



# **PROCEEDINGS OF INTERNATIONAL CONGRESS ON OIL AND PROTEIN CROPS**

**2-4 NOVEMBER, 2023**

**ANTALYA, TURKEY**

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INTERNATIONAL  
CONGRESS ON OIL AND  
PROTEIN CROPS**

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**Organized by  
Trakya University  
European Association for Research on Plant  
Breeding (EUCARPIA)  
International Researchers Association**

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## WELCOME NOTES

International Congress Oil and Protein Crops Section Conference of EUCARPIA which is organized by Trakya University and the International Researchers Association in cooperation with the European Association for Research on Plant Breeding (EUCARPIA). The congress is held in Megasaray Westbeach Hotel, Antalya, Turkey, on November 2-4, 2023 with supporting of several national and international partners.

The Congress topics covers Oil and Protein Crops: Plant Breeding and Genetics, Molecular Genetics and Biotechnology, Biology and Physiology, Genetic Resources, Plant Protection, Agronomy, Economy, Animal feeding, Food Science and Nutrients, Fats, lipids, and Protein studies.

Oil crops are rich sources of oils, proteins, minerals, vitamins, and dietary fibers for both human and animal feeding and provide the raw material for the production of biodiesel. Oil crops are soybean, cottonseed, sunflower, canola, rapeseed, peanut, safflower, flax, sesame, coconut, castor, copra, etc.

Almost 50% of the global food protein supply comes from cereal seeds. Soybean, peanut, common bean, pea, lupine, chickpea, faba bean, lentil, grass pea, cowpea, pigeon pea, etc. are currently the most important legumes for human consumption and animal feed. Because of the protein content of their seeds; grain legumes, cereals, and other minor crops such as amaranth, quinoa, hemp, caraway, etc. are protein crops growing for plant protein for food and feed.

The Congress is intended that the subjects to be kept broad in order to provide opportunity to the science and research community to present their works as oral or poster presentations. The Congress languages is in English. Researchers, breeders and others with an interest in the genetics and breeding of oil and protein crops are invited to participate. Among the topics to be discussed are directions of breeding for resistance to abiotic and biotic stresses, improved industrial use, and conventional versus organic production.

As there have been many different scientific meetings around the world, we aimed to bring three different communities together, namely science, research and private investment groups considering practical information sharing that is of value for breeders, seed enterprises, researchers and scientists, in a friendly environment of Antalya, Turkey to share their knowledge and experience and benefit from each other.

There are 38 orals and 63 poster presentation in the congress both joining and presenting normal and online with 141 participants from 20 different countries from the world.

The congress gathered scientists from around the world, and present their recent achievements. The organizers will also invite relevant stakeholders to provide a view on the current situation around the world as well as prospects to overcome the limitation for sustainable crop production to feed the world.

We would like to thank all of you for joining this conference and we would like to give also special thanks to our sponsors and collaborators for giving us a big support to organize this event.

Prof Dr Yalcin KAYA  
Head of the Organizing Committee

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<b>Dr. Etienne PILORGE</b>	<b>Terres Inovia, FRANCE</b> <b>«Oil &amp; Protein Crops Sector in Europe»</b>

