Michail Nikolov Christov, Ph. D

Senior research officer in DAI – G. Toshevo,

Main directions of the research work:

- Sunflower genetics and breeding;
- Wide hybridization - interspecific and intergeneric;
- Experimental mutagenesis;
- Resistance to diseases, parasites, herbicides and drought resistance;
- Searching and investigation of new sources of CMS and Rf genes in sunflower;
- Sunflower Plant Breeding. Creation of sunflower lines and hybrids – oil type; large seeds – confectionary type; small, variegated for birds and ornamental forms.

Defended thesis for the scientific and educational degree "Doctor" – theme: "Study of wild Helianthus species with respect of their use in the sunflower breeding"

Results of investigations in the field of wide hybridization and experimental mutagenesis

1.Realization of successful hybridization of cultivated sunflower *H. annuus* with 38 wild *Helianthus* species. We obtained some of the first interspecific hybrids of cultivated sunflower with species *H. eggertii*, *H. glaucophillus*, *H. smithii*, *H. microcephalus*, *H. pumilus*. Transfer of a great number of useful characters and traits of economical importance was carried out from all 38 wild *Helianthus* species in cultivated sunflower (Christov, M.,1991; Christov, M.,1996; Christov, M., 1996; Christov, M., P. Shindrova, V. Entcheva, 1996; Christov, M., 1996; Christov, M., P. Shindrova, V. Entcheva, R. Bachvarova, M. Christova. 1998; Christov, M.,1999, Christov, M., 2008, Christov M. et al., 2009, Christov M. et al., 2010 и др.).

2.First, proved, successful hybridization between cultivated sunflower and species from other genera of family *Compositae* in the world was carried out by us. Viable hybrids are obtained from cultivated sunflower *H. annuus* and species from different genera of family - *Tithonia, Arctium, Aster, Bidens, Calendula, Carduus, Gaillardia, Grindelia, Inula, Matricaria, Onopordum, Silfium, Telekia, Verbesina* and etc. As a result of the successful work with them new forms, carriers of characters interesting for sunflower breeding are obtained (Christov, M., I. Panayotov, 1991; Christov M., R. Vasileva, H. Tsujimoto and I. Panayotov, 1994; Christov, M., and Rumjana D. Vassilevska-Ivanova, 1999, Christov M. et al., 2009, Christov M. et al., 2010 и др.).

3.As a result of successful interspecific hybridization were obtained more than 65 000 F1 plants, and of intergeneric hybridization – more than 1900.

4. Resistance to the diseases downy mildew, *Sclerotinia*, *Phomopsis*, *Alternaria* and others and to the parasite broomrape was established in different accessions of *Helianthus* species and in some species of different genera of family *Compositae*. As a result of use of hybridization the transfer

of many genes, controlling these resistances was carried out. On this base more than 2000 sunflower R lines and 195 B lines suitable for heterosis breeding are created.

5. I am author of 25 new sources of cytoplasmic male sterility (CMS) in sunflower, obtained by applying of wide hybridization and experimental mutagenesis (Christov, M., 1990; Christov, M., P. Shindrova, V. Entcheva, 1996; Christov, M., V. Nikolova, 1996; Christov, M.,1999, и др.).

6. Rf genes were transferred to cultivated sunflower from 286 accessions of 36 *Helianthus* species and 24 accessions of 16 species of some genera from family *Compositae*. Together with Rf genes are transferred and the genes, controlling resistance to diseases and the parasite broomrape as well as tolerance to herbicides and soil and air drought resistance, high seed oil content, varied fatty acid content of oil and different amino acid content of protein.

7.Using of gamma rays, ultra sound and EMS were provoked the mutations in the plants of sunflower cultivars and lines, and some of them were positive from the economical point of view. Changes, which affect morphological and biochemical characters were obtained. On this base were created mainly sunflower B lines /more than 400/.

8. By applying of interspecific and intergeneric hybridization and experimental mutagenesis the change in the architectonics of some sunflower forms was provoked.

9. Now there are, alive /in the field/ 4800 sunflower forms /accessions/, obtained by wide hybridization and experimental mutagenesis. Greater part of the rest forms are preserved as seeds.

