

# THE FOURTH CONSULTATION OF THE F.A.O. RESEARCH NETWORK ON SUNFLOWER

(Pisa, Italy, 17—20 November 1981)

The Pisa meeting has continued the already established tradition of the previous Consultations of Bucharest (1975), Córdoba (1977) and Versailles (1979) organized by the F.A.O. Regional Office for Europe, with the purpose to review the results obtained by scientific co-operation and improve the future joint research programmes.

The Consultation was attended by 62 delegates from 15 countries (Algeria, Bulgaria, Canada, Czechoslovakia, Egypt, France, Hungary, Iran, Italy, Portugal, Romania, Spain, Tunisia, USA, Yugoslavia) and one international organization (International Sunflower Association). On behalf of the local authorities the participants were welcome by Mr. L. Bulleri, Mayor of the City, Prof. R. Favilli, Rector of the University of Pisa, Mr. R. Ricci, President of the Agricultural Commission of the Toscana Region and Mr. de Fabritis, Director-General of Agricultural Production of the Ministry of Agriculture and Forests.

On behalf of the Director-General of the F.A.O., Dr. O. Feneşan expressed his thanks to the competent authorities of Italy who had ensured and excellent organization of the Consultation. He underlined the great contribution to the excellent facilities provided for the Consultation which had been made by Professor Antonio Benvenuti, Director of the Institute of Agronomy of the University of Pisa, who also acted as chairman of the Consultation.

He thanked, on behalf of the F.A.O. Regional Office for Europe, dr. A. V. Vrânceanu for his outstanding contribution, as co-ordinator of the Network, to the valuable activity and results obtained by the Network as a whole.

The Consultation was assisted by dr. Al. Bozzini, chief of the F.A.O. Crop and Grassland Production Service, who remarkably contributed to the improvement and implementation of the network's research programmes.

Dr. A. V. Vrânceanu (Romania), Co-ordinator of the Sunflower Network, presented a progress report on the network's activities over the past two years and proposals for future developments. Starting as an European research network, this international scientific organization has completed three biennial cycles of joint research works, involving in this activity

not only the majority of the European countries interested in sunflowers crop development, but also an important number of countries, primarily developing ones, from the other continents. The Research Network on Sunflower may be regarded thus as a well established and consolidated international scientific organization, with 35 membercountries and 48 institutions co-operating in six sub-networks that correspond to six specific research topics of common interest.

Due to the valuable scientific results and information already obtained, the Consultation dedicated a part of its agenda to the presentation of 15 papers and communications in different fields of sunflower research and production activity.

Thus, four participating countries delivered review papers on sunflower research and crop development in the respective countries. The Algerian delegation presented a comprehensive information on the present status of the development of sunflower crop in Algeria, reflecting the increasing concern for solving the limiting difficulties encountered such as the identification of the best adapted varieties and the cultural practices. In Egypt, sunflower is a potential future oil crop and for this reason, research is being undertaken concerning both cultural practices and the breeding of the adapted cultivars (dr. M. Serry). In France, CETIOM is conducting a large programme aiming at helping growers to apply a suitable cultivation technology and at developing research works to improve the cultural practices (Mr. Y. Regnault). In Hungary, important achievements have been obtained recently, especially regarding the obtention of sunflower high yielding hybrids (dr. E. Kurnik).

Two papers dealt with sunflower protection against diseases by chemical treatments (Dr. Horia Iliescu, Romania) and against weed infestation by using different types of herbicides (Mr. G. Covarelli, Italy). Interesting data were presented by Dr. V. Pirani (Italy) on correlations between seed morphological characteristics and oil content and by Prof. T. Bogyo, F.A.O. Consultant, on the evaluation of varietal adaptability in sunflowers.

A comparison of sunflower cultivars in different Italian environments was discussed by Prof. G. Venturi on the basis of a wide contribution from 13 research institutions. Prof. M. Monotti, from the University of Perugia, presented interesting data on the influence of plant population on the main elements of productivity in sunflowers and Ms. M. Venezian-Scarascia referred, with rigorous scientific data, to sunflower response to irrigation in different ecological areas of Italy.

Four papers, presented by Italian delegates in the last part of the session, offered large scientific information on the latest research on the bio-chemical characteristics of sunflower seeds (Mr. L. Conte), protein quality (Mr. G. Greco), food perspectives of sunflower protein products (Mr. R. Boni) and sunflower protein processing (Mr. Tranchino).

Within the framework of each of the six sub-networks, the participants discussed the results obtained in 1980 and 1981 and the research projects for the next biennial cycle, with special emphasis on methodology and common experimental technique.

1. *Sub-network on the experimentation of sunflower cultivars in competitive trials* (report presented by dr. F. M. Stoenescu, Romania). A number of 34 new hybrids and 11 open-pollinated varieties were tested in 45 locations from 35 countries in the third biennial cycle, 1980—1981. Beside seed and oil yielding performances, sunflower cultivars were also studied in respect of their morpho-physiological traits, a special emphasis being laid on disease resistance under natural or artificial conditions. Scientific information was provided concerning oil and protein content and fatty acid composition.

A new set of sunflower hybrids, made up of two competitive trials, will be tested in five distinct geographical zones in the next biennial cycle. The first trial will comprise 15 early and medium-early hybrids, and the second one 18 medium-late hybrids. The proposed 33 new hybrids represent the most recent achievements of sunflower breeders from Romania (8 hybrids), Hungary (8 hybrids), Yugoslavia (6 hybrids), U.S.A. (4 hybrids), France (3 hybrids), West-Germany (3 hybrids) and Bulgaria (1 hybrid).