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## CONTENTS

WELCOME NOTES.....	3
ORGANIZING COMMITTEE.....	4
SCIENTIFIC COMMITTEE.....	5
THE DROUGHT EFFECT ON LEAF SPAD VALUE OF SESAME (SESAMUM INDICUM L.) ACCESSIONS .....	12
ENHANCING SESAME PRODUCTIVITY FOR LIVELIHOOD AND ECONOMIC IMPROVEMENT IN SUDAN .....	13
POLYMORPHISM OF GRAIN STORAGE PROTEINS IN TRITICALE LINES OF CIMMYT ORIGIN.....	14
TOWARD DEVELOPMENT OF CLIMATE RESILIENT VARIETIES: GENOME WIDE ASSOCIATION ANALYSIS FOR HEAT TOLERANCE IN CHICKPEAS.....	15
BREEDING FOR POD-SHATTERING RESISTANCE IN VEGETABLE-TYPE SOYBEAN.	16
NOVEL AND SIMPLE CROSSING TECHNIQUE IN OIL SEED CROP SESAME (SESAMUM INDICUM L.).....	17
VARIABILITY OF AMARANTHUS CRUENTUS L. CV. PRIBINA PBA AND CDDP PROFILES UNDER THE TREATMENT OF HEAVY METALS.....	18
TESTS FOR THE CULTIVATION OF SUNFLOWER IN THE AGRO-CLIMATIC CONDITIONS OF LATVIA .....	19
DEVELOPMENT OF SOUTH AFRICAN SOYBEAN LINES WITH RESISTANCE TO SUDDEN DEATH SYNDROME .....	20
CHARACTERISATION OF THE SCLEROTINIA SCLEROTIORUM POPULATION ON SOYBEAN AND SUNFLOWER IN SOUTH AFRICA TO IMPROVE RESISTANCE BREEDING STRATEGIES .....	21
OVERVIEW ON THE ROMANIAN SOYBEAN QUALITY .....	22
GENETIC STRUCTURE AND VARIABILITY PARAMETERS OF LATHYRUS SATIVUS L. EUROPEAN COLLECTION .....	23
THE STUDY ON THE VARIABILITY OF PRODUCTIVE AND QUALITATIVE COMPONENTS OF SOME MUSTARD GENOTYPES .....	24
USING OF HETEROSIS SELECTION IN PEANUTS (ARACHIS HYPOGAEA L.).....	25
USING OF HETEROSIS SELECTION IN SESAME (SESAMUM INDICUM L.).....	26
EVALUATION OF HYBRID FORMS, ORIGINATED FROM WILD HELIANTHUS SPECIES ON SOME BIOCHEMICAL CHARACTERISTICS.....	27
SAFFLOWER: A SOURCE OF BENEFICIAL FLORAL TEA.....	28
YIELD ENHANCEMENT OF WATER STRESS CHICKPEA GENOTYPES BY INOCULATION WITH RHIZOBIUM STRAINS .....	29
GENOME-WIDE ASSOCIATION STUDIES OF SALINITY TOLERANCE IN MUNGBEAN AT THE VEGETATIVE AND REPRODUCTIVE STAGE .....	30
EXPANDING GENETIC VARIABILITY AND TRAIT IMPROVEMENT OF STAPLE CROPS: INSIGHTS FROM IFVCNS SUNFLOWER, WHEAT AND BRASSICAS PROGRAMS .....	31
CYTOGENETIC STUDY OF SOME SPECIES OF MEDICAGO GENUS.....	33