10. Forms and lines, resistant to herbicides are developed – 980.

11. Hybrid combinations with the participation of lines, obtained by wide hybridization and experimental mutagenesis are created and tested and part of them are registered already or are in the process of registration as hybrid cultivars.

Author's certificates and patents

1.Christov, M., 1989. Method for obtaining of cytoplasmic male sterility in sunflower. Bull. "Inventions, trade marks, industrial patterns, 3, с. 7, Sofia. (Author's certificate № 44887, 1992).

2.main author of sunflower hybrid cultivars Musala, Mura, Mesta, Maritsa, Magura and Madan and co-author of 17 other sunflower hybrid cultivars – Perun, Santafe, San Luka (S-205), Zora, Nadejda, Penka, Stojer, Veda, Merkurii, Perfekt and etc.

= Sunflower hybrid cultivar "Musala",Christov and a team,Certificate for Bulgaria; № 10574/29.10.2004.
= Sunflower hybrid cultivar "Mura" Christov and a team, Certificate for Bulgaria № 10575/29.10.2004.
= Sunflower hybrid cultivar "Mesta" Christov and a team, Certificate for Bulgaria № ……..
= Sunflower hybrid cultivar "Maritsa" Christov and a team, Certificate for Bulgaria № 10711/28.02.2007.

= Sunflower hybrid cultivar "Maritsa" Christov and a team, Recognized in Modova, Ukraine and Russia, 2009. Certificate № (Certificate for Bulgaria № 10711/28.02.2007).
= Sunflower hybrid cultivar "Magura" Christov and a team, Recognized DUS. Order of Ministry of agriculture, №…….. 2007.
= Sunflower hybrid cultivar "Madan" Christov and a team, Recognized DUS. Order of Ministry of agriculture, № РД 12-52/23.04.2008.
=Line 7043R – paternal form of hybrid "Musala". Recognized DUS.
= Line – 7015R – paternal form of hybrid "Mura". Recognized DUS.
= Line 197A/B - maternal form of hybrid "Maritsa". Recognized DUS.
= Line – 7009R – paternal form of hybrid "Maritsa" and hybrid „Magura". Recognized DUS.
= Line 6127A/B - maternal form of hybrid "Madan". Recognized DUS.
= Line – 7515R – paternal form of hybrid "Madan". Recognized DUS.

Member of editors's board of journal "Biotechnology and biotechnological equipment", Sofia - 1997–2007.

Participation in research projects and programs

1. International competitive projects and programs on bilateral and multilateral base.

Participation in project:

1.Project: "GM and non-GM sup,ly chains: their CO-Existence and TRAieability (CO-EXTRA)" (www.ecod-bio.org) (GMO and nun-GMO mechanisms for food supply: their combined existence and study), ABI Project coordinator: Prof. A. Atanassov, Financial support by 6th Frame Program (FP6), EC, Brussels, 2005 – 2009**.**

2.Project supported by International Atomic Agency (IAEA),
R.C. № 108066/ RO, Vienna Orobanche cumana.

3. Project supported by EU: Integrated system for precise and sustainable management of the agricultural production risks spesific for Dobroudja area – ISYS, MIS-ETC code: 792, 2011-2012.

2. Competitive and planned projects supported by AA, Fund "НИ" to MEYS and etc.

Leader of:

Projects to Agricultural Academy:

1.Project: **"Creation of sunflower hybrids with increased productive potential, resistant to economically important for the country diseases and broomrape»** – 2004-2006.

2. Project: **"Creation of sunflower hybrids with increased productive potential, resistant to economically important for the country diseases and broomrape using classical and biotechnological methods»** – 2007-2008.

3.**National program for improving drought and cold resistance of important agricultural crops – Project Sunflower /Coordinator** and executor of project for the sunflower / - 2003 till 2009, supported by AA, MAF.

Participant in project:

Projects of AA:

1.Project: **" Creation of sunflower hybrids with increased productive potential, resistant to economically important for the country diseases and broomrape »** 2004–2006.

