



*Physiological and practical aspects of the yield and seed quality
improvement by ecological methods*

created
by Ministry of Scientific Research and Information Technology in Poland
on 18.03.2004
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**ABSTRACTS OF EXPERIMENTAL RESEARCH
WORKS COORDINATED BY NETWORK**

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The International Research Network titled: *Physiological and practical aspects of the yield and seed quality improvement by ecological methods*, was created by Ministry of Scientific Research and Information Technology in Poland on 18.03.2004 (Decision NR 580/E-177/SPB/MSN/P-06/DWM 23/2004-2006). This network gathers together 6 research teams from Poland and 3 foreign, from France, The Netherlands and Ireland. These teams are working in the field of improving of seed quality (in ecological aspects) and they are ready to cooperate. The task of this Network is to help for the future cooperation and a promotion and popularization of the research made by particular participants, in the field mentioned above. Every participant in Network conducts his research in the frame of his own budget. Ministry of Scientific Research and Information Technology expects that thanks to its financial support for meetings, a greater promotion of ideas will be in future, people will start to cooperate closely and the internal project can be created. At present 9 research groups, representing 8 Institutes or Universities in Poland and West Europe participate in Network. The representatives of these groups gather every year, since 2004, to discuss the current results and develop scientific cooperation, as it was mentioned in Abstracts of Experimental Research Works Coordinated by Network on 17 June 2004, on 04 February 2005, on 18 November 2005, 21 June 2006 and 04 December 2006.

The last, 5th Workshop was devoted to the current research and summary of the activity of cooperating teams during last three years in the frame of Network, according to the attached programme.

The cooperation of researchers participating in Network had a great contribution in the improvement of their knowledge and the level of investigations. The presentations during organized by Network meetings, discussions and information about the current research, as well as a close contacts helped to learn deeply about problems which are involved in the field of physiological and practical aspects of the yield and seed quality improvement by ecological methods. Moreover, such a wide cooperation showed that ecological production concerns not only biological plant protection and fertilization, but includes several areas which should be taken into consideration dissolved in order to elaborate the most sufficient methods. Cooperation within the Network prepared also the base for the future closer activity concerning, among others, joint projects. Thanks to Network some researchers could learn several new techniques during the organized scientific trainings in other laboratories. The Network helped also greatly in promotion and popularization of the performed research.

The activity conducted within the Network generally developed in the following fields which are needed for elaboration of ecological seed technology:

- metabolic processes in plants determining the yield and quality of seeds or plants (MU Olsztyn, PU Paris, RIFP Skierniewice, TAU Bydgoszcz, WAU Warsaw)
- conditioning and treatments of seeds in order to improve stress resistance, health status, vigour and plant developments (priming, temperature) (PU Paris, RIFP Skierniewice, TNO Leiden, TAU Bydgoszcz, WAU Warsaw)
- improvements of the seed health status and plant developments by seed and plant treatments with not toxic biological compounds or extracts from plants, antagonistic microflora, biostimulators and allelopathy (CU Cook, LU Lodz, PU Paris, RIFP Skierniewice, TNO Leiden, WAU Warsaw)
- ecological methods of seed production without environment degradation (LU Lodz, RIFP Skierniewice, TNO Leiden, WAU Warsaw)
- markers and biosensors of the seed quality and physiological events during seed development and treatment (CU Cook, LU Lodz, MU Olsztyn, PU Paris, RIFP Skierniewice, TNO Leiden, TAU Bydgoszcz, WAU Warsaw)

- harmfulness of toxic pollutions in the water and soil environment on seed germination or plant growth and biomonitoring of these pollutions using germinating seeds and water plants (LU Lodz, RIFP Skierniewice)
- popularization of the obtained research results and ecological ideas (CU Cook, LU Lodz, MU Olsztyn, PU Paris, RIFP Skierniewice, TNO Leiden, TAU Bydgoszcz, WAU Warsaw)

The years of 2004-2006 were full of the increased activity of the Network participants and closer cooperation. During these three years, five meetings of participants were organized, during which 70 lectures were presented and their summary were published in the prepared for each workshop "Book of Abstracts". Every meeting was devoted to the currently performed research in particular laboratory and to discussion concerning the results, cooperation and future experiments.

The Network members presented their research results, obtained under mentioned cooperation, during 25 conferences devoted to the physiology and production of seeds. In 2004 and 2005 they published 72 publications in field of ecology. The enlargement of the ecological plant production around the world, activity of our Network members in research and their personal contacts resulted in the increased cooperation. Thanks to these contacts within the Network, 11 members were taken part in the trainings during 2004-2006 in cooperating laboratories, doing research concerning improvement quality of ecological seed, learning the new statistics and laboratory techniques or methods concerning evaluation of seed quality, according to ISTA rules. These trainings were organized in cooperating laboratories in Poland, France and The Netherlands or others, which are working in ecology field. The certificated ecological field is organized at Research Institute of Pomology and Floriculture, Skierniewice, where the experimental research and the horticultural seed or plant production with ecological methods will be performed.

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