



TOGETHER
for a sustainable future

OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.



TOGETHER
for a sustainable future

DISCLAIMER

This document has been produced without formal United Nations editing. The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations Industrial Development Organization (UNIDO) concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries, or its economic system or degree of development. Designations such as “developed”, “industrialized” and “developing” are intended for statistical convenience and do not necessarily express a judgment about the stage reached by a particular country or area in the development process. Mention of firm names or commercial products does not constitute an endorsement by UNIDO.

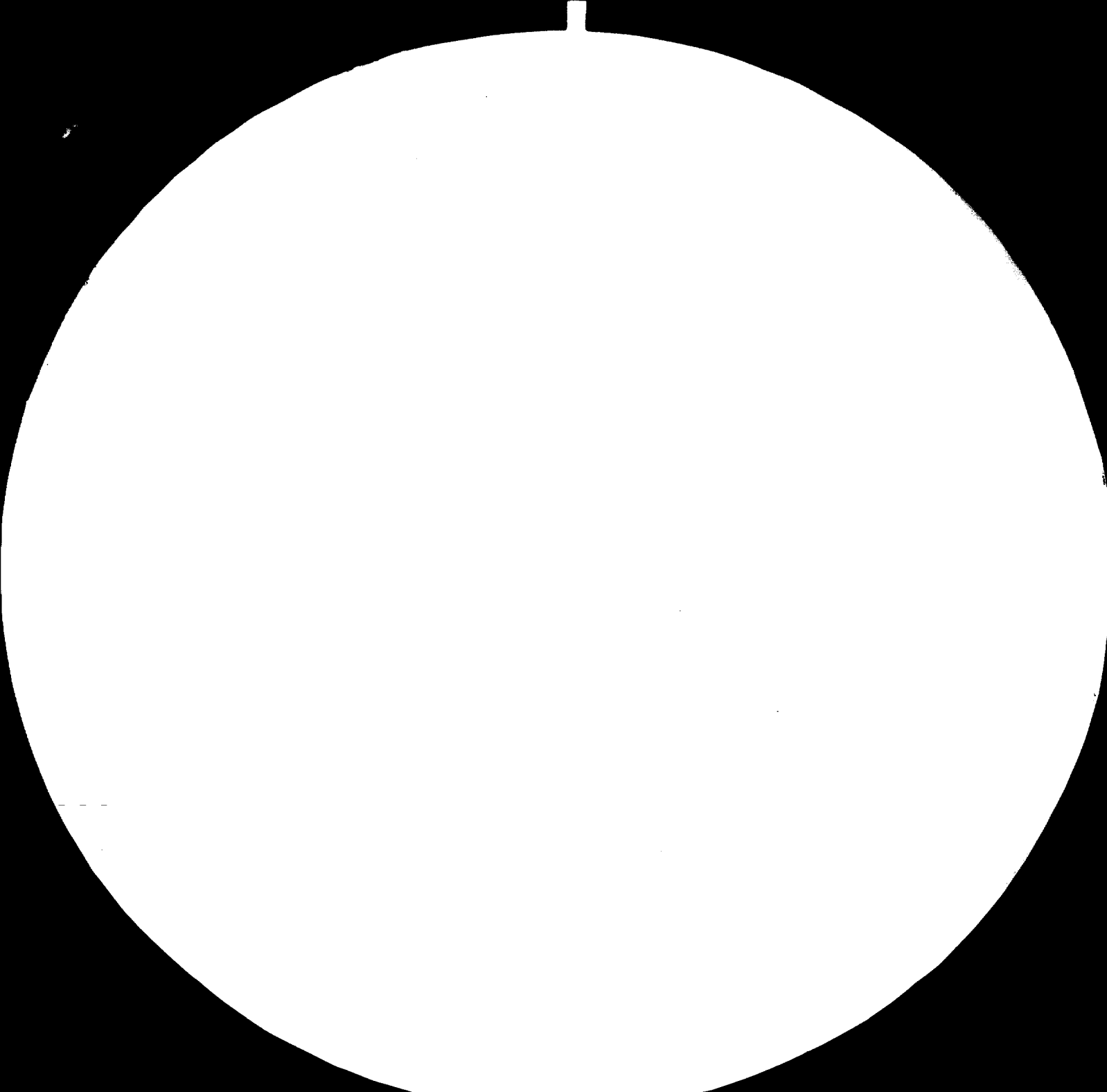
FAIR USE POLICY

Any part of this publication may be quoted and referenced for educational and research purposes without additional permission from UNIDO. However, those who make use of quoting and referencing this publication are requested to follow the Fair Use Policy of giving due credit to UNIDO.

CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org





3.6

4.0



MICROCOPY RESOLUTION TEST CHART

NATIONAL BUREAU OF STANDARDS-1963-A

12518

MISSION TO
SALTILLO
MEXICO . (Plastics in agriculture).

FINAL REPORT
submitted
by
JEAN-CLAUDE GARNAUD

Post: DP/MEX/78/017/11-56

Duration: 28 November 1982 - 4 December 1982

549

November - December 1982

English

PLASTICS EN LA AGRICULTURA

Proyecto del Gobierno de México

DP/MEX/7B/O17 (11-56/32.1.H)

Report prepared

by

Jean-Claude Garnaud, ingénieur horticole
plasticulturist consultant

(this report has not been cleared with UNIDO which does not
therefore necessarily share the views presented).

Contents :

1. Diary
2. Experiment Station for Plasticulture (Saltillo)
3. Experimental Network for Plasticulture (national)
4. International Congress for Plastics in Agriculture
5. Conclusions

Annex I - Mulch laying machines

Annex II- Experiments in plasticulture - Reports

Annex III- Organizing an international congress on plastics
in agriculture.

The expert would like to express his appreciation of the help
and assistance received from all those associated with his work
during his mission, especially Dr Salvador Fernandez and Ing.
Edgar Quero (CIQA), Mr Gregorio Pruzan (UNIDO) and the staff
both of CIQA-Saltillo and UNDP-Mexico City.

1. DIARY

- 28.11.82 - travel Paris - Mexico City, via Chicago
- 29.11.82 - briefing UNDP, Mexico City
- meeting Ing. Sergio Barranca M., Direccion general Promociones Industriales Mexicanas, and secretary general, Organizing Committee of the IXth International Congress for Plastics in Agriculture
 - travel Mexico City - Saltillo
- 30.11.82 - (02.45) meeting Mr Parthasarathy, UNIDO consultant, due to leave the same day at 05.30
- discussions at Centro de Investigacion en Quimica Aplicada
 - evaluation of trials conducted in 1980-81 and visit of the experimental station with Ing. Edgar Quero G., head of the department agricultural studies.
- 01.12.82 - meeting Ing. Francisco Javier O., Plasticos (Guadalajara), co-ordinator for the IXth International Congress for Plastics in Agriculture, together with Dr Salvador Fernandez, Mr G. Pruzan, Mr Barravecchia and Mr L. Martin Vicente : preparation of the 1st circular, programme of promotion, etc.
- 02.12.82 - discussions at CIQA
- meeting Ing Sergio Barranca (cf. 29.11.82)
- 03.12.82 - discussions at CIQA
- meeting Miss Isabel Rodriguez C., Consorcio Industrial Maldonado, Division Plasticos
- 04.12.82 / 05.12.82 - travel Saltillo - Monterrey- Mexico City - Paris

2. EXPERIMENT STATION FOR PLASTICULTURE (Saltillo)

cf. Project Document

(2.2) Greenhouse design and construction

The research and studies should take into account :

- (a) the current needs of the Mexican growers, to be determined by a survey.

At first glance, 2 types of greenhouses should be interesting :

- . a sophisticated greenhouse for flowers and pot plants production, equipped with efficient ventilation and shading systems and to be operated the year round ;
- . a very simple and economical greenhouse for the preparation of vegetable and/or forest trees transplants (possibly two models), to be operated only during a few weeks per year, i.e. with a short amortizing time.

The survey should at the same time give the acceptable construction and maintenance costs for each type.

- (b) the fact that the supply of polyethylene is now restricted in the country (high PE grades necessary for the extrusion of long life films being entirely absent) but that plastified PVC films are readily available : because of their elasticity, PVC films request adapted structures.

(2.4) Mulching

The excellent results obtained at the station in 1980-1981 especially on beans and maize, will only be transferable if a machine is developed to allow the growers to lay the film mechanically and sow in one single operation.

It is proposed that the project :

- imports 1 or 2 machines from abroad (see annex I)
- be equipped with a workshop able to build prototypes

In the meantime, a hand heat perforator would be a great help (see annex I).

