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REPORT OF THE

17TH SESSION OF
THE INTERNATIONAL
POPLAR COMMISSION
AND THE 32ND SESSION OF
ITS EXECUTIVE COMMITTEE

Ottawa
1-4 October 1984



FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

INTERNATIONAL POPLAR COMMISSION

Executive Committee

Report of the 32nd Session

Ottawa, Canada, 1 - 4 October 1984

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PART I REPORT OF THE 32ND SESSION OF THE EXECUTIVE COMMITTEE OF
THE INTERNATIONAL POPLAR COMMISSION

I. ORGANIZATION

1. The 32nd Session of the Executive committee of the International Poplar Commission was held at Ottawa, Canada, on 1st October 1984, at the kind invitation of the Government of Canada. Mr. M. Viart, Chairman of the Executive Committee, (and Chairman of the Sub-Committee on Nomenclature and Registration) chaired the meeting. It consisted of a closed session of ten members, and five heads of working parties and ad hoc committees, as well as two members of the Secretariat.

II. THE SESSION

2. The session was opened by the Chairman of the committee and the provisional agenda discussed. Item 4 (Proposals for the composition of the Executive Committee) was discussed after a short statement by the secretariat indicating that it was desirable to have an appropriate geographic distribution of members in order to facilitate the dissemination of recent developments in poplar and willow research and development to developing countries.

3. The agenda was amended to include "General remarks by the Chairman" as item 1. The Committee was informed by the Chairman that despite timely submission of the questionnaire on the theme of the 17th Session and the format of the national reports, replies were slow in arriving. At the eve of the Session - i.e. long after the deadline given to the national poplar commissions - only one third of national reports and one half of replies of the questionnaire had been received. This posed a problem for the preparation of position papers for the 17th Session.

4. The Committee recognised the need for a more complete network of contacts with key persons who could assist and promote action by governments through receipt of copies of correspondence sent to governments. This would help to overcome delays caused through government procedures and difficulties with communications within member countries. It was recommended that such a network of correspondents be built up and made use of in future.

5. The Chairman pointed out the broad nature of the present theme of the 17th Session "New perspectives offered by poplars and willows for socio-economic development" and urged the formulation, submission and adoption of more specific and concise themes in future. This would better serve the objectives of the Commission as well as facilitating the preparation of reports.

6. The Committee then examined activities of working parties. The Chairman of the Working Party on Logging and Utilization of Poplar Wood described his Working Party's intention of publishing comprehensive information gathered by this group on technical advances in harvesting and utilization and of creating a central data bank for the collection and retrieval of relevant information on the above subject, together with related data on the economics of poplar wood. These activities would be carried out provided funds could be obtained for this purpose.

7. The Committee agreed that it was desirable for questionnaires for the collection of data to be in a computerized format. Selective information based on the attainment of clear objectives should be requested. It was recommended that chairmen of working parties and ad hoc committees identify subjects to be treated by the above process.

8. The chairmen of other working parties and ad hoc committees also presented the achievements of their groups over the period 1982-1984. The Committee recognized the need to coordinate research activities and to create a network of known specialists in countries with the assistance of heads of delegations to the 17th Session. The need for a more efficient circulation of information within the International Poplar Commission was also noted as well as a greater degree of externally funded publications such as those produced by the Working Party on Poplar Diseases.

9. The Committee commended the above Working Party on the intended preparation of a directory of research centres on poplar diseases. The importance of such directories was recognized by chairmen of other working parties and ad hoc committees.

10. The Committee noted the need to protect the interests of the plant breeder without unduly restricting the flow of information on cultivars. The Committee recommended that the Chairman of the ad hoc Committee on Poplar Breeding participate as an observer in the forthcoming Session of the FAO Committee on Plant Genetic Resources (Rome, March 1985)

11. It was noted that two sets of forms for the identification, nomenclature and registration of poplars had been produced by Mr. Viart (in accordance with para 35 (c) of the report of the 31st Session of the Executive Committee) and by S.K. Hyun. The Committee agreed that Mr. Hyun present his version during the plenary session, agenda item 7. Members of working parties and delegates were urged to support work on identification of poplars because of the fundamental importance of this work to poplar breeding and assessing the reaction of cultivars to different soils, disease, insect and climatic stresses.

12. As no concrete proposals had been received for the venue of the 33rd Session of the Executive Committee, members were asked to approach their respective countries on this point.

13. The Committee recommended that the practice of combining sessions of the International Poplar Commission or its Executive Committee with meetings of subsidiary bodies be continued following the successful example of the 31st Session at Casale Monferrato, Italy, 6-8 September 1982.

III. POST SESSION INFORMAL MEETING OF THE EXECUTIVE COMMITTEE

14. The newly elected members of the Executive Committee 1985-1988, and the 2 members of the FAO Secretariat, met to elect the chairman and vice-chairman of the Committee and discuss general business. By unanimity of the elected members present Mr. Viart (France) and Mr. Gilles Vallée were re-elected as Chairman and Vice-chairman of the Executive committee.

15. The new chairman proposed the Cooperation of five additional members as provided for in the Convention of the IPC. The following persons were coopted, subject to the approval of their governments:

Mr. B. Taris (France)

Mr. S.K. Hyun (Rep. of Korea)

Mr. L.H.A. Rego (India)

Mr. I.M. van Vliet (Netherlands)

Mr. D. Cadahia (Spain)

16. The draft report of the 32nd Session was examined and amended. The revised version appears as paras 1-13 of this report.

PART 2 REPORT OF THE 17th SESSION OF THE INTERNATIONAL POPLAR COMMISSION

I. ORGANIZATION

1. The 17th Session of the International Poplar Commission was held at Ottawa at the kind invitation of the Government of Canada under the chairmanship of Mr. G. Vallée (Canada), with the assistance of two vice-chairmen, Mr. L.H.A. Rego (India) and Mr. E. Robredo (Spain).

2. The session was attended by 17 delegates and 6 alternates from 17 member countries of the Commission: Argentina, Belgium, Canada, China (People's Republic of), France, Germany (Federal Republic of), Hungary, India, Iran, Italy, Korea (Republic of), Netherlands, New Zealand, Spain, Turkey, USA and Yugoslavia. Participants and observers totalled 112 from 19 member countries (also including Japan, Portugal and the United Kingdom) and 8 observers from 4 member countries (Israel, Lesotho, Mexico and Sweden).

II. OPENING OF THE SESSION

3. The session was opened by the Chairman of the retiring Executive Committee Mr. M. Viart, who called on Mr. R. Herring, Assistant Deputy Minister, Canadian Forestry Service to address the Session.

4. Mr. Herring welcomed participants on behalf of the Canadian Forest Service, Ministry of Agriculture. He emphasized the importance of poplars in Canada as a natural resource of considerable and versatile industrial and land reclamation potential and offered best wishes for a productive and stimulating session.

5. Mr. J.P. Lanly, Director of the Forest Resources Division of FAO, thanked the Canadian Government and the organizers of the Session on behalf of the Director-General of FAO, Mr. E. Saouma, and the Assistant Director-General and Head of the FAO Forestry Department, Mr. M.A. Flores Rodas. Drawing attention to the theme of the session oriented towards socio-economic development, they stressed the growing importance of poplars in developing countries and the need for the dissemination of technology and ideas. He commended the vitality of the International Poplar Commission which, although largely dependent on the activeness of the Executive Committee and the Commission's subsidiary bodies, was also particularly dependent on the support of National Poplar Commissions and their activities in member countries. He wished the session every success and the most fruitful and interesting discussions possible.

6. A brief pause was made in remembrance of the demise of former International Poplar Commission members Mr. J. Pourtet (France), Mr. Schreiner (USA), and Mr. Wellstein (Austria).

7. Mr. G. Vallée of Canada was nominated Chairman of the 17th Session and Mr. L.H. Rego (India) and F. Robredo (Spain) Vice-Chairmen.

III. THE SESSION'S ADMISSION OF NEW MEMBER NATIONS

8. The delegate of Argentina proposed the admission of Mexico for which a formal proposal was submitted and received by the Secretariat. An informal request was lodged by Sweden. Those submissions will be lodged in due course with the Director General of FAO.

IV. NEW PROSPECTIVES OFFERED BY POPLARS AND WILLOWS FOR SOCIO-ECONOMIC DEVELOPMENT

9. The paper on the theme of the session "New perspectives offered by Poplars and Willows for Socio-Economic development" was introduced by Mr. Viart who referred to the national replies to the questionnaire on the theme as well as the various national reports submitted to the Commission. Many countries reported on activities to widen the knowledge of indigenous species thorough studies of natural stands, isoenzyme analysis, and determination of ecophysiological relationships. Problems were noted in precisely identifying pure species, such as Populus simonii in the balsam poplar group. A need for additional studies of species such as P. deltoides, P. balsamifera and P. euphratica was emphasized. Natural stands of select species have been identified for preservation in some countries. Special gene banks and collections have been established, but are costly to establish and require a substantial commitment if they are to be properly maintained. Tissue culture techniques and long-term storage procedures for seed, pollen and other plant parts may be a more suitable alternative.

10. Indigenous species have been utilized directly in addition to playing a more important role in breeding programmes. The acquisition and exchange between countries of new breeding material and selected clones was noted as a means of rapidly accelerating the development of programmes but posed a considerable threat of disease through inadvertent introduction of new pests. The need for stringent quarantine procedures and use of tissue culture to minimize the importation of diseases was stressed. Biotechnology activities reported varied widely from country to country. The development of specialized wood utilization procedures was also noted.

11. In the European countries the market demand for biomass and the associated financial return to poplar growers was described as being poor. This was in contrast to countries with newly emerging programmes, where demand for biomass is much stronger and financial returns more positive. Many countries provide planting stock, technical advice and cash subsidies, to stimulate production.

12. It was concluded that inspite of a diversity of situations, the same need exists everywhere for clones adapted to different ecological sites that are sufficiently good performers and above all resistant to adverse conditions. High quality genetic improvement work, based upon a sufficient knowledge of the various species, is essential.

13. The theme of the 17th session was considered ambitious but served to clarify some obscure points and created an appreciation of the magnitude of the task to be undertaken if poplars and willows are to make an even greater contribution to social and economic development.

14. Discussions following the presentation of the paper on the theme showed that members of the Commission were particularly concerned with breeding poplars and willows: Argentina with the development of willow varieties and hybrids for the Parana River delta; France with the development of poplar varieties for acid, hydromorphic soils, and the development of better rooting from cuttings by breaking the incompatibility barriers between varieties; Belgium with the selection of varieties for difficult sites while maintaining high wood quality; Canada with comparative surveys of growth of poplars on poorer soils in Ontario and Quebec and breeding between the Leuce and Tacamahaca sections; Italy with the determination of varieties adaptable to saline soils and soils of relatively high calcium levels, always bearing the cost/benefit aspects of breeding in mind; India with the need for extending the range of poplar culture below the 28 parallel of latitude north.