2. Project: **" Creation of sunflower hybrids with increased productive potential, resistant to economically important for the country diseases and broomrape using classical and biotechnological methods» – 2007-2011.**

3. Project: **"Creation of new sunflower cultivars with improved resistance to fungal diseases. QTLs mapping for resistance to diseases in sunflower lines, obtained from interspecific hybrids "** - 2009-2011. Project ДО02-105-4. Supported by НФНИ.

Project of MEYS:

1. Project: **"Molecular markers for identification, accelerated breeding and production of certified seeds of economically important crops – sunflower** - 2005-2009. Supported by the National Program "Genomika", Contract К – 1305-03. Leader: Acad. Atanas Atanasov.

Leadership and participation in contract scientific-applicable tasks

1. **"Exchange of wheat and sunflower breeding materials for testing, hybridization and evaluation with aim to be created new cultivars and hybrids "**
Leader of sunflower crop from DAI: Senior researcher Dr. Michail Nikolov Christov
Institute- partner: Trakya agricultural institute, Edirne, Turkey.
Duration of project: 2005 - 2010.

2. **"Exchange of elite self-pollinated sunflower lines and their common testing for developing of new sunflower hybrids and in case signing of contract for future common trade license "**
Leader of sunflower crop from DAI: Senior researcher Dr. Michail Nikolov Christov
Company-partner: Dow AgroSciences /DAS/ от Indianapolis, САЩ /working on the territory of Argentina and the USA /. Duration of project: 2002-2009 till its termination .

3.**Creation of sunflower forms, cultivars and hybrids suitable for material for obtaining of bio fuel. Study of developed hybrids – own and common from KWS SAAT AG, Еинбек, Germany with aim to license the sunflower material for biomass.**
Leader from DAI: Senior researcher Dr. Michail Nikolov Christov
Company-partner: KWS SAAT AG, Еинбек, Германия.
Duration of project: 2005 - 2006. Work lasted till the end of 2008.

4. **"Testing, seed production, advertisement and realization of sunflower hybrids, created and property of DAI on the territory of Moldova, Ukraine and Russia "**

Leader of sunflower crop from DAI: Senior researcher Dr. Michail Nikolov Christov
Company-partner: фирма "АКПАДОН" /ACPADON/ town. Chadr Lunga, Moldova.
Duration of project: 2006 – 2010. It prolongs with supplement in 2012.

5. **"For transfer of technologies for resistance to imidasolin and materials, resistant to imidasolin, property of BASF, the USA".**
Leader of sunflower crop from DAI: Senior researcher Dr. Michail Nikolov Christov
Company-partner: BASF, USA, delegation agency for Europe
Duration of project: 2008 – 2011- Prolonged.

6. **"Testing, seed production, advertisement and realization of sunflower hybrids, created and property of DAI on the territory of Romania"**
Leader of sunflower crop from DAI: **till 2008.**: Senior researcher Dr. Michail Nikolov Christov
Company-partner: фирма "SAATEN-UNIEN" ROMANIA, гр. Bucuresht.

7. **" Exchange of elite self-pollinated sunflower lines and their common testing for developing of new sunflower hybrids and in case signing of contract for future common trade license "**
Leader of sunflower crop from DAI: Senior researcher Dr. Michail Nikolov Christov
Company-partner: Dow AgroSciences /DAS/ от Indianapolis, USA / working on the territory of Argentina and the USA /, **till 2009**

List of publications of Dr. M. Christov for the period 1986 - 2010

1.**Christov, M**., 1986. Resalts from the hibridization between *Helianthus praecox ssp. praecox* Engl. & Gray (2n = 34) and *H. annuus* L. (2n = 34). Молодежная конференция по генетике' 86, Варна.
2.**Христов, М**., 1988. Хибридизация между *Helianthus argophyllus* Torr. & Gray (2n = 34) и *Helianthus annuus* L. (2n = 34). Генетика и селекция, 21, 6, София.
3. **Христов, М.,** П. Петров, 1988. Нови източници на Rf гени за ЦМС на основата на *Helianthus petiolaris*. Генетика и селекция, 21, 5, София.
4.**Christov, M**., 1988. Resalts of the crossing of *H. eggertii* Smal (2n = 102), *H. laevigatus* Torr. & Gray (2n = 68), *H. salicifolius* Dietr. (2n = 34) with *H. annuus* L. (2n = 34). Proc. of the 12th Inter. Sunfl. Conf. p. 74-83, Novi Sad.
5.**Christov, M.,** 1988. Some Studies in the Hybridization of *Helianthus debilis* Nuttall subspecies with Cultivated Sunflower. Proc. of the Symposium on Interspecific Hybridization with Inter. Participation. September, 27-30, Sofia.
6.**Christov, M.,** N. Nenov, 1988. Some Studies of InterspecificHybrids-Carries of Rf Genes for CMS – *H. petiolaris* type. Inter. Youth Conf. of Genetics' 88, p. 354-360, September, Albena.
7.Венков, В., **М. Христов**, 1989. Влияние на облъчването с гама лъчи върху някои морфологични признаци при сортове и линии слънчоглед. Конференция на младите научни работници от сел. стопанство и хранително вкусовата промишленост, 25-28 април, ТК "Албена".