(2.5) Shading

Foreign shading paints could be imported to be tested and CIQA is certainly in a good position to develop formulations to be made in the country.

(2.8) Silos

As for greenhouses, a preliminary investigation should point out which type of silo is needed : i.e. silage of fodder or storage of grain.

(2.11) Reports

The expert advised on the implementation and mostly on the interpretation of experimental results : see Annex II.

3. EXPERIMENTAL NETWORK FOR PLASTICULTURE (national)

cf Projet Document (3.3)

CONACYT/CIQA, institutions responsible for the execution of the project, have already established an exemplary system of co-operation with various public institutions, national corporations and private companies, both in the industrial and agricultural fields. It is necessary that the joint programmes and their results be strictly harmonized and compatible, in order to allow for realistic comparisons and also for easy introduction into the computerized information bank installed at CIQA.

4. INTERNATIONAL CONGRESS FOR PLASTICS IN AGRICULTURE

Every 3 years, an International Congress is held in one of the countries members of the International Committee for Plastics in Agriculture (CIPA).

At the occasion of the VIIIth International Congress held in Lisbon, Portugal, October 1980, the General Assembly of CIPA approved the choice of Mexico to organize the IXth Congress. Consequently, Dr Salvador Fernandez T., director of project (CIQA) and president of the Mexican Association for plastics in agriculture has been elected president of CIPA for the period 1980-1983.

Organizing the congress in Mexico, of course in close cooperation with the Project "Plasticos en la agricultura" (COMACYT/CIQA), will present a number of advantages :

- . it will be a noticeable opportunity to "plan, organize and implement... seminars directed toward industry and agriculture" (see Project Document 3.10) and to present the activities of the Project to a large assistance, both in the sessions and within the exhibition ;
- . it will certainly tighten the relations previously established between the industrial and agricultural bodies concerned with the development of plasticulture and of plastics for agricultural uses (see Project Document 3.2) ;
- . as a rule, such an international congress, if well advertized in the country, results in a fast growth of the consumption of plastics by agriculture (for example, after the Vth International Congress held in Hungary in 1972, the part of agriculture in the total Hungarian consumption of plastics has jumped from 7,3 p.cent to 11,1 p. cent).
- . In Mexico, one more advantage, and not the least, is to be expected : the papers presented on experience gained abroad and contacts made with foreign scientists, industrialists and agriculturists, will probably lead the Mexican petrochemical companies to improve their range of polymeric resins, both for diversity and quality.

The consultant gave advice on the successive steps and different aspects to be considered when organizing an International Congress : see Annex III. He helped also in the elaboration of the 1st circular, and its translation into French.

5. CONCLUSIONS

In spite of a restricted time, the consultant was able to ascertain :

- the interest and the ability of the Mexican plastics processors for manufacturing plastics for agricultural uses, but at the same time the lack of adequate raw materials (especially PE) ;
- the excellent results obtained with plastics mulches in the Mexican arid conditions (trials 1980-1981)
- the efficiency of the activities carried out at Saltillo, which

however need to dispose of a complete workshop to be extended into horticultural engineering (construction of greenhouse and mulch laying machines) ;

- the favourable prospects contained in the International Congress to be held in Guadalajara, Mexico, in November 1983

NB (see Project Document 2.12) : the consultant will at a later date suggest consultants to fulfill the duties described, bearing in mind that a fair knowledge of the Spanish language is almost a necessity.

MULCH LAYING MACHINES

1. French manufacturers

- . Equipment which rolls out flat film over the soil

Ateliers Fillières, route de l'Isle sur Sorgues, 84250 Le Thor

(this manufacturer also sells hand heat perforators)

- . Equipment which performs several operations (ridging, perforating, sowing, planting, distributing fertilizer ...) These manufacturers usually also have more simple equipment.