15. It was suggested that trials in Iran with P. euphratica and the existing small P. euphratica stands in Kenya should be further studied with regard to penetration of the genus Populus into subtropical and tropical areas. A suggestion as to the further study of P. yunnanensis was also put forward with regard to this aspect of poplar culture.

16. It was drawn to the attention of the Commission that the replies to questionnaire on the theme appeared for the most part to have been unenthusiastic. This could be changed by the formulation of a questionnaire reflecting deeper concern for the subject of the next theme and a greater reflection by the Session on the components of the theme as expressed in the programmes of the working groups as well as elements of the study tours associated with session.

17. With regard to the cost of planning and execution of poplar plantations, and socio-economic aspects of poplar culture. Example on incentives were presented by The Netherlands encouraging tree planting and the establishment of tree cover on farms in view of ameliorating current agricultural surpluses. In Canada work created by the harvesting and conversion of natural aspen stands is particularly helpful in providing unemployment relief.

18. The Commission also showed its concern over the phytopathological hazards of exchanging live material for the propagation of poplars. Such exchanges required very careful phyto-sanitary inspection and extremely careful verification and confirmation of identity, as well as long periods of quarantine. It was suggested that the practice of the exchange of cuttings or rootstock be ceased and replaced by exchange of material for tissue culture, which promised very rapid multiplication of material without long quarantine delays. This method has already produced good results in New Zealand. The Commission recommended further work to be carried out on the development of these techniques.

19. The Federal Republic of Germany raised the problem of the effects of aerial pollution on the growth and health of forest trees. In the Federal Republic more than one-third of forest stands were said to be exhibiting symptoms of forest damage and reduced growth now extending to broadleaved species as well as conifers. The Netherlands indicated the possibility of establishing stands as pollution sensitivity indicators. It was considered in The Netherlands that 25% reduction in growth of poplars could be caused by ozone and other pollutant emissions.

20. The Commission was unsure otherwise of the effects of aerial pollution on poplars or whether they could replace damaged stands of other species, but recommended that the establishment of mixed stands with conifers/broadleaved species (such as poplars) should be attempted to counter increasing soil acidity, acknowledging that further work is required in this field.

V. MAJOR DEVELOPMENTS IN THE FIELD OF POPLAR AND WILLOW POLICY AND LEGISLATION

21. Under the chairmanship of F. Robredo (Spain), the report was presented by Mr. D. Drysdale (Canada). There have been very few major developments in poplar and willow policy and legislation in responding IPC countries during the reporting period (1980-83). No legal measures have been undertaken in the People's Republic of Bulgaria, Hungary, Ireland, and Japan. A few countries are providing subsidies for planting of poplars and willows, such as Italy, Korea, Turkey and the People's Republic of China. However, most of these (such as Great Britain and The Netherlands) are covered under general policies for the development of all species.

22. Some countries are reported to be using tax incentives. Countries, such as New Zealand and Germany, have established regulations on the importation and licencing of reproductive material.

23. In developing countries, supplies of plant material from fast growing species such as poplars and willows are distributed to landowners with incentives that will encourage their use. It is likely that as the use of special clones of poplars and willows increases, it will only be a matter of time before legislation and regulations (especially in the form of genetic certification) are developed to enhance the establishment of these species.

24. During the discussion it was stated that a predominant problem in the subsidization of poplar growing is a lack of interest among potential growers, because revenue from growing plantations is delayed until harvesting.

25. Although some subsidies are paid at establishment, this does not support the minimum profitability which a landowner must receive in return for using the land for that purpose. This situation is common to many countries. The possibility of providing annual subsidies to be recovered by the government at time of harvesting, and the growing of poplars at wider spacing with other agricultural crops between the rows were suggested as means of providing annual financial returns.

VI. OVERVIEW OF POPLAR AND WILLOW STATISTICS AND ECONOMICS

26. The Report was presented by Dr. J. Balatinecz. Efforts are being made to establish a standardized computer data bank of statistics to facilitate rapid compilation and updating of the information. Line plantations are decreasing due to lower financial returns, while the area of other plantations has increased, possibly due to stimulation caused by growing market demand. Production is gradually being increased through use of better clones, improved management and planting of larger land areas.

27. Levels of poplar utilization for traditional wood products such as veneer has been quite variable. The most dramatic increase in poplar utilization has occurred in Canada for waferboard panels. Increases in production of pulp from poplar from a number of processes were also reported.

28. The working Party on Logging and Utilization of Poplar Wood will continue to improve the collection and presentation of statistical information and proposes to undertake the following activities:

- i) development of a directory of researchers and institutes concerned with product development;
- ii) development of a directory of poplar-using industries in IPC member countries;
- iii) preparation of a listing of manufacturers of harvesting and utilization equipment.

29. Efforts will continue to improve the collection and presentation of statistical information. The Commission noted that modifying and standardizing the format for presenting the data in the national reports will facilitate data handling and was noted that the directories could greatly assist the exchange of information. The Commission endorsed the action programme proposed by the Working Party on Logging and Utilization of Poplar Wood.

VII. POPLAR AND WILLOW IDENTIFICATION AND VARIETAL CONTROL

30. A study of poplar identification criteria has been undertaken jointly by France, the Republic of Korea and the Federal Republic of Germany including respectively: observations of buds, leaf scars and leaf/bud flavonoids; detailed study of poplars of the Leuce section including careful observation of flower, fruit and bud characteristics; isoenzyme determination for different aspen clones.

31. The Commission recalled that the International Poplar Commission was the only official body for the registration of poplar cultivars and that it was the responsibility of the National Poplar Commissions to make sure that the cultivars cultivated in their respective country have been officially registered and that cultivar names by which they are commercialized and cultivated do not vary from those allocated by the breeder when officially registered. It commended New Zealand on the proposal of two new cultivars: "Tasman" (cultivar NL 2195), and "Cridano" (P. deltoides x maximošviczii, I 88/58). On the other hand, the Commission stated that the use of codes of letters and numbers was not recommended.

32. The comparison of lists of cultivars presented by member countries of the IPC indicated the large amount of useful and used planting material available but also emphasized the delay being experienced in the registration of new poplar cultivars which has resulted in considerable confusion which can only be overcome through the willing assistance of National Poplar Commissions.

33. A detailed study on the nomenclature and registration of poplar species of the section Leuce and their hybrids was presented by the Republic of Korea covering 117 characteristics of different cultivars/species of the section.

34. In concluding, it was recommended that studies of isoenzyme and cytogenetical characteristics be carried out with cooperation of investigators from other countries to obtain further and more effective identification of material.

35. Discussions following the above presentations clarified the fact that only material of commercial productive value should be submitted for registration.

36. Another interesting aspect was the registration of material adopted by a country of material bred in another country. According to the commission either the breeder should apply or the country of adoption should apply in the name of the breeder for the nomenclature and registration of the cultivar.

37. A question on the registration of willow clones was referred to the report of the 31st Session of the Executive committee para 35 (d) recommending the use of the IUPV registration form.

VIII. POPLAR AND WILLOW CULTIVATION AND SILVICULTURE

38. The Secretariat note FO/CIP/84/5 was based on reports from 14 countries which, although less than half of the IPC membership, nevertheless represented a sufficiently wide and useful geographic distribution.

39. Uses for poplars varied from the conversion of large trees for sawmilling and plywood in Europe, medium-sized trees for pulp and particle board in North America and small-sized material for domestic use and energy by rural populations in the middle East and Asia.

40. The note mentioned the promising possibilities of micro propagation and the treatments to promote rooting of certain difficult-rooting species of the section Leuce. Examples were given of country experience with prolonged preparation of material (Hungary); relatively long-term storage (U.S.A., New Zealand); wider planting spacings (Bulgaria, France, Italy); closer spacings (Korea) and mulching (China).

41. Although no significant changes in cultivation practices for industrial plantations have occurred, there is a far greater degree of mechanization, fertilization, weedicide application and recognition of cost/benefit aspects. Cultivation of poplars is progressively spreading to more difficult sites with corresponding increases in problems and appreciation of cultivar/site reactions.

42. Valuable information was provided on productivity of poplar plantations totalling a net 180 tons/ha at age 16, 60% being supplied from stemwood and the remainder from crown components. Mixed plantations, Row plantations and Biomass plantations were also discussed in detail.

43. The Commission was informed that natural poplar stands represent valuable though often poorly utilized and under-protected genetic resources which require greater future attention. Data from member countries on the cultivation and use of willows was relatively meagre despite their resistance to hydromorphic conditions and utility for biomass production.

IX. POPLAR AND WILLOW PROTECTION

a) Report of the Working Party on Poplar Diseases

44. Mr. Giles Vallée (Canada), Chairman of the 17th Session conducted the Session on its third day. The report of the Working Party on Poplar Diseases was delivered by its chairman M. Bernard Taxis (France). As the theme of the above Working Party's twenty-third Session was "The Influence of Diseases on the Production of Wood for Biomass", emphasis was laid on the effects of close-spaced plantations on the epidemiology of poplar diseases on "biomass production" stands of the species.

45. The phytosanitary situation of both poplars and willows was covered for 13 countries. The most common poplar diseases observed being Melampsora, Dothichiza, Marssonina followed by Septoria, Armillaria, Xanthomonas and Rosellinia. The willows also apparently suffer from Melampsora and Marssonina with Schysosporia in Argentina which was influencing cultivar selection. The reported antagonism of Trichoderma to Rosellinia was of particular interest in Portugal.

46. Particular reports on diseases attacking roots, trunks and shoots and diseases attacking foliage were also noted. The report on "Brown Spot" showed the direct relationship between the disease and its intensity and the density of planting as well as age of stand and genetic make-up of the clones involved. Another report showed the relationship between the inter-row cultivation of sorghum and increased pathogen occurrence.

47. Several spacing trials had been established in Italy to determine the influence of spacing, as well as the influence of the application of fertiliser, on epidemiology. Trials indicated that a certain risk of increased disease occurrence was anticipated in close-spaced poplar plantings. Caution in exchanging material was recommended. Details of the Working Party report appear in Annex 5.

48. The discussion following the presentation of the report revealed that quarantine facilities for exchange material have been established at Casale Monferrato in Italy while the Commission recommended that both the Insect and Disease Working Parties draw up rules of procedure for the protection of countries against the introduction of diseases on exchanged vegetative material.

49. Spain drew attention to the need to study the protection of Salix spp. more thoroughly while increasing effort on the study of nematodes in relation to the culture of Salicaceae. The Commission's attention was also drawn to the fact that pollen could also be a medium for disease transmission and that very complex examinations were required for avoiding the transmission of virus diseases through exchanged tissue for culture purposes.