The Liaison Centre of Fundulea, Romania, in co-operation with Plant Production and Protection Division of F.A.O., have prepared and printed the field books and the instructions for their use. Dr. Al. Bozzini (F.A.O.) gave indications concerning the standardization of the network trials with sunflower cultivars and stressed the necessity of utilizing the F.A.O. facilities for computer data interpretation, in a more efficient manner.

2. *Sub-network on sunflower applied genetics*. The report presented by Prof. A. Kováčik (Czechoslovakia), in charge of the Liaison

Centre of this sub-network, dealt not only with results obtained in the framework of co-operative activities but also took into account the larger picture of the main achievements of sunflower genetic research. Four topics have been followed: a) genetics of quantitative traits involved in sunflower productivity, b) genetics of pollen sterility, c) genetics of disease resistance, and d) genetics of marker characters. In addition to these research topics, some methodological procedures important to the evaluation of genetic parameters and for practical breeding works have also been developed.

Starting from 1982, the genetic co-operation will be extended to other countries such as Italy and U.S.A. The first concrete results of the topic concerned with genetics of quantitative traits will be evaluated and published in the Information Bulletin "Helia" during 1983. Partial results of the other topics will be presented or published starting from next year. Among the proposals for future development of this activity, one is very important: genetic research has to be completed with physiological studies, especially for quantitative traits.

3. *Sub-network on the collection, evaluation and conservation of wild species and their use in sunflower breeding programmes*. Dr. D. Skorić, in charge of the Liaison Centre of Novi Sad, Yugoslavia, presented a comprehensive report on the results obtained in the first two years of co-operative activity. Five countries were involved in the following research items: a) setting-up an exhaustive collection of *Helianthus* species as a result of study and collection trips and of multiplication of the existing collections in different centres; b) screening for resistance to diseases, insects and unfavourable conditions; c) determining the degree of self-fertility as well as new sources of cytoplasmic male sterility and pollen fertility restorer genes; d) studying inter-specific compatibility and degree of self-fertility; e) detection of new valuable agronomic traits.

Important proposals for the further improvement of the activity were presented, and the discussions clarified the main aspects of co-operation in this field. It was stressed that the collection should be organized in at least two centres where it could be multiplied and stored. Seed samples could then be dispatched to interested countries. On the other hand, all breeding centres should contribute to the genetic evaluation of the wild species, using a common procedure and methodology.

4. *Sub-network on sunflower disease mapping*. Dr. M. Aćimović (Yugoslavia), in charge of the Liaison Centre of this sub-network, presented his report on the phyto-pathological situation in 1980 and 1981. In the last years a limitation of downy mildew attack has been

noted, due to the extension of sunflower hybrids resistant to downy mildew, but accompanied however by the intensification of other pathogen's attack such as *Sclerotinia sclerotiorum*, *Botrytis cinerea*, *Sclerotinia bataticola*, *Verticillium* sp., *Alternaria* sp., etc. The number and importance of pathogens varied from region to region, according to climatic conditions and cultivars used. A severe attack caused by a pathogen complex producing brownish-gray spots on sunflower stem and leaves was observed in the adjacent regions of Yugoslavia, Hungary and Romania. In Yugoslavia, the pathogen was identified as belonging to the genus *Phomopsis*, while in Hungary it has been attributed to *Rhabdospora* genus.

The Consultation agreed with proposals for future co-operation contained in the report of the Liaison Centre and which includes the following activities :

a) A more careful identification of the so called "minor diseases", which could become very important under certain favourable circumstances. If new pathogens were identified, their biology should be determined and report sent to all the participants in the project ;

b) The work on disease symptoms should be continued and the data classified and published ;

c) The bibliography of papers on sunflower diseases was by no means complete and work on this should be continued ;

d) A new research topic on chemical control by seed treatment against the principal sunflower parasites has been added to the sub-network activities. The scientist in charge of this new topic will be dr. Horia Iliescu (Romania) who will prepare and send to all interested institutions, the samples and a protocol on the methodology to be commonly used.

5. *Sub-network on chemical weed control.* Mr. Y. Regnault, in charge of the Liaison Centre CETIOM Paris, pointed out in his report that the technical balance of this sub-network was positive, since the most part of problems had been resolved, but on condition that the herbicides be applied before the crop emergence. For the next years, the research works will be directed towards the identification of new products, better adapted, usable after sunflower emergence. The study of varietal susceptibility to herbicides will be developed and the residues of herbicides as regards the following crop will be investigated.

6. *Sub-network on sunflower response to irrigation* (report presented by dr. J. Fernández-Martínez, Spain). The general objective was to study the effects of different water regimes on plant development and production, in order to obtain the maximum water efficiency when water is scarce. Data for the two-year period were presented. A first conclusion was that the irrigation during the critical periods gave better water efficiency. A basic protocol was presented for discussion, to be used over the next period. Emphasis was put on the need for a joint methodology to be used by all the participating countries.

During the third day of the Consultation, the participants examined in separate meetings of the six sub-networks, the details of methodology and experimental procedures and the requirements of the biological material to be used.

The Consultation re-elected the existing Liaison Centres of the six sub-networks.

The participants expressed their wish to hold the next Consultation of the network in Yugoslavia, from 24—27 July 1984.

A. V. VRÂNCEANU