- Ateliers Degisors, Guitry, 27510 Tourny

- B' d'zyn, 30580 Seynes

- Dougnac, RN 710, Journiac, 24260 Le Bugue

- CDEA, rue de la Mairie, 44370 Belligné

- Huard, rue des Vauzelles, 44110 Chateaubriand

2. German manufacturers

- Wilhelm Säger - Geräte-und Fahrzeugbau, Sylbacher Strasse 85
D 4937 Lage, Lippe (Pottenhausen)

- Hermann Strasser - Landmaschinen, Hauptstrasse 36, D 6701 Fussgönheim

- Norbert Stratmann - Vertretungen f. Gartenbauartikel, Offsteiner Strasse 4,
D 6711 Dirmstein ;

- Karl Unger-Gartenbaumaschinen, Gewerbegebiet Süd, Gerhardt-Hauptmann St.
D 6901 Heidelberg-Dossenheim

- Martin Frick - Maschinenfabrik, Hainbrunnenstrasse 4, D 8550 Forchheim

- Euflor GmbH, Alfonsstrasse 1, D 8000 München 19

EXPERIMENTS IN PLASTICULTURE - REPORTS

1. Introduction

A brief description of the current situation in the country or the region, for the concerned crop, specifying the problem to be overcome.

2. Materials and methods

Describe the experimental pattern, with every useful information on :

- the characteristics of the plastics materials used : PE, PVC ..., film or sheet..., thickness and width, if need be weight/m² ;
- the main features of the protective structure, of the irrigation system, of the canal of water reserve lining, etc ;
- the size of the plots (in the open or under protection), of the units (silos), etc ;
- the species and cultivars (varieties) tested ;
- the cultural process :
 - . sowing date and conditions,
 - . transplanting date and conditions,
 - . growing stages and conditions (e.g. pinching)
 - . fertilization programme,
 - . plant protection measures, etc.

3. Results

Present preferably in the form of tables and/or graphs :

- solar radiation
- temperatures : soil, air, leaf
 mini, maxi, average
- moisture : soil, air

- water consumption
- consumption of fuel for heating
- light
- CO₂
- other observations on environmental factors : wind ...
- yields, establishing whenever possible a distinction between early cropping (determined according to local market, i.e. before the drop in price) and total yield ;
- evaluation of quality :
 - . fruit diameter (tomatoes)
 - . stem length (roses)
 - . dry matter (maize), etc.

4. Discussion

= interpretation of the above results, on a purely technical basis.

5. Conclusion

= evaluation of the new or improved technique from an economical and social point of view. (feasibility).

The report may also conclude to the inadequacy of the tested technique, or to the need for more experiments over a number of years.

ORGANIZING AN INTERNATIONAL CONGRESS ON PLASTICS IN AGRICULTURE

D = opening day

D - (24-18 months) : establish an Organizing Committee if need be with sub-committees :

- . programme committee
- . excursions committee
- . local committee, etc.

D - 18 months :

- book necessary accommodation (halls, service rooms ...)
- contacts with a travel agency
- draw provisional programme and provisional budget

D - 15 months

distribute 1st circular for provisional registration
press communiqué

D - 12 months

evaluate the number of participants
invite guest speakers
revise budget
revise programme

D - 8 months

distribute 2nd circular
press communiqué

D - 3 months : get the abstracts of the papers

D - 2 months

name the chairmen of the different sessions
print book of abstracts

D - 1 month (1 week !)

print final programme
collect the full text of the papers

JUST BEFORE THE CONGRESS

- check total number of registrations
- check attendance from the press
- prepare distinct badges for :
 - . members of the organizing Committee
 - . guest lecturers
 - . active participants
 - . accompanying participants
 - . press

- prepare documents sets :
 - . badge
 - . final programme
 - . lists of participants
 - . book of abstracts
 - . touristic documents (maps ...)
 - . vouchers for excursions, visits, meals ...

- organize the registration desk, with several counters according to the alphabet (A-D, E-K, ...)

- brief the staff

- nominate 1 secretary responsible for each session

- check that during the whole congress there will be :
 - . at least one member of the organizing committee to take decisions
 - . a clear signalisation ;
 - . a board to give the latest news, to indicate the changes in programme
 - . another board for personal messages
 - . a bank office for change
 - . an office of the Travel Agency
 - . post telephone and telex facilities for participants
 - . at least 2 small offices for CIPA and UNIDO delegates with typing equipment
 - . photocopies facilities

- audiovisual aids :

At least 2 technicians should be permanently at the congress.

Check :

- . pulpit (with independant light)
- . sound
- . slide-projections (spare ones might be necessary)
- . screens
- . retroprojectors
(have in reserve transparencies and corresponding pens)
- . film projector (8 - 16 - 35 mm)

NB : establish a system using several cartridges to make sure that the slides are not mixed and returned to speakers

- . simultaneous translation equipment : make sure everything is in working order. Simultaneous translation :English, Spanish and French
- . simultaneous translation : give the interpreters a maximum of texts well ahead of the congress to make sure that they get acquainted with the technical words.