50. The Commission was advised that the overall disease situation had not changed significantly over the period 1981-1984 but that there was need to determine the economic impact of poplar diseases on the species' productivity, possibly at its next Session.

51. The delegate from Belgium recommended that a special session of the Working Party be held on the theme of resistance and immunity of poplars to disease and that the next theme of the Session should reflect the common interest in this subject.

b) Report of the Working Party on Poplar Insect Pests

52. The report of the Working Party was presented by Mr. Cavalcaselle, its technical secretary. A great many insect pests were mentioned in detailed country reports. China, for instance, listed 214 insect pests of poplars and it appeared that Cryptorhynchus lapathis is one of the most important ones in this and other countries.

53. An important advance was reported in the development of a method for a quantitative comparison of sensibility of clones to certain insects for 3 clone groups leading to an assessment of "relative sensibility".

54. The case of new insecticides was reported, among them a systemic insecticide distributed through drip irrigation against a shoot moth. Biological control trials have also advanced and a common methodology is to be determined and tested in Italy and Spain for the screening of recently bred clones against attack by Cryptorhynchus sp.

55. The Working Party proposed that its next session be held in Belgium; Mr. B. Cavalcaselle (Italy) was elected as chairman and Mr. F. Robredo (Spain) technical secretary.

X. LOGGING AND UTILIZATION

56. The report of the Working Party on Logging and Utilization was presented by Dr. J. Balatinecz. This Working Party held 3 meetings during the 17th Session including full day meeting on "Advances in Harvesting and Utilization". A joint meeting with the ad hoc Committee on Biomass Production systems for the Salicaceae was held and a keynote paper on biomass properties was presented. During the business meeting it was decided to produce the following 3 directories:

- 1) researchers and institutions involved in logging, utilization and economics (to be undertaken in 1985);
- 2) industries utilizing poplar and willows (to be undertaken in 1986)
- 3) manufacturers and suppliers of equipment related to harvesting and utilization of poplar and willow biomass.

Member countries and the Secretary of the IPC will be asked to assist in the preparation of the directories.

57. A survey at regular intervals on utilization and economics will be computerized for 1988, and assistance with this task will be requested from FAO. The survey is intended to provide information on production costs, price trends, and the emergence of new industries. Information on legislation will be deleted from the survey. The theme for the next meeting will be selected to attract more industrial representatives.

58. During the discussion period it was requested that the IPC member country governments prepare statistics that distinguish those of poplars and willows from other hardwoods. It was further recommended that in 1984 the Executive Committee undertake the reforming of the questionnaire on the theme of the session.

XI. BREEDING AND SELECTION OF POPLARS AND WILLOWS

59. Mr. E. Avanzo (Italy), Chairman of the ad hoc Committee presented the report of the joint meeting of the committee and working groups S2.02.10 (Poplar Provenances) and S2.03.07 (Poplar Breeding) of IUFRO (International Union of Forestry Research Organizations).

60. The Commission noted the reduction in poplar breeding in the USA through the disbanding of the Stoneville, Mississippi and Durham teams and the discontinuation of their poplar breeding programmes. The Commission also noted that 5 clones of Populus deltoides (Stoneville provenance) had been retained for large-scale planting.

61. As far as provenances were concerned, there were interesting developments in Japan and a negative correlation established between the length of period of vegetative growth and resistance to cold as well as a positive relationship between late leafing and resistance to late frosts.

62. Populus ciliata vegetative material and seed had been collected in 41 localities in Pakistan and the species crossed with P. deltoides in Italy. In an attempt to remove incompatibility barriers between species of poplars and willow two main techniques had been developed. Firstly the use of interspecific hybrids as parents and secondly physicochemical treatments of pollen and stigmata.

63. It was reported that the Hann-Münden group had proposed in-vitro mass micro-propagation as a breeding tool. These techniques promised to reduce to weeks, instead of years, the sensibility tests of clones to bacterial cankers. They also could be used to determine chromosome levels and lend themselves to genetic manipulation or to protoplast fusion.

64. Mr. V. Steenackers was elected as the future chairman of the ad hoc committee and indicated its wish to be associated with the work of the ad hoc committee on Biomass Production systems as well as the Working Party on Poplar Diseases in order to better define the various types of resistance to disease.

65. The ensuing discussion focussed on the subject of the dangers of depending on absolute exclusion of disease and the need for holding a special session of the breeding and diseases groups to discuss genetic improvement for disease resistance. The exercise of caution was again emphasized in the exchange of plant material to avoid transmission of bacterial and fungal diseases.¹

66. The usefulness of P. balsamifera as a species of great ecological potential was brought to the attention of the Commission and a request was lodged by Belgium for the supply of seeds of species from the section Tacamahaca from Canada. The possibility of clones being tested and found inappropriate for one region or country but being appropriate for another country was also raised. Members of the Commission also recommended that more attention be given to the breeding of Salix spp. with the additional involvement of Asian countries in view of the importance of the genus for biomass production.

XII. BIOMASS PRODUCTION SYSTEMS FOR THE SALICACEAE

67. The report of the ad hoc Committee on biomass production systems for the Salicaceae was presented by Dr. L. Zsuffa. This group met on several occasions during the 17th session including both individually and jointly with other ad hoc committees and working parties. These included two keynote papers dealing with biomass production for energy.

68. Socio-economic factors appear favourable for fibre and fuel production. Particularly in the developing countries local supplies of fuel, fodder and the regional economy can be significantly improved. Although information is available, considerable improvement is required in the area of genetics and cultural practices.

69. The need for common use of standardized biomass terminology was developed as proposal for circulation to IPC member countries, IEA^{1/} and various IUFRO and FAO groups. An ideotype was proposed during these joint meetings and will be circulated to other groups. The proposed ideotype consists of fast juvenile growth, fast sprouting, resistance to foliar and stem diseases, rapid healing of cuts resistant to stem decay, response to cultural practices, narrow crown form, extended growth period, high ideal density and herbicide tolerance. It was concluded that these particular qualities can be developed, but this should only be undertaken when specific stable markets exist.

^{1/} IEA International Energy Agency

70. The following proposals were made for 1985-86:

- 1) evaluation of the FAO reports on biomass production and utilization and establishment of contacts in developing countries;
- 2) production of a manual on biomass production for developing countries based on these FAO reports;
- 3) development of a common data base for growth modelling, establishment of production functions, leading to greater cooperation with other groups;
- 4) production of a compendium on biomass tracts and their variation which are important in growing and using biomass;
- 5) request the logging and utilization group to coordinate the development of standards for utilization in cooperation with IEA and financial support from FAO;
- 6) development of further ideotypes and cooperation with the ad hoc committee on genetics in this task;
- 7) standardization of the common usage of biomass terminology;
- 8) preparation of a periodic survey of biomass production and utilization;
- 9) development of active cooperation with other organizations to improve efficiency (FAO, IUFRO Groups, IEA Forestry Energy).

71. During the discussion it was noted that poplars play an important social-forestry role, particularly in agroforestry. In some countries technical aspects of production have been solved but production is not economically feasible. It was clarified that biomass production does not only refer to small size trees. It was recommended that greater attention be paid to economics by most working parties and committees and in particular the biomass and the logging and utilization groups. It was suggested that the IPC should further encourage the use of wood and thereby improve marketing opportunities and the economies of poplar growing through measures such as shorter rotation periods.

XIII. ADMINISTRATION AND OPERATION OF NATIONAL POPLAR COMMISSIONS

72. The representatives of National Poplar Commissions presented their respective reports under the chairmanship of Mr. Gilles Vallée (Canada).

73. Argentina. The National Poplar Commission is incorporated within the Forestry Institute of Buenos Aires and is largely concerned with the use of Salicaceae to rehabilitate land degraded by flooding in the Paraná River delta.

74. Belgium. This active NPC is renewed every 6 years with a chairman and vice-chairman nominated by the government. The Commission meets twice a year, its secretary being delegated by the Ministry of Agriculture. It also comprises 5 working groups corresponding with those of the IPC. The NPC also controls a network of populeta which is extended annually.

75. Canada. The Poplar Council of Canada is independent of the government but is recognized as representing Canada in poplar affairs. It comprises a chairman, vice-chairman and an executive committee plus 6 working groups which include an editorial sub-committee. There are 2 annual meetings for which a theme is devised. Reports are produced frequently under the auspices of the Canadian Forestry Service.

76. China. The National Poplar Commission of China, founded in 1980, comprises seven working groups and 3 provincial-level branches. The NPC is based in the Chinese Academy of Forestry and is particularly active in the field of exchange of material with more than 20 countries, as well as the identification of indigenous species. The second session of the NPC of China was held in 1983 and study groups have visited France, Italy, the USA Canada.
77. France. The NPC is appointed by order of the Ministry of Agriculture and is appointed every 3 years. It meets annually, manages a network of nationally funded populeta and within the past 4 years created 3 ad hoc commissions to investigate specific subjects and arranged 3 field visits as well as 2 tours in France and 2 in Belgium and Spain on the subject of poplar breeding.
78. Federal Republic of Germany. The NPC exists under the auspices of the Federal Ministry of Forestry and is renewed every 3 years. Its function is to coordinate activities on poplars and it receives government financial support for research facilities, research personnel and research contracts. The NPC manages a populetum near Cologne and a paper is to be prepared on its layout, which requires enlargement to accommodate clones of the section Leuce.
79. Hungary. The NPC is incorporated in the National Department of Agriculture and Food. Two to three meetings are held each year and the NPC manages a network of populeta for which new cultivars are being sought.
80. India. The Ministry of Agriculture, Department of Forests is the seat of the National Poplar Commission and work is carried out in collaboration with the FRI, Dehra Dun. Decentralisation into state-level centres has been recommended and a meeting to exchange views on the culture of poplars, poplar insect pests and diseases was held at Naldwant under the auspices of the NPC.
81. Iran. Iran, as represented by the delegate of the country, expressed its desire to participate in poplar affairs and expressed the need for assistance in creating its national poplar commission.
82. Italy. The NPC is incorporated within the Ministry of Agriculture. The chairman is reelected every 4 years and activities under the NPC's auspices have a strong regional as well as a national character. Regional committees meet as often as 4 or 6 times per year.
83. Republic of Korea. The NPC of the Republic of Korea is generally incorporated within its Ministry of Agriculture and Forests and specifically within the Institute of Forest Genetics. The commission is one of the most active in the developing world and regularly issues a "Poplar" magazine in addition to bi-monthly meetings to comply with the consultation needs of government departments and private companies for poplar cultivation data. A seminar is held annually, together with study tours and demonstrations.
84. Netherlands. The NPC which is represented by a permanent committee comprising a chairman, vice-chairman, 3 members and a secretary, meets twice a year and combines these meetings with field excursions. The last meeting was concerned with the breeding and selection of poplars.
85. New Zealand. The New Zealand National Water and Soil Conservation Authority acts as the NPC. The Minister of Works and Development is Chairman of the Authority and hence either he or his deputy is chairman of the NPC. The NPC work through 20 Catchment Boards throughout the country. The NZ government created the National Poplar Commission and joined the IPC in 1969. The NPC is largely concerned with poplar culture for erosion control and has sought and obtained assistance from the IPC on the subject of diseases.