8.**Christov, M**., 1990. Characteristics of Some Hybrid Progenies Produced by Crossing of *Helianthus salicifolius* Dietr. with *H. annuus* L. International youth conference on genetics' 90, Sofia.
9.**Christov, M**., 1990. A Study on the combining ability between *H. annuus* L. (2n = 34) and *H. smitthii* Heiser (2n = 34), International youth conference on genetics' 90, Sofia.
10.Christov, M., 1990. A new sourse of cytoplasmic male sterility in sunflower originated from H. argophyllus. Helia 13, p. 55-61.
11. **Христов, М.,** 1990. Използване на гама лъчи за получаване на нови форми слънчоглед. IV Национална конференция "Йонизиращата радиация и лазерите в селското стопанство и хранителната промишленост". Варна, 20-23 септември.
12.Ivanov P., N. Nenova, **M. Christov,** 1991. Direct Shoot and Root Organogenesis from Leaf Segments of Helianthus smithii. Sunflower Biotechnology in Europe. Mittelwihr (France).
13.**Christov M.,** I. Panayotov, 1991. Hybrids between the Genera Helianthus and Tithonia and their Study. Helia, 14, Nr.15, p.p.27-34.
14.**Christov M.,** 1991. Possibilities and problems in the hybridization of cultivated sunflower with species of the genus Helianthus L. Helia, 14, Nr.15, p.p.35-40.
15. **Христов, М.,** П. Шиндрова, В. Енчева, 1992. Фитопатологична характеристика на диви видове от род *Helianthus* с оглед на използването им при селекцията на устойчивост. Генетика и селекция, 21, 1, стр. 45-51, София.
16.Spassova Marina, **M. Christov**, N. Bohorova, P. Petrov, K. Dudov, A. Atanassov, H. John J. Nijkamp and J. Hille, 1992. Molecular analysis of a new cytoplasmic male sterile genotype in sunflower. FEBS, Vol.297, 1, 2, p.p.159-163.
17.Spassova M., T. Terachi, M. Usunova, P. Petrov, **M.Christov,** P. Ivanov, A. Atanassov, K. Dudov, 1992. Molecular analysis of a sunflower sterile cytoplasm in different nuclear backs rounds. Biotechnology, 2, p.p.24-28.
18.**Christov M.,** 1992. Development of cytoplasmic male sterility in sunflower using wide hybridization and artificial mutagenesis. XII th Eucarpia Congress, July 06-11th p.69-70, Angers, France.
19.**Christov M.,** 1992. New sources of male sterility and opportunities for their utilization in sunflower hybrid breeding. Helia, 15, No. 16, p.p. 41-47
20.**Christov M.,** 1992. Species of Helianthus and Tithonia sources of Rf genes for CMS in sunflower. Proc. of the 13th Inter. Sunflower Conf., Pissa, Italy, p. 1356-1361.
21.Nenov N. , **M.Christov**. 1992 . Study on the way of restoring of some new sources of cytoplasmic male sterility in sunflower.Proc. of the 13th Intern. Sunfl. Conf., Pizza, Italy.
22.Encheva J., **M. Christov**, P.Ivanov. 1992 . Use of direct organogenesis *in vitro* from immature embryos of interspecific and intergeneric hybrids of Helianthus annuus L. Proc. of the 13th Intern. Sunfl. Conf., Pizza, Italy. Vol. II, 1455-1460.
23.Nenova N., P.Ivanov, **M.Christov**. 1992 . Anther culture regeneration of F1 hybrids of Helianthus annuus x Helianthus smithii and Helianthus annuus x Helianthus eggertii. Proc. of the 13th Intern. Sunfl. Conf., Pizza, Italy, p. 1509-1514.
24.**Christov M**., Ivanova I., Ivanov P., 1993. Some characteristics of the Helianthus species in Dobroudja collection.I. Protein content and amino acid composition in proteins. Helia 16, No. 18, p.p. 63-70.
25.**Christov M.,** 1993. Sources of cytoplasmic male sterility produced at IWS "Dobroudja". Biotechnology & Biotechnological equipment. No. 4, p.p. 132-135.
26.**Christov M.,** 1993. Gamma ray and ultrasound induced male sterility in sunflower. Mutation Breeding Newsletter, IAEA,Vienna, p. 15-16.