Do not forget to

- . make sure that assurances cover responsibilities of the organizing Committee
- . approach local authorities (police, ...) to get their collaboration

DURING THE CONGRESS

- have regular meetings within the organizing committee
- have regular briefing of the staff
- check that all registration fees have been paid
- instead of a Congress Journal (expensive), have all announcements written at once on the board in the hall
- have a collaborator always on hand for the relations with the press ;
- organize 2 short press conferences, with communiqués distributed all over the country ;

- have the floral decoration renovated every 2-3 days ;
- organize separate meetings (i.e. dinners) with important delegates (V.I.P.)
- check that all papers (and related graphs, photos ...) have been collected as well as the formulars regarding participation to discussions.

JUST AFTER THE CONGRESS

- press communiqué
- draw a provisional balance
- report to authorities

IX. INTERNATIONAL CONGRESS PLASTICS IN AGRICULTURE

PROGRAMME

(1) TIMING

. Sunday, November 6th, 1983

registration

distribution of documents (final programme, abstracts, badges, vouchers ...)

opening session (18 h.)

"get together" : an informal dinner party at the beginning is very useful for the people to get acquainted

. Monday 7th - Friday 11th, 1983

working sessions and visits

. Friday 11th (18 h.) oraturday morning :

closing session ; vote of resolutions.

NB : special groups (i.e. CIPA General Assembly or liaison between UNIDO supported Centers) will have to meet in the evening.

(2) CONTRIBUTIONS

General

According to the recommendation of the General Assembly of CIPA in Lisbon, the first day (Monday 7th, November 1983) should be entirely devoted to the presentation of a world survey of the development of plastics in agriculture and related fields.

NB : Lectures on Mexican agriculture and the Mexican plastics industries, and on the CIQA achievements, could take place at the opening session.

Special subjects

Instead of the traditional chapters (mulching, low tunnels, etc), it is proposed to organize a number of symposia on well defined subjects of present interest (of course always with a view toward the applications of plastics)

For instance, I would suggest sessions (of about 3 hours, each with one invited lecture, 2-4 papers and ample time for discussion) on the following subjects :

- . Tomato cultivation in semi-arid and arid zones ; including the use of plastics protection for the production of seedlings (shade areas in summer, low tunnels or greenhouses in winter), the influence of mulch and drip irrigation on soil salinity, etc.
- . The establishment of fruit orchards in semi-arid and arid zones, either dry cultivated (olives, carubs, pistacio ...) or irrigated.
- . Protected cultivation of flowers and ornamentals in Mediterranean and (dry) tropical regions.
- . Plastics in strawberry production, from the conditioning of cold stored transplants to the marketing of fruit.
- . The use of plastics in maize cultivation and other field crops in semi-arid and arid lands.
- . The use of plastics in seedlings for developing countries : poultry houses, grain storage (silos) ...
- . Collecting, storing and distributing water in water-poor regions.
- . Designing greenhouses and greenhouse equipment for regions with seasonal excess of heat (Mediterranean, sub-tropical and tropical)
- . Designing greenhouses and greenhouse equipment for regions with seasonal excess of cold (Mediterranean, temperate and northern countries).
- . The use of plastics in the intensification of semi-hardy crops : wind-breaks, frameless covers, etc.
- . Plastics technologies to solve energy shortage in the farms of developing countries : solar collectors, biogas digesters, reforestation ...

NB : Each session should be the occasion to up-date technical advances, and also to give an evaluation of the economic effects (and if need be social effects) of the described technologies .. Thus the proceedings of each session should constitute a complete synthesis on the subject.

POSTERS

This method would allow to present both :

- contributions complementary to the special sessions ;
- contributions which because of their subject would not find place in the special session.

Moreover, posters could also demonstrate new plastics materials and equipment proposed by the plastics companies.

The programme should include time for "poster sessions", allowing the participants to visit the posters and to discuss with the authors.

(3) VISITS

It is important to split the participants into groups each with a capable leader.

(4) EXHIBITION

Previous experience has shown that it is very difficult to associate a scientific congress and a commercial exhibition :

- congress participants lack time to visit the exhibition properly ;
- exhibitors generally complain since they do not make business or have spent too much money as compared with the commercial results

I would then suggest that interested plastics companies be allowed a special area in the poster room (if need be with payment of an additional fee)