86. Spain. The NPC has been restructured following the new mandate of 1953. In 1980 the government of Spain created the National Centre for Poplar Cultivation which was responsible for research into the genus.

87. USA. The North American Poplar Council changed its name to the Poplar Council of the United States in July 1982, adding a fifth committee on energy at the same time. The Council comprises a chairman, some 100 members and 5 standing committees. Four national meetings have been held during the period 1981 to 1984 and these included field tours. The Council is under the auspices of the USDA Forest Service and includes private growers, land owners and industrialists as well as civil servants.

88. Yugoslavia. The NPC led by a chairman presiding over the delegates is incorporated within the Yugoslav Poplar Research Institute and was created in 1955. Ten meetings were held during 1981-84 and a special consultation on short rotation poplar and willow biomass production held in 1984. The Commission regularly publishes a bulletin "Topola" comprising scientific and technical papers.

XIV. OTHER MATTERS

a) Presentations

89. A gift of a gilded poplar leaf was presented to Mr. Marcel Viart, the president of the Executive Committee of the IPC in appreciation of his work for the Commission. Mr. Viart expressed his sincere thanks and the presentation was acclaimed by the members of the Commission.

b) Election of the Executive Committee 1985-1988

90. Twenty-one candidates were proposed by countries for membership of the Executive Committee of the International Poplar Commission 1985-1988. An election was held by secret ballot involving 17 delegates of the Commission authorized to represent their countries by their respective governments. (Argentina, Belgium, Canada, China, France, Germany (Fed. Rep. of), Hungary, India, Iran, Italy, Korea (Rep. of), Netherlands, New Zealand, Spain, Turkey, USA and Yugoslavia.)

91. The following were duly elected to the Executive Committee 1985-1988: Alonzo A.E. (Argentina), Arru C. (Italy), Giordano E. (Italy), Herpka I. (Yugoslavia), Johnson R.L. (USA), Keresztesi B. (Hungary), Kraayenoord C.W.S. (Van) (New Zealand), Steenackers V. (Belgium), Vallée G. (Canada), Viart M. (France), Wang Shi Ji (China, Republic of), Weisgerber H. (Germany, Fed. Rep. of). The collection and counting of votes was scrutinized by J. Balantinecz (Canada) and S. Fakhreddin-Ziyal (Iran).

XV. DATE AND PLACE OF THE NEXT SESSION OF THE EXECUTIVE COMMITTEE

92. The venue of the 33rd Session of the Executive Committee was discussed and the delegate for Belgium indicated the possibility of his country hosting the Session but could make no promises. The delegate for France, referring to paragraph 23 of the report of the 31st Session of the Executive Committee, considered it unlikely that France would offer to host the 33rd Session, while the delegate from Argentina, who expressed a sincere wish that his country would host the Session indicated that this would be practically impossible.

93. The members of the Commission recommended that the 33rd Session of the Executive Committee be held in western Europe at a venue to be decided in due course.

XVI. CLOSING OF THE SESSION

94. The representative of FAO, Mr. J.P. Lanly, offered thanks to the host government on behalf of the Organization, mentioning by name members of the Organizing Committee of the 17th Session. In reply, the chairman of the Session expressed his appreciation of the assistance provided by FAO, the Secretariat, and the participants, as well as his pleasure that Canada had successfully hosted a fruitful Session. He duly declared the Session closed.

THIRTY-SECOND SESSION OF THE EXECUTIVE COMMITTEE

Ottawa, Canada, 1 October 1984

PROVISIONAL AGENDA

1. Adoption of the Agenda
2. Activities of the Working Parties and Ad Hoc Committee of the Commission since the Thirty-first Session of the Executive Committee in Casale Monferrato in September 1982.
3. Activities of the Sub-Committee on Nomenclature and Registration of Poplars
4. Proposals for the composition of the Executive Committee for the period 1985-1988
5. Proposals for the date and place of the next session of the Executive committee
6. Other matters

SEVENTEENTH SESSION OF THE INTERNATIONAL POPLAR COMMISSION
AND RELATED SESSIONS

Ottawa, Canada, 2 - 4 October 1984

PROVISIONAL AGENDA

1. Adoption of the agenda
2. Election of officers
3. Admission of new Member Nations
4. New Perspectives offered by Poplars and Willows for Socio-Economic development
5. Major Developments in the Fields of Poplar and Willow Policy and Legislation
6. Poplar and Willow Statistics and Economics
7. Poplar and Willow identification and Varietal control
8. Poplar and Willow Cultivation and Silviculture
9. Poplar and Willow Protection
10. Poplar and Willow Logging and Utilization
11. Breeding and Selection of Poplars and Willows
12. Biomass Production Systems for Poplars and Willows
13. Administration and Operation of National Poplar Commissions
14. Other matters, including:
 - Election of the members of the Executive Committee for the four-year period (1985-1988)
15. Date and Place of next Session

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17TH SESSION

Ottawa, Canada, 1 - 4 October 1984

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SUMMARY REPORT ON THE THEME OF THE SEVENTEENTH SESSION
OF THE INTERNATIONAL POPLAR COMMISSION

by

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1. FOREWORD

The theme of the Seventeenth Session of the International Poplar Commission was chosen by the Executive Committee at its Thirty-First Session, held in September 1982 at Casale Monferrato, Italy, at the kind invitation of the Italian Government.

The theme is as follows: "New perspectives offered by poplars and willows for socio-economic development".

The 32 member countries of the Commission were invited to send their written contributions by 31 March 1984 but, in view of the paucity of replies received by the date (eight only), the Secretariat of the Commission decided to extend the deadline for submission to 30 April 1984.

In the end it has been possible to review 16 reports from the Argentina, the People's Republic of China, the Federal Republic of Germany, France, India, Iran, Ireland, Italy, Japan, the Republic of Korea, the Netherlands, Pakistan, Spain, Turkey, the U.K. and the U.S.A.

We wish here to thank those who have collated these replies which have permitted us to prepare this summary report.

It has been possible to fill in some gaps, thanks to our knowledge of the situation in some countries, and to the Consultation financed by FAO and carried out by Dr. M.I. Sheikh on the utilisation of poplars and willows in the sub-tropical to temperate zone which covers the north of India and Pakistan.

2. MEASURES UNDERTAKEN TO WIDEN THE KNOWLEDGE OF INDIGENOUS SPECIES

2.1 Knowledge of variability and identification of species, provenances and ecotypes

2.1.1 Poplar

2.1.1.1 Black poplars

Specify purity criteria for Populus nigra is the subject of systematic observations in France, the Netherlands, Germany, Spain and Italy, while in the U.K. the Botanical Society of the British Isles has been preparing an inventory since 1973.

Several provenances of Populus nigra have been recognized in France, particularly in the Alps and the Jura, and in Spain and Italy.

In Germany studies are under way to perfect techniques for the identification of different provenances by means of biochemical analyses of the iso-enzymes.

In the U.S.A., although knowledge of the natural ranges of the main woody species is generally felt to be sufficient, information is still lacking on the variability of Populus deltoides and their eco-physiological requirements.

2.1.1.2 White poplars

Populus alba seems to have attracted attention only in Italy, Pakistan and Spain where several genotypes appear to have been isolated.

Iran reported a Populus caspica of which several provenances are believed to have been recognized, it would be worthwhile to establish the identity of the specie. Is it actually a white poplar?

2.1.1.3 Aspens

Populus tremula, which is the only indigenous representative of the genus Populus in Scotland, has held the attention of Scottish foresters. In Germany and in Spain, mainly in the Pyrenees, a certain number of remarkable subjects have been identified for vegetative propagation. In Italy genuine aspen populations have been identified.

In Korea, Populus glandulosa has been studied in detail and its range described in numerous publications; Korean breeders are trying to identify any provenances. The same applies to Populus davidiana.

2.1.1.4 Balsam poplars

No precise information on the American balsams is given in the U.S.A. report: these poplars, and more particularly Populus trichocarpa, have so far interested only breeders in north-west Europe.

Knowledge of the Asiatic balsams is also very incomplete still. The Chinese report stresses that, owing to the natural aptitude of balsams for hybridization, identification of pure species is very difficult; Populus simonii is quoted as an example.

The Himalayan poplar, Populus ciliata, is beginning to be better known following work in Pakistan and India. In India particularly the natural range has been studied in some detail. On the other hand, neither the Pakistan report nor recent Indian publications, nor Mr. Mahmood Iqbal Sheikh's report refer to Populus suaveolens. However, India reports studies on two other Himalayan poplars, Populus glauca and Populus gambles, it would be desirable to have details on these species, especially their taxonomy and ecology.

It is therefore appropriate to stress here that it is absolutely essential to complete, or where appropriate initiate, study of the systematics of this big group of poplars, which comprises a great number of species.

2.1.1.5 Populus euphratica

The Pakistan report and Mr. Mahmood Iqbal Sheikh's survey note the presence of Populus euphratica in Pakistan and India up to an altitude of 4 000 m and a latitude of 37°N, and in China in the north-western provinces. This points to a very great variability in the species, but unfortunately this has not so far been studied.

2.1.2 Willows

Only the Netherlands and Italy in Europe, and Argentina have undertaken systematic study of certain indigenous species: Salix alba, Salix fragilis, S. triandra, S. viminalis on the one hand, and Salix humboldtiana on the other. Several types of S. humboldtiana have been recognized and described by the Argentinians, while several willow clones have been individualized by the Dutch.

2.2 Identification of the eco-physiological requirements of species, provenances and ecotypes and of their potential for genetic improvement and planting.

2.2.1 Poplars

French breeders have undertaken a systematic study of the hereditary transmissibility of certain characters of Populus nigra, such as leafing season, arrest of growth, angle of insertion of the branches, resistance to rusts, etc. They are also studying the link between the young tree and the adult tree to make possible early selection of the best individuals.

Italy considers that Populus nigra has the highest potential for use in improvement. Populus alba is cultivated in some areas of central Italy and has been introduced in programmes for hybridisation with Populus tremula and Populus deltoides.

In the Netherlands, research workers are concentrating on studying tolerance to CINa and the behaviour of poplars under different pH values of the soil.