<b>BREEDING AND AGRONOMIC COMPARISON BETWEEN SPRING AND WINTER VARIETIES OF CAMELINA SATIVA IN ITALY .....</b>	<b>34</b>
<b>IMPROVEMENT OF BEAN PLANT TRAITS BY INDUCED MUTAGENESIS .....</b>	<b>35</b>
<b>EXPLORATION, EVALUATION AND EXPLOITATION OF WILD SPECIES OF COOL SEASON FOOD LEGUMES .....</b>	<b>36</b>
<b>DEVELOPMENT OF CHLORSULFURON RESISTANCE SOYBEANS BY EMS MUTAGENESIS .....</b>	<b>38</b>
<b>THE CHALLENGE OF BREEDING FOR REDUCED OFF-FLAVOUR IN FABA BEAN INGREDIENTS.....</b>	<b>39</b>
<b>POLIMORPHISM OF GRAIN STORAGE PROTEINS IN TRITICALE LINES OF CIMMYT ORIGIN.....</b>	<b>40</b>
<b>MODIFIED METHOD OF MICROSPORE ISOLATION FOR DH TECHNOLOGY FOR THE BRASSICACEAE FAMILY .....</b>	<b>41</b>
<b>IMPROVEMENT OF BEAN PLANT TRAITS BY INDUCED MUTAGENESIS .....</b>	<b>42</b>
<b>PREPARATION OF CUO-TiO<sub>2</sub> BINARY NANOCOMPOSITES FOR THE SUPERIOR PHOTOCATALYTIC DEGRADATION OF RHODAMINE B: MORPHOLOGICAL AND STRUCTURAL PROPERTIES.....</b>	<b>43</b>
<b>PHYTOPATHOLOGY AND MOLECULAR INVESTIGATION OF RESISTANCES TO BACTERIAL AND FUNGAL PATOGENS IN COMMON BEAN MUTANT AND BREEDING LINES.....</b>	<b>44</b>
<b>DROUGHT STRESS TOLERANCE IN COMMON BEAN MUTANT AND BREEDING LINES: PHYSIOLOGY AND PROTEOMICS RESPONSE .....</b>	<b>45</b>
<b>PROTEOME EFFECT OF DROUGHT STRESS IN PEPPER MUTANT LINES .....</b>	<b>46</b>
<b>YIELD ENHANCEMENT OF WATER STRESSED CHICKPEA GENOTYPES BY INOCULATION WITH RHIZOBIA .....</b>	<b>47</b>
<b>EFFECT OF CLIMATE VARIABLES ON SUNFLOWER YIELD IN THE REPUBLIC OF MOLDOVA.....</b>	<b>48</b>
<b>DETERMINING THE CONTRIBUTION OF THE ENVIRONMENTAL FACTORS IN THE VARIATION OF SUNFLOWER SEED YIELD BY MULTIVARIATE ANALYSIS.....</b>	<b>49</b>
<b>PHYTOCHEMICAL AND PHARMACOLOGICAL PROFILE OF PHENOLIC EXTRACTS OF POMEGRANATE PEEL (PUNICA GRANATUM).....</b>	<b>51</b>
<b>CHROMATOGRAPHIC ANALYSIS AND HYPOGLYCEMIC ACTIVITY OF TWO MEDICINAL PLANTS .....</b>	<b>52</b>
<b>ANTI-INFLAMMATORY AND ANALGESIC ACTIVITY OF AQUEOUS EXTRACT OF INULA VISCOSA LEAVES .....</b>	<b>53</b>
<b>IN VITRO, MOLECULAR DOCKING AND TOXICITY PREDICTION OF PINE RESIN EXTRACT .....</b>	<b>54</b>
<b>THE ACCUMULATION OF PROLINE AND SOLUBLE SUGARS UNDER THE LOW TEMPERATURES IN SOME GRASS AND LEGUME MEADOW IN TEH SEMI ARID REGION SETIF , ALGERIA SPECIES.....</b>	<b>55</b>
<b>STEREOLOGICAL ANALYSIS OF THE SUNFLOWER ROOT SEEDLING.....</b>	<b>56</b>
<b>URTICA DIOICA L., ALGERIAN WILD PLANT WITH HYPOGLYCEMIC EFFECT .....</b>	<b>57</b>