27.Петров, П., Ф. Цветкова, В. Велков, А. Писков, **М. Христов**, П. Шиндрова, Д. Петъков, Н. Ненов, В. Венков, Н. Ненова, Ю. Енчева, М. Тодорова, Л. Николова, В. Николова, 1994. Състояние и проблеми при селекцията на слънчогледа в България. Растениевъдни науки, год. XXXI, No 3-4, стр. 72-77, София.
28.**Christov M.,** R. Vassileva, H. Tsujimoto and I. Panayotov, 1994.Intergeneric hybridization between sunflower and some species of genera from Compositae. International Compositae Conference, Royal Botanic Gardens, Kew, 26.07 - 05.08.
29.**Christov M.,** V. Venkov, V. Nikolova & L. Nikolova, 1994. New sunflower material originating from interspesific hybridization. International Compositae Conference, Royal Botanic Gardens, Kew, 26.07 - 05.08.
30.Ivanov P. and **M. Christov**, 1994. Cluster-analysis classification of 60 accessions, belonging to 23 Helianthus species according to their SDS-Page storage protein patterns. International Compositae Conference, Royal Botanic Gardens, Kew, 26.07.-05.08.(Ivanov P. and **M. Christov**, 1994. Cluster-analysis classification of 60 accessions, belonging to 23 Helianthus species according to their SDS-Page storage protein patterns. Eucarpia Simposium of Breeding of Oil and Protein Crops, Albena, Bulgaria, 22-24 Sept., p.213-218.)

31.**Christov M.,** 1994. Results in using interspecific hybridization in sunflower. Eucarpia Symposium of Breeding of Oil and Protein Crops, Albena, Bulgaria, 22-24. Sept.
32.Ivanov P., I. Ivanova and **M. Christov**, 1994. A storage protein characterization of some systematically related to genus Helianthus species**.** Eucarpia Symposium of Breeding of Oil and Protein Crops, Albena, Bulgaria, 22-24, Sept.
33.Nikolova L., **M. Christov,** 1994. Primary investigations of F_1 hybrid plants from crosses between Helianthus annus L. (2n = 34) and Helianthus praecox Engelm. & Gray (2n = 34). Eucarpia Symposium of Breeding of Oil and Protein Crops, Albena, Bulgaria, 22-24, Sept.
34.Nikolova L., **M. Christov**, 1994. Interspeciific hybridization between Helianthus annuus L. (2n = 34) and Helianthus neglectus Heiser (2n = 34). Eucarpia Simposium of Breeding of Oil and Protein Crops, Albena, Bulgaria, 22-24 Sept.
35.**Christov M.,** 1995. Development of new sunflower forms by treating seeds with gamma rays. The first Balkan Symposium on Breeding and Cultivation of Wheat, Sunflower and Legume Crops, June 26-28, Albena, Bulgaria, p. 320 – 323.
36.Nikolova, L., **Michail Christov** and Pepa Shindrova, 1995. Interspecific hybridization between cultivated sunflower and H.nuttallii, H.glaucophyllus and H.grosseserratus. The first Balkan Symposium on Breeding and Cultivation of Wheat, Sunflower and Legume Crops, June 26-29, Albena, Bulgaria, p. 324 – 330.
37.Venkov, V. and **M. Christov**, 1995. Evaluation of sunflower hybrids developed by interspecific hybridization. The first Balkan Symposium on Breeding and Cultivation of Wheat, Sunflower and Legume Crops, June 26-29, Albena, Bulgaria, p. 315 – 319.
38.Todorova M., N. Nenova, P. Ivanov and **M. Cristov**, 1995. Plant regeneration through anther culture and induced parthenogenesis in genus *Helianthus*. The first Balkan Symposium on Breeding and Cultivation of Wheat, Sunflower and Legume Crops, June 26-29, Albena, Bulgaria, p. 341- 347
39.Vassilevska-Ivanova, R., T. Lidansky, Z. Cekova, **M. Christov**, 1995. Colchicine treatment on cultivated sunflower *Helianthus annuus* L. I. Methods and influences. The first Balkan Symposium on Breeding and Cultivation of Wheat, Sunflower and Legume Crops, June 26-29, Albena, Bulgaria, p. 348 – 351.
40.**Christov M.,** 1996. A new sunflower mutant form. Helia, 19, N 24, pp. 39-46.