In Turkey, several remarkable individuals have been isolated in natural stands of Populus nigra: vegetative copies have been made for comparison in populeta and the best individuals propagated vegetatively; these new clones are now marketable.

In Japan, observations have been made on the eco-physiological requirements of Populus maximowiczii, particularly very early leafing, time of bud set, resistance to rusts and growth in the presence of relatively dry conditions in the edaphic environment.

2.2.2 Willows

In the Netherlands willows receive the same attention as poplars from breeders as regards study of their behaviour in the presence of various CINA contents and pH values.

Argentina also shows a certain interest in the possibilities of using the best types of Salix humboldtiana in improvement programmes and programmes of hybridization with Salix babylonica.

3. MEASURES ADOPTED FOR THE CONSERVATION OF INDIGENOUS AND INTRODUCED GENETIC RESOURCES

3.1 Present situation

The solution most frequently adopted is the establishment and maintenance of collection populeta; however, it should be stressed that this solution requires large areas which are not always available.

In Italy, the existence of Populetum mediterraneum should be noted, including over 500 genotypes of which 180 belong to the Populus nigra specie.

The U.K. report mentions the interesting example of the action undertaken by local associations of naturalists who have organized themselves to conserve natural stands of Populus nigra and Populus tremula.

India has undertaken a 5-year programme for protection of native species.

The same idea is found in Korea, where the most outstanding trees in the natural stands are protected and their utilization controlled. Similar measures may also be taken in Spain in pursuance of a law on protected natural areas.

Conservation of genetic resources is also affected in the form of mother trees, e.g. in U.K. and the Netherlands.

In Japan no specific measures have been taken but the various research establishments interested in the balsam Populus maximowiczii and the aspens Populus davidiana and P. sieboldii maintain clone conservatories and populeta.

In the U.S.A. no concerted action is organized at present to conserve resources of the various indigenous poplars; several public and private bodies maintain small clone collections but without any coordination.

In France vegetative copies of the best specimens found in 244 natural stands of Populus nigra have been made, for introduction into the French agricultural research collections. These collections have been reproduced in the Netherlands under a bilateral agreement between the two countries concerned. It is emphasized, however, that such collections are extremely onerous because of the land tenure problems involved in acquiring areas which may be of considerable extent and also because of the costs of upkeep.

3.2 Suggestions on measures to be taken and evaluation of their costs

In vitro cultivation is one of the solutions offering the best prospects for the future, as is emphasized in the report by Germany.

Refrigerated conservation is also contemplated: in France, seeds of Populus nigra have been placed in cold rooms to be conserved up to 1987 without any appreciable loss of viability.

This is also the situation in Italy where refrigerated conservation of seeds and pollen, and even some plant parts, are being actively examined.

The possibility of long term storage of pollen is also being studied in France. The estimated cost of this programme is about US\$ 3 600 over three to five years.

In China it is planned to set up gene banks (the nature of which is not specified) in each poplar growing region; the estimated budget for this operation is between US\$ 2.5 and 5 million.

In the Republic of Korea breeders suggest classing all the natural stands of Populus glandulosa and rational management of the utilization of certain stands of Populus davidiana, P. maximowiczii and P. koreana; private owners would be subsidized in the form of support for wood prices.

In Italy the cost of investigation, identification and collection of a genotype is estimated at US\$3.0 excluding labour costs which can be estimated at about 1/2 man/day.

4. PRESENT AND POTENTIAL UTILIZATION OF INDIGENOUS SPECIES

4.1 Selection of the best provenances and phenotypes for the creation of plantations

4.1.1 Poplars

4.1.1.1 Black poplars

Populus nigra is relatively little used in plantations for wood production purposes. The only exceptions are Turkey and Italy where several indigenous clones have been selected and propagated for the purpose of establishing poplar plantations. The Turkish clones are now awaiting registration by the International Poplar Commission. In Italy several genotypes are being selected to be used for planting in marginal stands.

Mention should be made, however, of the work being done in France by AFCEC (Association Forêt Cellulose (Forest Pulp Association), which has selected 57 clones of Populus nigra in the main French valleys. The main purpose of this work is the selection of clones adapted to the production of woody biomass in coppices managed on a short rotation.

In the U.S.A., several hundred clones of Populus deltoides have been isolated and then introduced into comparison plantations during the last decade; several of these already seem to be very promising.

4.1.1.2 White poplars

In Spain a clone of Populus alba has been individualized.

In Pakistan the growth and behaviour of several vegetative copies of several phenotypes of Populus alba are being compared in experimental installations. Probably India will also pursue this course.

4.1.1.3 Aspens

German breeders have been devoting attention to the European aspen, Populus tremula, ever since the sixties; several good phenotypes have been identified and propagated by root cuttings or by micro-propagation. Identical work is in progress in France.

In the Republic of Korea three clones of Populus davidiana and three of Populus glandulosa have been selected for their form and productivity but the Korean report stresses that their growth remains modest as compared with that of hybrids. For this reason they are no longer recommended for use in new plantations.

In Japan several clones of Populus davidiana and Populus sieboldii have been selected for use in the establishment of biomass-producing coppices.

In China, Populus tomentosa is used for the establishment of plantations, particularly row plantations; it would appear, however, that Chinese foresters have not so far attached great importance to the individualization of clones.

In North America, many factories use aspens for manufacture of panel boards and even sawnwoods.

4.1.1.4 Balsam poplars

Two clones of Populus maximowiczii have been selected in the Republic of Korea, but their use in plantations is limited for the reasons indicated above. The same species has also attracted the attention of Japanese breeders who have selected several clones for the production of biomass in coppices.

In Pakistan, several clones of Populus ciliata have been selected and introduced into comparison populeta.

No work on selection of the best phenotypes of American balsam poplars, particularly Populus trichocarpa, is mentioned in the U.S.A. report. However, it is interesting to note that this research is conducted mainly in Europe, where the various provenances collected during missions of European foresters, in close collaboration with the U.S. Poplar Council, are being compared. This is a good opportunity to thank it for the good will with which it responds to requests from European foresters.

4.1.1.5 Populus euphratica

Pakistan is devoting some attention to the possibilities of using Populus euphratica in plantations owing to the commercial value of its wood. Breeding work has been started: several remarkable phenotypes have been identified and then propagated and grown in nurseries; the best have been established in populeta for comparison.

4.1.2 Willows

Several member countries, such as the Netherlands, Argentina, China and, to a lesser extent, France (AFOCEL) and Italy, take an interest in willows; several clones have been selected, mainly within the species Salix alba, S. humboldtiana and S. matsudana. However, attention should be drawn to a remark made in the Argentine report to the effect that the performance of clones of pure species is relatively modest, as compared with that of hybrid clones.

4.2 Inclusion of the best genotypes in tree breeding programmes

4.2.1 Poplars

Most of the member countries have undertaken work to improve the poplars they grow by hybridization. But only a few have adopted rational cross-breeding programmes based on research and knowledge of the heritability of certain characters considered important, such as resistance to certain leaf diseases of cryptogamic origin. It must be emphasized that these considerations are extremely important if time is not to be lost by working at random.

The European research establishments, in particular, have made progress in this field; but it is to be regretted that no reference to this is made in the reports submitted to the Commission. It may be stated without risk of error that considerable progress has been achieved in knowledge of the variability of the two American species Populus deltoides and Populus trichocarpa, thanks to the work done in Europe.

Italy is taking special interest in the establishment of up-grading plantations of Populus nigra for cross-breeding with Populus deltoides.

In Iran attempts at alba x euphratica crossbreeds have been undertaken, but have proved unsuccessful so far.

In China hybridization work started in the fifties and many hybrids have resulted, mainly between the Chinese balsam Populus simonii and the Eurasian black poplar Populus nigra, but there does not seem to have been much clonal selection.

The Republic of Korea has done extensive work on Populus alba x Populus glandulosa hybrids and this has enabled it to carry out successfully a very ambitious plantation programme.

4.2.2 Willows

It is mainly the Argentinians who have studied the possibilities offered by hybridization in willows; they have worked on hybrids of Salix humboldtiana x Salix babylonica. Several hybrid clones have been selected and introduced into commercial plantations. This programme has recently been extended to other species of willow, e.g. Salix alba, calva variety. The best results have been obtained with Salix babylonica x Salix alba, several clones of which now replace spontaneous clones, and results with Salix nigra hybrids are also excellent.

5. NEW MEASURES ENVISAGED

5.1 For the protection of nurseries and extensive and intensive plantations against pests and diseases

5.1.1 Regulations

After having outlined the history of the protection of French nurseries against pests and diseases the French report specifies the nature of the regulations in force at present. These consist essentially of the organization of systematic and periodic visits to the nurseries by qualified government agents who provide all necessary advice on the techniques of protection against pests and diseases. They may also prescribe the destruction of plants particularly infested by pests or affected by disease. Similar regulations are in force in the other member countries of the European Economic Community (EEC).

India is now using similar methods to control nurseries and plantations.

5.1.2 Technical aspects

Several studies have been undertaken in Italy and the Netherlands on the use of pheromones against Leucoma salicis and Paranthrene tabaniformis, and on the effectiveness of carbofuran in controlling Phytobia cambii and Paranthrene tabaniformis.

In the U.S.A. a new systemic fungicide, "Tilt", produced by Ciba Geigy, is being tested for use against leaf diseases of Populus deltoides.

In Pakistan several methods of controlling Apriona cinerea and Melanophila picta are being studied, as is the use of insecticides such as "Sevin" and "Decis" against certain leaf eaters.

Studies are now being conducted in Italy on the use of Carbofuran in aqueous suspension with trickle irrigation for protection of nurseries. Italy also pointed out the value of rehydrating cuttings to facilitate their rooting, and gave examples of phenic chlorosis control by use of Sequestrene in doses of 30 kg/ha.

5.2 For the detection and prevention of pests and diseases when plant material is exchanged

5.2.1 Regulations

Most of the countries concerned require any imported material to be accompanied by a health inspection certificate. A detailed example of inspection procedures is given in the French report.

Quarantining of imported material is also prescribed, particularly in Japan, the Republic of Korea, and China; in the U.K quarantining is obligatory for poplar clones coming from countries where ecological and health conditions differ from those prevailing in the U.K..

5.2.2 Technical aspects

Only the report by Germany mentions the obvious interest of cultures of sterile tissues for the organization of international exchanges of living material, the only way of avoiding dissemination throughout the world of poplar and willow pests and diseases. However, Italy stressed the need and importance of making in vitro cultures for other reasons than only the safety of international exchanges.

5.3 For studies on the behaviour of new clones vis-a-vis pests and diseases

The method traditionally used is to observe the behaviour of poplar or willow cultivars in comparison populeta.