<b>DIVERSE METHODS TO EVALUATE THE ANTIOXYDANT EFFECT OF PLANT EXTRACT .....</b>	<b>58</b>
<b>EVALUATION OF BIOLOGICAL ACTIVITY OF CRUDE EXTRACTS FROM PLANT USED IN TRADITIONAL MEDICINE.....</b>	<b>59</b>
<b>AN INVASIVE WEED OF CROPS: OXALIS PES-CAPRAE.....</b>	<b>60</b>
<b>PHYSICAL CHEMISTRY ANALYSIS, ANATOMICAL STUDY AND ANTIOXYDANT ACTIVITY OF ROSMARINUS OFFICINALIS.....</b>	<b>61</b>
<b>PHYTOCHEMISTRY AND ANTIOXYDANT ACTIVITY OF CERATONIA SILIQUA L. PULP EXTRACTS .....</b>	<b>62</b>
<b>PHYTOCHEMISTRY AND ANTIOXYDANT ACTIVITY OF CERATONIA SILIQUA L. SEEDS EXTRACTS.....</b>	<b>63</b>
<b>EXPANDING THE GENETIC BASE OF FLAX FOR IMPROVEMENT OF BIOTIC AND ABIOTIC STRESS TOLERANCE.....</b>	<b>64</b>
<b>FATTY ACID COMPOSITION AND YIELD COMPONENTS OF HEMP (CANNABIS SATIVA L.) GENOTYPES OF DIFFERENT ORIGINS CULTIVATED IN LATVIA .....</b>	<b>65</b>
<b>COMPARATIVE ASSESSEMENT OF THE PHYSIOLOGICAL AND MORPHOLOGICAL EFFECTS OF AN ORGANIC FERTILIZERS VERSUS A CHEMICAL FERTILIZER ON GREEN BEANS (PHASEOLUS VULGARIS L.).....</b>	<b>66</b>
<b>ROLE OF POST-HARVEST RESIDUE TREATMENT ON THE WHEAT PRODUCTIVITY, FLOUR PROPERTIES AND BREAD-MAKING QUALITIES .....</b>	<b>67</b>
<b>EVALUATION OF PHYTOSANITARY PRESSURE IN CEREAL GROWING IN AN ARID REGION.....</b>	<b>68</b>
<b>DIAGNOSIS OF AGRICULTURAL PRACTICES OF QUINOA CULTURE IN ALGERIAN ARID REGIONS .....</b>	<b>69</b>
<b>SEEDYIELD AND PROTEIN CONTENT IN SOME BULGARIAN SUNFLOWER HYBRIDS .....</b>	<b>71</b>
<b>CONTENT ESSENTIAL MACRONUTRIENTS IN THE ORGANS OF SUNFLOWER (HELIANTUS ANNUS) - HYBRID DEVEDA DEPENDING ON THE MAIN TILLAGE SYSTEM .....</b>	<b>72</b>
<b>CONTROL OF POLLEN BEETLE (MELIGETHES AENEUS F.) IN OILSEED RAPE USING INSECTICIDE LAMBDA-CYHALOTHRIN.....</b>	<b>73</b>
<b>THE NUTRITIONAL VALUE OF TWO FODDER PLANTS (MEDICAGO SATIVA L. AND CYPERUS ROTUNDUS L).....</b>	<b>74</b>
<b>CHANGES IN THE NITROGEN CONCENTRATION IN THE ORGANS OF WINTER WHEAT VARIETIES DEPENDING ON THE AGRICULTURAL PRODUCTION SYSTEM</b>	<b>75</b>
<b>USES OF POST-HARVEST RESIDUES AND THEIR INFLUENCE ON GRAIN PRODUCTIVITY AND GRAIN PHYSICAL PROPERTIES OF WINTER WHEAT .....</b>	<b>77</b>
<b>IN RURAL AREAS INTERNET CONNECTION PROBLEMS AND SOLUTION RECOMMENDATIONS EXPERIENCED IN THE PROCESS OF USING SMART AGRICULTURE METHODS IN OLIVE FARMING.....</b>	<b>78</b>
<b>EFFECTS OF DIFFERENT POLYETHYLENE GLYCOL (PEG) CONCENTRATIONS ON GERMINATION AND ROOT LENGTH OF SOYBEAN [GLYCINE MAX (L.) MERR.] .....</b>	<b>79</b>
<b>RECENT ADVANCES IN THE USE AGRICULTURAL-BASED MATERIALS FOR WASTEWATER TREATMENT.....</b>	<b>80</b>



