorimeter (CR-400, Konica, Minolta, Tokyo, Japan), while textural properties of uncooked (hardness, flexibility and toughness) pasta samples were measured by using texture analyser TA.XT Plus (Stable Micro System, U. K.)

RESULTS:

The sample P95/R5 had more than two times higher content of proteins compared to R95/P5 pasta and Rp pasta. Comparing textural properties of uncooked pasta, results showed higher hardness of pasta based on rice flour (Rp). Pea based pasta had significantly ($p<0.05$) more red and yellow nuance, although during cooking red tone was washed into cooking water. Cooking loss for P95/R5 and R95/P5 pasta samples was at the same level and significantly lower compared to Rp pasta.

Figure 1. ARABIC 1. Textural properties (hardness, flexibility and toughness) of uncooked pasta

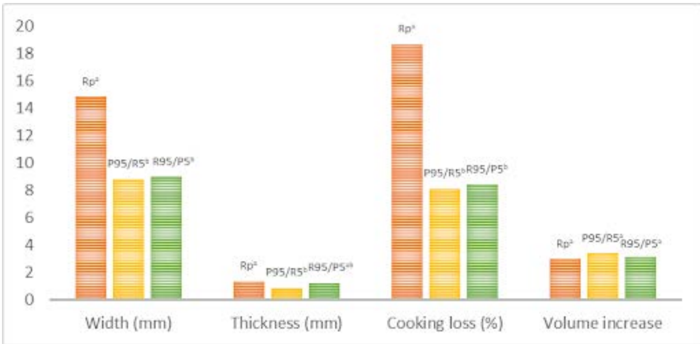

Figure 2. ARABIC 2. Physical properties (width, tickness) and cooking quality (cooking loss, volume increase) of pasta

CONCLUSIONS:

The results indicate that pea flour may be used for production of protein enriched pasta without altering quality properties. Parameters such as protein content and cooking loss were significantly improved with addition of pea flour.

T4-P-23-ORAL Oil crops breeding at IFVCNS – new tools for tackling changing environment and market demands

Dragana Miladinović, Ana Marjanović Jeromela, Sandra Cvejić, Siniša Jocić, Aleksandra Radanović, Milan Jocković, Boško Dedić, Sonja Gvozdenac, Nada Hladni, Ankica Kondić-Špika[72]

KEYWORDS: oil crops; breeding; molecular tools; environment

INTRODUCTION:

Oil crops breeding at Institute of Field and Vegetable Crops (IFVCNS) has a successful 50-year long tradition that resulted in collection of 7000 sunflower inbred lines, as well as collection of wild sunflowers and substantial collections of genetic resources of rapeseed, pumpkins and 24 minor oil crops. Creation of new oil crop varieties using classical breeding methods is a long-term process, sometimes not efficient enough to meet demands of changing environment and market demands of 21st century.

72 Institute of Field and Vegetable Crops, National Institute of Republic of Serbia, Novi Sad, Serbia. Corresponding author: dragana.miladinovic@ifvcns.ns.ac.rs

OBJECTIVES:

The introduction of modern techniques, such as high-throughput phenotyping, marker-assisted and genomic selection, into IFVCNS breeding programs, for more efficient incorporation of desired traits into commercial varieties.

METHOD / DESIGN:

The most common application of molecular tools in oil crops breeding at IFVCNS is marker-assisted backcross breeding for gene introgression, as well as mapping of agronomically important traits. Climate change and its consequences placed focus also on selection of oil crops genotypes tolerant to abiotic stresses. Since abiotic stress related traits are mostly quantitative, genomic selection along with epigenomic selections are gaining importance in IFVCNS breeding activities.

RESULTS:

Marker-assisted backcross breeding is routinely used for introduction of resistance traits into sunflower germplasm, with the emphasis on downy mildew, where markers for identification of P_{l6}, P_{l15} and P_{larg} genes are available. Marker-assisted selection is also used in production of rapeseed hybrids, as well as high-oleic sunflower genotypes. Genomic selection is already applied in soybean breeding, with the initial efforts made for introduction of epigenetics into sunflower breeding with the aim of developing epiQTLs. Tolerance to abiotic stresses is also addressed through phenotyping efforts, focused predominantly on root traits and drought resistance, with the first results obtained in sunflower and rapeseed. Tolerance to abiotic stresses is also addressed through phenotyping efforts, focused predominantly on root traits and drought resistance, with the first results obtained in sunflower and rapeseed.

CONCLUSIONS:

There is still room for improvement, especially in data collection and integration. Further efforts should be made in better combining of phenotypic and molecular data and their integration into the breeding process through envirotyping and identification of traits and markers of real practical value for the breeders.

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T4-P-24 Specificity of heavy metal accumulation in vegetable species and health risk assessment in relation to cultivation site

Nataša Nikolić, Slobodanka Pajević, Danijela Arsenov, Milan Borišev, Milan Župunski[73]

KEYWORDS: heavy metals; vegetables; human health risk; metal pollution index

INTRODUCTION:

Enrichment of the environment by heavy metals (HM) due to various human activities occurs at the global scale. Besides the essential mineral nutrients, edible food crops simultaneously absorb and accumulate metals whose role in plant metabolism has not been discovered yet (e.g. cadmium, lead, chromium). Concentration of HM in edible cultivated plants above the recommended values (i.e. maximum permitted concentration) poses significant human health risks due to dietary exposure to

73 Department of Biology and Ecology, Faculty of Sciences, University of Novi Sad, Trg Dositeja Obradovića 2, Novi Sad, Serbia.

Corresponding author: natasa.nikolic@dbe.uns.ac.rs

Index