41.Nikolova, L., **M. Christov**, 1996. Preliminary investigations on interspecific hybrids between *Helianthus annuus* L. and perennial *Helianthus* L. species. Helia, 19, N 24, pp. 53-64.
42.**Christov M.,** P. Shindrova, V. Encheva, V. Venkov, L. Nikolova, Al. Piskov, P. Petrov and V. Nikolova, 1996. Development of fertility restorer lines originating from interspecific hybrids of genus *Helianthus* L. Helia, 19, N 24, pp. 65-72.
43.Ivanov, P., **M. Christov**, I. Ivanova and V. Nikolova, 1996. Stady of seed oil and protrin quality of some *Bidens tripartita* accessions. Helia, 19, N 25, pp. 79-85.
44.**Christov M.,** 1996. Characterization of wild *Helianthus* species as sources of new features for sunflower breeding. In P.d.s. Caligari & D.J.N. Hind (eds). Compositae: Biology & Utilization. Proceedings of the International Compositae Conference, Kew, 1994. (D.J.N. Hind, Editor-in-Chief), vol. 2. pp. 547-570. Royal Botanic Gardens, Kew.
45.**Christov M.,** 1996.Hybridization of cultivated sunflower and wild *Helianthus* species.. In P.d.s. Caligari & D.J.N. Hind (eds). Compositae: Biology & Utilization. Proceedings of the International Compositae Conference, Kew, 1994. (D.J.N. Hind, Editor-in-Chief), vol. 2. pp. 603-570. Royal Botanic Gardens, Kew.
46.**Christov M.,** V. Nikolova, 1996. Increasing of the Sunflower Genetic Diversity by Mutagenesis. In: Proceedings of 14th International Sunflower Conference, Beijing/Shenyang, China, pp. 19-30.
47.Nikolova L. & **M. Christov**, 1996. Investigations on Hybrid Combinations between Cultivated Sunflower and the Wild Species *H. neglectus, H. giganteus, H. decapetalus and H. strumosus.* In: Proc. Inter. Sunflower Confer., Beijing/ Shenyang, China, pp. 1021-1028.
48.**Christov M.,** P. Shindrova, V. Entcheva, 1996. Transfer of new characters from wild *Helianthus* species to cultivated sunflower. Genet. a Slecht., 32, (4): 275- 286.
49.**Christov M.,** 1996. Hexaploid *Helianthus* species as arich source of germplasm for the sunflower breeding. In: Proceedings of the symposium Eucarpia, Breeding of oil and protein crops. 5-8 August, Zaporozhye, Ukraine,Pp. 46-56.
50.Vasssilevska-Ivanova, **M. Christov**, T. Lidanski, 1996. A new type of flowers in sunflower inflorescence by crosses between *Helianthus annuus L. and Verbesina helianthoides Michaux*. Comptes rendus de l' Academie bulgare des Sciences, T. 49, N 6.: 91-92.
51.Todorova M., P. Ivanov, P. Shindrova, **M. Cristov** & I. Ivanova, 1997. Doubled haploid production of sunflower (Helianthus annuus L.) through irradiated pollen-induced parthenogenesis. Euphytica 97: 249-254.
52.Vassilevska-Ivanova, R., T. Lidansky, **M. Christoff**, 1997. Pollen size variability of species from compositae. Comptes rendus de lTAcademie bulgare des Sciences. Tome 50, No 9-10, Biologie, p. 105-108.
53.**Christov, M**., P. Shindrova, V. Entcheva, R. Bachvarova, M. Christova. 1998. New sunflower forms resistant to broomrape. Current Problems of Orobanche Researches. Proceeding of the 4th International Orobanche Workshop, p.317-319, September 23-26, Albena, Bulgaria.
54.Nikolova L., **Christov, M.,** V. Nikolova, P. Shindrova, V. Entcheva, 1998. Interspecific hybridization between H. annuus L. and H. praecox ssp. hirtus Engleman & Gray. Helia, 21, N 28, pp. 15-22.
55.Nikolova L., **M. Christov** and P. Shindrova, 1998. New sunflower forms resistant to *Orobanche cumana* Wallr. originating from interspecific hybridization. Current Problems of Orobanche Researches. Proceeding of the 4th International Orobanche Workshop, p.295-300, September 23-26, Albena, Bulgaria.
56.Petakov, D., P. Shindrova, N. Nenov and **M. Christov**, 1998. Combining ability of new sunflower lines that are resistant to broomrape. Current Problems of Orobanche.