But several countries, such as France, have developed methods of examination which make it possible to determine the behaviour of new cultivars, particularly with regard to diseases, at a young age; some of these methods are recommended by the Commission's Working Party on Poplar Diseases. Italy, for its part, plans to study early testing of susceptibility to viruses.

6. THE APPLICATION OF BIOTECHNOLOGY TO ENHANCE PRODUCTION AND DIVERSIFY UTILIZATION OF THE BIOMASS

Biotechnology techniques are little used as yet by poplar and willow breeders.

Examples are:

- micropropagation by the culture of balsam and aspen tissues (Netherlands, etc.)
- study of the fusion of cells to obtain the combination of a large number of characters (Japan, Germany);
- study of the degradation of lignin by physico-chemical processes (Japan).

Other studies are under way, mainly in the U.S.A., to ascertain the best technology for forest trees, and poplars in particular.

7. ANALYSIS OF DEVELOPMENTS AND PROSPECTS

7.1 The market for poplar and willow wood

Very few figures are supplied in the country reports. It is therefore impossible to compare the situation in the various member countries that replied to the questionnaire.

However, thanks to the information contained in the report by Mr. M.I. Sheikh, a few ideas can be formulated. Below are given the values of a cubic metre of poplar wood on the local markets for products not exceeding the unit volume of one cubic metre:

- | | |
|---------------------|---|
| - China | US\$ 65 to 125 (according to thickness) |
| - India | US\$ 50 |
| - Pakistan | US\$ 75 |
| - Republic of Korea | US\$ 100 |

The trees are probably felled and the poles or logs transported by the peasants themselves.

The above information illustrates fairly well two contradictory trends that have already been in evidence for several years:

- Stagnation in the old poplar growing countries, where poplar wood is still facing competition in major uses, such as the manufacture of plywood from imported tropical woods, indigenous wood-based panels themselves facing strong competition from imported panels; this situation also exists in the U.S.A. and Japan where poplar growing is not traditional but where the market for poplar wood is extremely sluggish.
- Dynamism among the new poplar growing countries which have discovered in poplar a species that can rapidly help to satisfy wood requirements and where the high prices offered to poplar growers are directly related to the scarcity of the wood on the market, both for industrial purposes and for local use in building and even heating.

No information is given on the prices of willow wood.

7.2 Use of poplar and willow biomass for both traditional and new purposes

7.2.1 Rural uses

7.2.1.1 Construction

The use of poplar poles in traditional rural constructions in all the Middle Eastern countries as far as Afghanistan is attracting increasing interest from Pakistan, India and China. It is usually for this type of use that the prices offered on the local markets are the most remunerative.

In the Middle East countries, traditional poplar growing is characterized by very close spacing in plantations (less than 10 m² per tree) and phased logging of individual trees that have reached or exceeded a dimension fixed in advance. In Pakistan, India and China the trees are much more widely spaced (25 to 35 m² per tree), crops are usually associated with the poplars and all the trees in a plantation are logged at the same time.

7.2.1.2 Heating

In Pakistan, India and the great plains of north-east China, where the fuel necessary for cooking food is in extremely short supply, branches, twigs and even leaves that fall to the ground are carefully collected both in natural stands, e.g. of Populus euphratica, and in plantations. Mahmood Iqbal Sheikh quoted the figure of US\$ 10 for about 100 kg of poplar fuelwood (Pakistan).

To meet the growing needs for fuelwood these countries are considering resorting to poplars; work carried out in Pakistan shows that coppice established with a density of 1 666 stools per hectare on a six year rotation can produce 120 m³ of poplar wood (only 108 with eucalypts, and 60 with Robinia). It seems, however, that these encouraging results have not yet induced the breeders to undertake large scale industrial plantation programmes.

7.2.1.3 Animal feed

Mahmood Iqbal Sheikh states that poplar leaves and the leaves and young branches of willows are collected and kept in Pakistan and India to feed livestock, particularly in winter when other sources of fodder are exhausted or the ground is covered by snow. Leaves of Populus euphratica, P. ciliata and P. alba are also given fresh to the animals, and serve to increase milk production.

7.2.2 Industrial uses

7.2.2.1 Sawnwood

Only in Pakistan report is any information given on the use of poplar and willow wood for lumber. In Pakistan total removals of poplar wood in the round were 40 400 m³, of which 32 percent was used in the form of lumber, mainly for the manufacture of packing cases and in construction and furniture building. Total production should rise to 65 800 m³ between 1985 and 1990, of which 71 percent would be processed as lumber (61 percent for construction alone).

According to M.I. Sheikh, Korea plans to utilize annually about one million cubic metres of roundwood by 1985/88, of which 40 percent would be sawn for the manufacture of packing cases.

The remark applies as in 7.2.2.1 on the absence of details in the report of the Commission.

Pakistan report and M.I. Sheikh, however, give some interesting

Pakistan in 1980 about 30 percent of the 40 400 m³ of roundwood was used, almost exclusively for the manufacture of match sticks.

In the Republic of Korea, of the million cubic metres to be logged annually in 1985/88, one-fifth is intended for the manufacture of matches.

Wood paper

The remark as in 7.2.2.1 and 7.2.2.2 applies. However it can be assumed that the quantity of poplar and willow wood used for pulp manufacture is very modest at the present situation should change significantly in the near future. All the current report research and experimental work aimed at determining the best conditions for the production of poplar (and, to a lesser extent, willow) biomass in Europe on a short rotation.

For example, mention may be made of:

Testing of various clones, particularly in Pakistan and France, where 10 clones of black poplars and balsams, 75 willows clones and 52 aspen clones have been compared.

Study of production in terms of density of plantations and length of rotation (2 to 10 years in Germany, 6 years in Pakistan).

These questions will be examined in detail as part of the activities of the Committee on Biomass Production Systems for the Salicaceae.

In line with the figures quoted by Mr. Mahmood Iqbal Sheikh, Korea plan to produce 100 000 m³ of poplar for the manufacture of pulp - half chemical pulp and half mechanical pulp.

Recently (personal communication) the production of poplar and willow biomass for the manufacture of paper has fallen far below expectations, owing to the difficulty of finding sufficiently large areas of land suitable for such cultivation. It is tending more towards growing eucalypts selected for their resistance to pests and for their productivity.

7

The biomass produced by Salicaceae for energy purposes interests several countries, e.g. Korea and Ireland.

Ireland has been engaged since 1977 in a project sponsored by EEC whose main objective is to provide an alternative to the peat used at present to supply energy to the State. Several broadleaved and coniferous species have been tested. In particular, poplar and willow clones have been compared at densities varying from 5 to 10 trees per hectare. So far the results are not very encouraging; in the best case, with a clone of Populus trichocarpa, designated by the letters MB, the production of dry matter after six years did not exceed 2.8 t/ha/year; in other conditions a willow such as Salix aquatica gigantea produced no more than 1

7.2.3 Other uses

Of the various other uses mention should be made of the manufacture of hockey and cricket bats, mainly from willow wood, for which Pakistan and India have a kind of world monopoly. Pakistan alone consumes about 3 000 m³ of willowwood annually for this purpose.

Pakistan is studying the possibility of using poplar to make rifle butts, as well as artificial limbs.

7.3 Cost effectiveness of growing poplars and willows

Despite the lack of precise data in the reports, it is again possible to distinguish between two types of situation:

- old poplar growing nations, usually coinciding with the industrialized countries, where poplar growing is not considered very profitable at the moment, even though it brings in higher returns than the cultivation of other reforestation species, both broad leaved and coniferous, as is noted in the Netherlands report.
- new poplar growing countries, usually coinciding with countries on the road to industrialization, where poplar growing is considered sufficiently profitable and is therefore expanding. Mahmood Iqbal Sheikh puts forward the following figures for the cost/benefit ratio, R calculated as follows:

$$R = \frac{100 \quad P}{E}$$

with P = value of products discounted at annual rate of 10% after 10 years

E = sum of annual expenses discounted at annual rate of 10%

All calculations being made, R would seem to be between 210 and 280 percent in India and between 330 and 590 percent in Pakistan! In such circumstances it is easy to understand the enthusiasm shown by some peasants for growing poplars.

However, it should be pointed out that as far back as 1965 FAO recommended the adoption of a common schedule by member countries for cost accounting and the drawing up of balance sheets so that the results could be compared. This schedule is set out in the Study, Poplars and Willows in Wood Production and Land Use, Rome 1979 (FAO Forestry Series No. 10).

8. GOVERNMENT INCENTIVES TO ENCOURAGE PRODUCTION

8.1 Subsidies and fiscal measures to promote planting

With the exception of Japan, all the member countries who replied to the questionnaire have taken or propose to take specific measures to encourage the planting of poplars (and willows).

8.1.1 Subsidies

8.1.1.1 Subsidies in kind

In Pakistan and India, the plants necessary for planting are supplied free of charge to the peasants, who also receive technical support from the government forestry services.

In France, owners of small areas (a few hectares at most) can obtain a voucher which enables them to obtain free of charge from a Government-approved nursery half the plants required for their plantation; to this may be added a subsidy in cash which cannot exceed either half the cost of the plantation work, or half the value of the plants established.

Arrangements similar to those in Pakistan might exist in China in certain provinces.

It should be pointed out that the plants supplied to planters always belong to clones that have been tested and that have proved their superiority following government-controlled trials. Some countries, such as France and the other members of the EEC, have decided to publish regularly a catalogue or list of the poplar clones marketable or cultivable over all or part of their territory. More specifically, in France there is a National Poplar Clone Catalogue and a regional list of the clones subsidizable by the National Forestry Fund.

8.1.1.2 Subsidies in cash

The conditions for the granting of subsidies vary according to the country, although it is always made obligatory for the planter to use plants belonging to officially approved clones. The rates of these subsidies also vary.

Below are a few examples taken from the reports submitted by the countries that replied to the questionnaire:

- In Spain all plantation work may be subsidized up to 50 percent of the total cost in the case of non-forested land and up to 30 percent in the case of land already forested; this difference is the result of the government's wish to encourage the extension of wooded areas in Spain by all possible means. Between 25 and 35 percent of the total cost of maintenance work can also be subsidized.
- In France, all the planting work and the maintenance work during the three years following establishment of the plants can be subsidized up to 40 percent of the total estimated cost. The minimum area planted must be 5 ha.
- In the U.S.A. 50 percent of the cost of soil preparation, up to a ceiling of US\$ 92.5/ha, and 50 percent of the cost of planting, up to a ceiling of US\$ 65/ha, can be subsidized. It is estimated that the cost of a poplar plantation on non-forested land and its upkeep for one year amounts to US\$ 250 to 315/ha. The report states that to date public aid for planting has not helped to promote poplar and willow plantations.
- In the Netherlands, anyone owning a wood of more than 5 ha with a management plan approved by the State may claim aid corresponding to 75 percent of the total cost of the planning and soil preparation. The same level of aid may be granted to anyone owning a wood of over 0.5 ha, and the level may be raised to 80 percent if the area is at least 1 ha.
- In the U.K. the total amount of public aid available is not specified, but it can only be granted if the area concerned is over 0.25 ha.