<b>SUNFLOWER HYBRID SEED PRODUCTION - CHALLENGES AND PERSPECTIVES.....</b>	<b>81</b>
<b>NEGLECTED AND UNDERUTILIZED A CROP IN TURKEY: LINSEED (LINUM USITATISSIMUM L.) .....</b>	<b>83</b>
<b>DEVELOPMENT OF ORGANIC SOYBEAN GROWING IN POLAND.....</b>	<b>84</b>
<b>SOIL FERTILITY, PRODUCTIVITY AND CARBON STOCKS OF DIFFERENT OIL PALM (ELAEIS GUINEENSIS) HYBRIDS IN TUNGABHADRA COMMAND AREA OF KARNATAKA.....</b>	<b>85</b>
<b>LEGUMES IN TERMS OF SUSTAINABLE AGRICULTURAL PRACTICES FOR GLOBAL WARMING AND CLIMATE CHANGE.....</b>	<b>87</b>
<b>EFFECTS OF DIFFERENT SALT DOSES ON SEEDLING GROWTH AND RELATIVE WATER CONTENT OF SUNFLOWER (HELIANTHUS ANNUUS L.) .....</b>	<b>88</b>
<b>ROLE OF POST-HARVEST RESIDUE TREATMENT ON THE WHEAT PRODUCTIVITY, FLOUR PROPERTIES AND BREAD-MAKING QUALITIES .....</b>	<b>89</b>
<b>CHANGES IN THE NITROGEN CONCENTRATION IN THE ORGANS OF WINTER WHEAT VARIETIES DEPENDING ON THE AGRICULTURAL PRODUCTION SYSTEMS .....</b>	<b>90</b>
<b>POST-HARVEST RESIDUE TREATMENT EFFECT ON THE WINTER WHEAT PRODUCTIVITY.....</b>	<b>92</b>
<b>VALORIZATION OF LOCAL NATURAL RESOURCES IN LIVESTOCK FEED IN ARID REGIONS OF ALGERIA .....</b>	<b>93</b>
<b>VALORIZATION OF OLIVE CAKE, AN OLIVE OIL INDUSTRY BY PRODUCT, IN THE DIET OF GROWING RABBITS.....</b>	<b>94</b>
<b>VALORIZATION OF OLIVE OIL INDUSTRY BYPRODUCT, OLIVE CAKE, IN THE DIET OF JAPANESE QUAIL: IMPACT ON ZOOTECHNICAL PERFORMANCE AND HEALTH STATUS .....</b>	<b>95</b>
<b>ASSESSING THE NUTRITIONAL VALUE OF FORAGE PLANTS IN ARID REGIONS OF ALGERIA .....</b>	<b>96</b>
<b>FUNCTIONAL PROPERTIES OF STARCH EXTRACTED FROM LANDRACES OF ALGERIAN PEARL MILLET USING VARIOUS TECHNIQUES, INCLUDING WET MILLING AND ULTRASOUND .....</b>	<b>97</b>
<b>DIETARY INTERVENTION OF BETALAINS FROM AMARANTHUS VIRIDIS FOR DETOXIFICATION OF ENVIRONMENT-INDUCED OXIDATIVE STRESS .....</b>	<b>98</b>
<b>INSIGHT INTO RADIATION DEVELOPED AMARANTH SEED - ANALYSIS OF STARCH AND STARCH-RELATED GENES.....</b>	<b>99</b>
<b>CHARACTERIZATION OF SOME CORN GENOTYPES IN TERMS OF PRODUCTION AND PROTEIN CONTENT .....</b>	<b>100</b>
<b>ANTI-INFLAMMATORY ACTIVITY OF ETHYL ACETATE AND BUTANOLIC EXTRACTS OF ARBUTUS UNEDO L. ....</b>	<b>101</b>
<b>QUALITY INDICES VARIATION IN SEEDS OF SOME HEMP GENOTYPES.....</b>	<b>102</b>
<b>SUGAR AND PROTEIN CONTENTS, SUPEROXIDE ANION RADICAL SCAVENGING AND ANTIHEMOLYTIC ACTIVITIES OF ETHANOLIC EXTRACT OF APPLES (MALUS DOMESTICA BORKH) .....</b>	<b>103</b>