57.Nikolova L., **M. Christov**, N. Nenova and P. Ivanov, 1998. Hybridization between diploid perennial Helianthus species and H. annuus L. Sustainable agriculture for food, energy and indastry, pp. 227-232.
58.**Christov, M.,** 1999.Using wide hybridization for production of new sunflower forms. Res. Commun. Of USB branch Dobrich, v. 1: 46-56. /Христов, М., 1999. Използване на отдалечената хибридизация за създаване на нови форми при слънчогледа. Научни съобщения на СУБ клон Добрич. Том 1, Добрич, с.46-56./
59.Нанкава, М., Н. Нанков, Н. Ненов, **М. Христов**, 1999. Биологически изисквания на слънчогледа във връзка с калиевото хранене и състояние на минералното торене на тази култура в България. Научен семинар - Потребности от калиево торене при основни земеделски култури в България. София, 9. юни 1999. /Nankova, M., N. Nankov, N. Nenov, M. Christov, 1999. Biological requirements of sunflower in relation to Its potassium nutrition and the situation with mineral fertilization of this crop in Bulgaria., Workshop - Potassium fertilizer needs in the main crop production of Bulgaria. Sofia, 9. June 1999./
60.**Christov, M.,** 1999. Production of new CMS sources in sunflower.Helia, 22, Nr. 31, p.p. 1-12.
61.**Christov, M**., and Rumjana D. Vassilevska-Ivanova,1999. Intergeneric hybrids in *Compositae* (*Asteraceae*), I. Hybridization between cultivated sunflower *H. annuus* L. and *Compositae* Genera. Helia, 22, Nr. 31, p.p. 13-22.
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Quotations

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Organizational and administrative activities

Participation in international scientific groups:

Participation in the work of international scientific organizations– in the group of sunflower at FAO, ISA / International sunflower association /, ESNA /International organization for news in agriculture /, IASPRR /International association for study of sex plant reproduction / and EUCARPIA .

Participation in ISA – International sunflower association, **ESNA** / International organization for news in agriculture /

Coordinator of a program at ΦАО: «Identification, study and utilization in sunflower breeding programs of new CMS and Rf genes". – 2002-2007.

Participation in scientific and expert councils and commissions

Member of expert councils of AA:

Expert council on „*Agriculture*" – 2007-2012

Participation in governing body of scientific organizations:

Head of Department "Sunflower breeding" in DAI, General Toshevo, and 2005 – 2008

Member of the General Meeting of Agricultural Academy and member of a commission on restructure of AA, 1997 – 1999.

Chairman of General Meeting of scientists in IWS "Dobroudja" /now Dodroudja Agricultural Institute /, General Toshevo, 1995 – 1999.