8.1.2 Loans

China and Turkey state that loans at extremely advantageous rates may be granted to planters but do not specify the conditions.

Several other member countries also provide loans to encourage the planting of poplars.

- In Argentina, annual interest is 2 percent; given the rate of inflation - over 20 percent a year - any loan granted under such conditions amounts to a real subsidy. Thus in 1976, thanks to the National Bank of Argentina, aided by the World Bank, a programme for the planting of 100 000 ha was implemented; in 1978-83 130 000 ha were planted in the Parana delta and 38 125 ha of various Salicaceae should be planted in 1984.
- In France the minimum area required is 10 ha. The amount of the loan varies from 60 to 80 percent of the estimated cost of the work, including soil preparation, planting and upkeep during the first three years. The interest rate is a token amount of 0.25 percent a year and 20 years are allowed for repayment.
- In both France and Spain additional loans may be granted to planters benefiting from the subsidies already mentioned for that part of the investments not covered by the subsidies.

8.1.3 Fiscal advantages

Many different kinds of fiscal advantages may be granted to poplar planters :

- In France, plantations are exempt from land tax for 30 years. In view of their rotation period, this amounts to saying that poplar stands are completely exempt.
- In Pakistan, the land tax is reduced for poplar planters.
- In Argentina, part of the forestry investments are deductible in the income tax returns made by both individual and legal entities.

8.1.4 Other advantages

In Pakistan the best planters, those who have obtained the best results as regards quality and quantity, may receive cash rewards.

In the Netherlands, poplar growers are exempt from the usual obligation to replant after logging; this exemption is granted if logging occurs within less than 25 years after establishment of the plants. This measure has been taken to encourage the creation of forest plantations that can be logged after a short rotation. Such plantations may benefit from public aid.

8.2 Measures affecting the level of market prices

No specific measures are indicated in the reports submitted to the Commission. However, in India, the price of poplar wood may be fixed by the administration. Mention should be made of the remark made in the Pakistan report on the activities of the numerous middlemen who intervene between the planters who produce the wood and the industrialists who use it, which have an increasingly heavy impact on price formation; the State will have to intervene if it wants the peasants to obtain the fairest possible remuneration for their labour in planting and tending poplars.

9. CONCLUSIONS

The theme of the Seventeenth Session was ambitious. We are far from having attained all the objectives, if only because the number of contributions received was low. Nevertheless, the quality of the information contained in the reports that were received has enabled the rapporteur to paint a sufficiently instructive picture of a number of very different situations. This diversity of situations described goes hand in hand with the development of poplar growing in the world, particularly in Asia. Everywhere the same need is felt for clones adapted to the different ecological contexts that are sufficiently good performers and, above all, resistant to adverse physical or biological circumstances. This aspect makes it possible to stress the pre-eminence of genetic improvement work over the other scientific activities connected with the growing of poplars and willows.

It must be realized that the quality of improvement work and the validity of the results are closely linked with sufficiency of knowledge of the identity and variability of the various species of poplars and willows.

Three of the seven elements of the theme for our Seventeenth Session are directly related to the problem of knowledge of the indigenous species which occur in member countries. This shows the degree of interest brought to bear by the Commission on these questions.

Today some obscure points have been clarified. We should feel pleased at this. But we must also appreciate the magnitude of the task that still has to be undertaken in order that the cultivation of poplars and willows can contribute even further to social and economic development.

REPORT OF THE SUB-COMMITTEE ON NOMENCLATURE AND REGISTRATION

Ottawa, 2 October 1984

1. Delegates present

Mr. Avanzo E., Chairman of the ad hoc Committee of the breeding of poplar

Hyun, S.K.

Steenackers V.

Viart, M., President

2. Problems of Nomenclature

The sub-committee stated that numerous gaps persist in the taxonomy and chorology of the different natural species of poplar. They note that these gaps constitute a source of difficulty in both the short and long term for the work of the tree breeders.

Consequently, it recommends that this work should be organized with priority in this area of research by member countries, by looking for, if necessary, and seeking the help of the specialists of the university level. The sub-committee has admitted to the United Kingdom of the mistake which had been committed when making the new clone registered under the name of Balsam Spire in the poplar hybrid species Px interamericana - as this clone is born from crossing of a female Populus trichocarpa with a male Populus balsamifera. The correct name of this clone is as follows:

Populus trichocarpa x balsamifera cv. Balsam Spire.

3. Registration Problems

The sub-committee stated that no proposal on registration has been presented at this session.

They admit to Mr. Viart of the tabling of the modified project of the indexing of registration as it was agreed at the last session held in Casale Monferrato in 1982.

They congratulated Mr. Hyun for the excellent work completed in the Republic of Korea for studying the criterion of identification of poplar in the section of Leuce after having assisted in the showing of slides illustrating these different characteristics.

They have given the mandate to Mr. Hyun and Mr. Viart for the harmonizing of the two proposals on the table, keeping in mind the next meeting of the sub-committee in 1986.

The sub-committee finally recommends that studies should be continued and followed in the area of biochemistry with the idea of furnishing to the tree breeders the manner of identification that is the best.

WORKING PARTY ON DISEASES

REPORT OF THE TWENTY-THIRD SESSION

CITAWA, 1-4 October 1984

- The Working Party on Diseases held its Twenty-Third Session in Ottawa, Canada from 1 to 4 October 1984.
- Twenty-three (23) participants representing 10 countries took part in the different meetings. This was the second time the Working Party met in North America.
- The subject this year was: "Incidence of diseases on production of wood for the biomass".

The following topics (or sections) were examined during the discussions:

1. A general discussion of parasite problems which arise (or could arise) in poplar plantations intended for production of biomass.
2. Plant health condition and main problems in the past two years.
3. Diseases affecting roots, trunks and branches.
4. Leaf diseases - Miscellaneous

A joint meeting of the Working Party on Diseases and the ad hoc Working Party of Breeders was also held in Ottawa during the Twenty-third Session of the Working Party.

1. General Paper: Possible influence of diseases on production of poplar wood for biomass.

A document summarizing our present information and the potential risks of pathogenic agents settling on "new formula" poplar plantations (destined for production of biomass) was presented by Bernard Taxis and G.P. Cellerino (Chairman and Secretary of the Working Party). "Active" and "unbalancing" parasites were reviewed.

It was stressed that closely spaced plantations cause major changes in the environment and consequently substantial modifications in the epidemiology of parasites and their destructive effect.

The established resistance (to several diseases) of many clones will have to be reconsidered.

Indications concerning control methods (cropping, chemical, biological, genetic, etc.) were mentioned and discussed. This subject of control should be "monitored" very closely in the future.

2. State of Plant Health

The data on the state of plant health were contained in the reports of 13 delegations and were the subject of an equal number of statements/comments. Although in many cases these statements review the same parasites, in the report we shall stress those representing the main concerns (during the 1982/84 period) of the respective countries.

ARGENTINA

Populus: At present the two most damaging parasites are Septoria musiva and Melampsora medusae. A large patrimony of Populus deltoides of North American origin made it possible to undertake work for improving resistance to these two diseases.

Salix: These species are established on about 100 000 ha and are mainly represented by hybrids:

- S. humboltiana x babylonica

- S. babylonica x S. alba

The main parasites are:

- Marssonina salicicola

- and several Melampsora

On the previously imported S. nigra (1961) the following parasite was found for the first time:

- 1978 - presence of Schysosporia carneolutea.

Selection is under way.

AUSTRALIA

The main parasites are rusts, especially Melampsora populina and Melampsora medusae. After a very rainy summer in 1983 attacks spread to the southeast of the country, especially on P. nigra, P. x euramericana in the first case and on P. deltoides in the second.

The hyperparasitism of Cladosporium can reduce attacks of rusts. The damages due to bees which take "wax" in buds (followed by drying + parasites) have been considerable during recent years.

BELGIUM

Armillaria mellea, Dothichiza populea, Chalaropsis populi, Xanthomonas populi, Marssonina brunnea, Melampsora larici populina have been the most damaging parasites in recent years.

Early attacks of rusts have favoured the development of Dothichiza and Chalaropsis.

In view of the large range of material examined, the selection programmes under way should make it possible to obtain resistant clones.

Tests on control of Armillaria, Dothichiza and Chalaropsis by use of Trichoderma have been undertaken.

BULGARIA

Populus: In 1983 climatic conditions unfavourable to sound poplars development caused large-scale attacks of Armillaria, Dothichiza populea and Cytospora chrysosperma nivea and foetida all over the country and attacks of Fusarium spp. in the south. In dense plantations brown spots appeared after the fifth year.

Leaf spot: It was observed that Pollaccia radiosa was increasing on poplars in the Section Leuce, while Pollaccia elegans was observed on poplars in the Section Aigeiros. Attacks of rusts (M. laricipopulina, M. allii-populina, etc.) were observed in nurseries.

Salix: Attacks of Rhytisma salicis and Melampsora amygdalina

CANADA

Populus: Mentioned as especially dangerous on Populus tremuloides were: Armillaria, Fomes spp., Stereum, Hypoxylon, Cryptosphaeria and brown leaf disease.

On Populus deltoides and balsamifera and their hybrids with Cryptosphaeria, Septoria and bacterial canker.

On leaves in general, rusts are the source of most concern.

FRANCE

Poplars: Attacks of Armillaria mellea have been observed in several stands (so far they have not had any economic impact). Little evolution has been noted in attacks of Hypoxylon. Dothichiza populea has been increasing during the past few years (partly due to a slackening in nursery and plantation upkeep).

Xanthomonas populi is still a major potential danger. In the 1982/83 period there has been an increase of damages from collar gall due to Agrobacterium tumefaciens. Browns leaf disease has been observed in many French stands. Among leaf diseases, Marssonina brunnea and rusts (Melampsora larici-populina and Melampsora allii-populina) have caused the most damage.

HOLLAND

Poplars: Xanthomonas populi and Melampsora and Marssonina are the pathogens most feared at present. During the past two years attacks of M. larici populina have been observed on clones which had been considered resistant (possibly a new physiological breed). the presence of Xanthomonas campestris, Pseudomonas syringae and Dothichiza populea has been observed on plants that had suffered from frosts. Attacks by cambium borers have facilitated the spread of bacterias.

Willows: Serious and widespread damages can be attributed to attacks of Erwinia salicis. No resistant clones are known.

ITALY

Populus: The drought in autumn 1983 predisposed nursery plants and young plantations to attacks by Dothichiza populea (especially noticeable in clones having a prolonged vegetative cycle).