<b>SUGAR AND PROTEIN CONTENTS, SUPEROXIDE ANION RADICAL SCAVENGING AND ANTIHEMOLYTIC ACTIVITIES OF ETHANOLIC EXTRACT OF WATERMELON (CITRULLUS LANATUS L.)</b> .....	<b>104</b>
<b>PROTEIN AND SUGAR CONTENTS, ALKALINE DMSO SUPEROXIDE RADICAL SCAVENGING AND ANTIHEMOLYTIC POTENTIALS OF HYDROALCOHOLIC EXTRACT OF WATERMELON</b> .....	<b>105</b>
<b>PROTEIN AND SUGAR CONTENTS, ALKALINE DMSO SUPEROXIDE RADICAL SCAVENGING AND ANTIHEMOLYTIC POTENTIALS OF HYDROALCOHOLIC EXTRACT OF HAWTHORN FRUITS</b> .....	<b>106</b>
<b>ANTI-INFLAMMATORY AND ANALGESIC EFFECT OF ETHANOLIC EXTRACT OF CITRUS RETICULATA</b> .....	<b>107</b>
<b>EVALUATION OF ANTI-INFLAMMATORY ACTIVITY OF OLIVE OIL IN PAW AND INTESTINE OF ALBINO FEMALE MICE</b> .....	<b>108</b>
<b>ANTI-INFLAMMATORY AND ANALGESIC ACTIVITIES OF ETHANOLIC EXTRACT OF CITRUS SINENSIS</b> .....	<b>109</b>
<b>EVALUATION OF PROTEIN AND SUGAR CONTENTS AND IN VITRO ANTIOXIDANT ACTIVITY OF QUINCE ETHANOLIC EXTRACT</b> .....	<b>110</b>
<b>EVALUATION OF PROTEIN AND SUGAR CONTENTS AND IN VITRO ANTIOXIDANT ACTIVITY OF MELON ETHANOLIC EXTRACT</b> .....	<b>111</b>
<b>ANTI-INFLAMMATORY AND ANALGESIC ACTIVITIES OF ETHANOLIC EXTRACT OF CITRUS SINENSIS</b> .....	<b>112</b>
<b>PROTEIN AND SUGAR CONTENTS, ALKALINE DMSO SUPEROXIDE RADICAL SCAVENGING AND ANTIHEMOLYTIC ACTIVITIES OF HYDROALCOHOLIC EXTRACT OF WATERMELON</b> .....	<b>113</b>
<b>PRODUCTION METHODS OF VIRGIN COCONUT OIL: THE IMPACT ON NUTRIENTS AND THEIR BIOLOGICAL ACTIVITIES</b> .....	<b>114</b>
<b>BIOLOGICAL ACTIVITY AND EFFICIENCY IN FOOD PRESERVATION OF THYMUS VULGARIS EXTRACTS</b> .....	<b>115</b>
<b>CHEMICAL COMPOSITION OF ESSENTIAL OIL FROM MEDICINAL PLANT AND ANTI MICROBIAL ACTIVITY</b> .....	<b>116</b>
<b>EXCEPTIONAL AMARANTH SEEDS</b> .....	<b>117</b>
<b>CHARACTERIZATION AND ANTIOXIDANT STUDY OF APRICOT KERNEL VEGETABLE OIL EXTRACTED BY COLD PRESSING</b> .....	<b>118</b>
<b>PREDICTION OF PRION-LIKE PROTEIN DOMAINS IN IRRADIATED AND CONTROL SAMPLES OF THE PEA SEEDLINGS</b> .....	<b>119</b>
<b>CHANGE OF PROTEIN AND TRYPTOPHAN AMOUNT IN FRESH, DRY AND CANNED SEEDS OF SOME PEAS GENOTYPES</b> .....	<b>120</b>
<b>BIOCHEMICAL, TRANSCRIPTIONAL AND FLUORESCENCE SPECTROSCOPY ANALYSIS OF FATTY ACIDS IN SEEDS OF CAMELINA CULTIVARS GROWN IN ORGANIC INTERCROPPING SYSTEM</b> .....	<b>121</b>
<b>THE EFFECT OF ADDING CANOLA OIL TO DIESEL FUEL ON ENGINE POWER, FUEL CONSUMPTION AND EMISSIONS</b> .....	<b>122</b>
<b>GLOBAL POLICY TO ELIMINATE TRANS FATS BY 2023 AND THE SITUATION OF PACKAGED FOOD IN TURKEY</b> .....	<b>123</b>

<b>EXTRACTION AND CHARACTERISATION OF MILK THISTLE SEED PROTEIN: AN OPTIMIZATION STUDY.....</b>	<b>124</b>
<b>THE IMPACT OF PERENNIAL FLOWER STRIP ON THE COLONIZATION OF WINTER RAPE PLANT BY SELECTED PEST AND BENEFICIAL SPECIES.....</b>	<b>125</b>
<b>CENSUS OF THE ENTOMOFAUNA AND THE ADVENTICE FLORA SUBSERVIENT TO THE CULTURE OF QUINOA .....</b>	<b>126</b>
<b>PARTICIPANT LIST .....</b>	<b>127</b>
<b>AGBIOL 2023 CONFERENCE STUDENT ORGANIZING TEAM.....</b>	<b>130</b>
<b>OUR SPONSORS .....</b>	<b>131</b>

## SUNFLOWER HYBRID SEED PRODUCTION - CHALLENGES AND PERSPECTIVES

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### ABSTRACT

The introduction of sunflower hybrids into production became possible after the discovery of the CMS source in 1969. The first hybrids were put into production in Romania, Yugoslavia and France at the end of the eighties of the last century. Today, sunflowers are grown on over 28 million hectares in the world, and hybrid seeds are sown on over 85% of this area, the rest of the area is still occupied by open-pollinated varieties. The production of hybrid seeds involved certain specificities. Since the female and male parental lines often do not have the same length of vegetation, they need to be sown at different times to achieve a flowering match. This problem was largely overcome by introducing recessive branching into the male line, which extended its flowering period. The main problems in production are related to fertilization, which can lead to low seed yields. The reasons for poor fertilization lie in incompatibility, low attractiveness for pollinators and other factors. These problems are overcome by finding lines with good compatibility, changing the ratio of the number of rows, increasing the number of hives/ha, but also by using preparations based on pheromones that increase bee visits. A successful hybrid must be good and yielding in seed production too, otherwise its production is not worthwhile. The decrease in the number of wild pollinators and the problems in beekeeping have a direct impact on the success of sunflower seed production, except in areas where pollination is carried out by hand. The increase in the area under commercial sunflower in the world makes it difficult to find areas for seed production. The necessary spatial isolation for the production of seeds of the C1 category used to be 3 km, but now in some countries it has been reduced even to 500 m., which makes it easier to find areas for production but leads to other problems related to the genetic purity of the seeds. Multiphase sowing complicates the fight against weeds due to the need for multiphase treatments, this is greatly facilitated by the introduction of hybrids tolerant to certain groups of herbicides. Recently, a large number of fungicides and insecticides for seed treatment have lost their registration in certain countries. This primarily affects the quality of seed treatment of all seed categories and therefore production, but also leads to restrictions on seed trade due to uneven legal regulations between countries. Chemical desiccation is a necessary measure in the production of hybrid sunflower seeds, but most desiccants have lost their registration and new solutions are not yet on the horizon, which will further complicate the production of quality seeds. Finally, the situation caused by the Covid-19 epidemic and especially the restrictions on the production and trade of seeds in the two largest sunflower producing countries (Ukraine and Russia), caused by the current political situation, led to additional challenges. In order to produce sufficient quantities of high-quality hybrid sunflower seeds in the future, it will be necessary to constantly work on the permanent improvement of the technological process itself,

as well as on overcoming all other obstacles in the production and trade of seeds. Without quality seeds, it will not be possible to successfully produce sunflowers on ever-larger areas.

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