For the same reason "brown spots" have often been observed in plantations (Piemont, Lombardy, etc.), especially on highly productive and demanding clones.

Rosellina necatrix has been found to be increasing in the Po valley.

The drought in the summer of 1983 and the cold spring of 1984 have helped to reduce the occurrence of leaf diseases during those two years.

Willows: Nothing was reported for the recent period.

NEW ZEALAND

Chondrostereum purpureum is the most serious pathogenic agent in nurseries.

Poplars: Following the introduction of Marssonina brunnea in 1976, in 1984 the introduction of Marssonina castageni could be observed in Australia but not in New Zealand.

Rusts, especially Melampsora larici populina present greater problems than those related to attacks of Marssonina (at least at present).

Salix: Melampsora coleosporioides is affecting Salix babylonica but has not appeared on other Salix species cultivated in New Zealand.

PAKISTAN

Poplars: Ganoderma bucidum is an exceptionally important agent on extensive and monospecific plantations more than 10 years old (the control advised would be to plant a mix of several ligneous species).

Dothichiza populea has been observed on "I 214" and "Harvard" clones.

The presence of Septoria populi (/P. nigra), Taphrina populina, (/P. ciliata), and Melampsora populina (/P. alba and /P. euphratica) has been observed frequently on leaves.

PORTUGAL

The main problems concern attacks of Rosellinia and Marssonina.

Rosellinia is prevalent mainly in areas having a variable groundwater table. The antagonism of Trichoderma sp. to Rosellinia has been observed.

Rusts (M. allii-populina/North and M. medusae/South) have no special economic importance at present.

Dothichiza populea has been observed on "Harvard" (1982) and "San Martino" (1983).

Bacterium tumefaciens has been established on the Italian clone NND.

USA

Septoria canker was the most serious disease on hybrid poplars in the USA during this period. Drought induced Dothichiza, Cytospora and Phomopsis cankers also have been serious. Hypoxyton canker was found for the first time on hybrid poplars. Cryptosphaeria canker has increased in aspen stands. Bronze-leaf disease on P. grandidentata and its hybrids is causing serious tree death in specific areas in the North Central States. Hypoxyton canker of aspen, Marssonina and Melampsora leaf diseases, and possible PMV virus of hybrid poplar continue to cause problems, the seriousness depending upon area, and clonal and species types being grown.

YUGOSLAVIA

Poplars: The presence of Dothichiza populea was found in 1981 and 1982 on "I 214" and on "Robusta". Marssonina brunnea still creates problems on Euro-American clones. Chemical control of this parasite through the use of helicopters is planned. Gloesporium tremuloides attacks on seeds of the section Leuce were observed in 1982 and 1983.

Salix: The presence of Glomerella myabeana and Monostichella salicis was observed occasionally in nurseries on Salix alba and its hybrids.

3. Diseases affecting roots, trunks and branches

Several subjects concerning parasites were discussed during this part of the Session.

1. J. JUSWICK and M. HUBBES presented a note on a poplar canker in Ontario, Canada, whose cause has not yet been fully identified. This canker causes marked deformation in trunks and branches. An insect combination (Lygus lineolavis) + bacterias (to be identified) seems necessary for these cankers to appear.
2. T. DE KAM stressed the importance of Erwinia salicis attacks on willows in the Netherlands. This bacteria (an agent of Watermark disease) limits the expansion of cultivation of willows having long rotations (over 8 years). T. de Kam gave details on studies concerning evaluation of the susceptibility of Salix alba clones to this disease.

T. DE KAM reviewed the studies conducted in the Netherlands on Xanthomonas populi, an agent of poplar "bacterial canker." He expressed the wish that very severe measures be adopted to prevent the expansion of this disease to new areas in the world.

3. L. SPIELMAN and M. HUBBES described their studies conducted in Canada on the Septoria canker. These studies have shown that there seems to be no difference either in terms of morphology or of heat extremes between Septoria strains coming from Ontario and those from the United States, differences which had they existed could have helped to explain why the disease is so severe in the United States compared to what has been observed in Canada.

Analyses of isoenzymes through electrophoresis also could not reveal differences between United States strains and those in Canada showing marked differences in other respects (US strains: highly virulent; Canadian strains: low virulence).

4. P. MANION, D. GRIFFIN and S. FALK, United States presented their studies (a.b.c.) on Hypoxyton canker. Between 1962 and 1968 heavy losses were observed in many plantations in New York State, United States. The loss was "linear" and was between 1.2 and 3.6 percent per year.

Losses attributable to Cryptosphaeria canker during the same period were about 0.40 percent. (This type of canker is not visible on trees less than 10 years old). The impact of these two diseases reduces harvest potential by 34 to 80 percent. Selection of clones resistant to Cryptosphaeria attacks has been encouraging.

Selection of clones resistant to Hypoxyton canker is based on:

- study of toxins
- results of inoculations
- manifestation of symptoms in natural conditions.

These studies have shown that:

- x formation of cankers at the base of trunks causes the highest mortality;
- x small-sized trees show a high death rate;
- x cankers in crowns only appear on large trees;
- x there is no correlation between tissue response to toxins and the manifestation of symptoms.

5. Messrs. S. SANTOS M.N., Portugal, gave results on the susceptibility of several poplar clones to Dothichiza populea attacks. "Transplant shock" has greatly intensified susceptibility and the manifestation of symptoms.
6. N. ANSEMI, Italy, presented his research on the influence of coppice felling (short rotation) on the mycoflora of the rhizosphere in poplars. In the case of short rotations, felling slows down the mycorrhiza formation process considerably, this facilitates infection of stumps by different fungi (Fusarium, Trichothecium, etc.) - felling/1-2 years.

The appearance of ligniphagous fungi on stump is also found when older plants-felling/2-3 years are exploited.

Special attention should be paid to (possible) passage of these fungi from a saprophytic to a parasite phase.

4. LEAF DISEASES

1. De Kam read a note on the variability of resistance to Melampsora larici populina observed in northwestern Europe. These studies, carried out in collaboration with J. Pinon, mention the appearance of new physiological breed of that Melampsora which can be established on clones previously - before 1980 - considered resistant. Fortunately, new selections of Populus have proved to be resistant.

The geographic distribution of different physiological breeds needs to be established. A complementary study on resistance in controlled conditions would be desirable.

2. SPIERS gave some details on the influence of temperature on the duration of incubation and infection of various Marssonina species. He confirmed the possibility of infection by Marssonina brunnea up to 28° C. Between 16° and 24° C all Marssonina species have the same characteristics. Below 16° C the duration of the incubation period increases, especially for Marssonina brunnea.
3. Studying the apothecial development of Drepanopeziza tremulae in the laboratory, SPIERS revealed that maturation of apothecia occurs in 50 days if the temperature varies from 5 to 8° C. On the contrary, with temperatures above 12° C (for at least five consecutive days) maturation of apothecias is not found.
4. In a communication, SPIERS gave detailed information on the main diseases occurring on Salix species in New Zealand; some of these diseases have been mentioned above in the section on the state of plant health.
5. LAHOUSTE, conducting nutrition tests in controlled conditions, showed the susceptibility of the "Neeroeteren regenerata", cultivar to Marssonina brunnea is in direct ratio to the increase of leaf bore concentration and in inverse ratio to that of nitrogen. This is the first evidence of the indirect influence of the bore on that parasite.
- 6.7. PRAKASH and HEATHER have studied the effect of radiation on the uredospores of a Melampsora medusae strain in order to determine whether these radiations led to production of mutants that are more virulent toward a number of Populus clones. The five Melampsora medusae mutants obtained were inoculated in the laboratory on 11 Populus cultivars.

The findings showed, among other things:

1. A modification of sporulation compared to the original non- irradiated strain;
2. The virulence of the five mutants did not depend on the intensity of the radiations.

8. WICKREMASINGHE HEATHER and GRIFFIN studied and compared different methods for isolating and counting the microflora present on the surface of leaves. In the present case these methods concerned especially Melampsora medusae and Pestalozzia sp.. The "leaf print" method produced the best results; on the contrary, the washing method proved to be the least satisfactory.

MISCELLANEOUS

1. NAIDENOV studied the relationships between the dynamic of attacks of the so-called "bronze spot" disease and plantation density, the latter with different clones. He showed:
 1. The direct interdependence between disease intensity and planting density.
 2. The influence of age and genetic characters on production of symptoms.
2. CELLERINO and ANSELNI, in line with the theme of the session, that is, the influence of dense plantations on the evolution of pathogens have initiated some preliminary tests (with variable spacing) at Casale Monferrato in the Po Valley.

Fertilization was also examined.

To date one can say that plantation density plays a major role in early leaf fall, emergence of the so-called "bronze spot" disease, and mortality of juvenile plants.

In the framework of the experimental scheme, concerning Marssonina brunnea one can merely note an acceleration in the falling of the affected leaves. Here fertilization does not seem to have had any noticeable influence on the evolution of damages.

On the other hand, intercropped sorghum intensified the occurrence of pathogen phenomena in all cases.

These tests confirm what was said in the introduction to the Session by B. TARIS and G.P. CELLERINO, to the effect that some dangers could be encountered in poplar stands intended for biomass. Caution should be the rule concerning such plantations stands.

LIST OF WRITTEN COMMUNICATIONS

1. GENERAL

CELLERINO J.P. and TARIS, B. - Possible influence of diseases in production of poplar wood for biomass.

2. STATE OF HEALTH

1. W.A. HEATHER. Phytosanitary situation in Australia 1983/84.

2. I. NAIDENOV. Aspects of plant health in poplar cultivation in Bulgaria.

3. M. HUBBES. Most important poplar diseases in Canada (List).

4. J. PINON, M. RIDE et B. TARIS. State of health in France 1982/83.

5. M. de KAM. The sanitary situation in the Netherlands 1982/84.

6. G.P. CELLERINO. Poplar and willow disease situation in Italy 1983/84.
7. C.W.S. VAN KRAAYENCOORD. Sanitary situation in the period 1980-1984.
(In New Zealand)
(except from Report National Poplar Commission).
8. MAHMOOD IQBAL SHEIKH. A note on the diseases of poplars and willows in Pakistan.
9. H.S. MCNABB, Jr. Poplar and willow diseases Report from U.S.A. (1982-1984).

3. LIST OF COMMUNICATIONS ROOT, TRUNK AND BRANCH DISEASES

1. JUSWICK J. and HUBBES M. Bacterial canker of poplars in Ontario, Canada.
2. M. de KAM. Resistance research in Salix alba to Erwinia salicis.
3. SPIELMAN L., and HUBBES M. The occurrence of Septoria musiva in Ontario and comparisons between isolates from Ontario and the United States.
- 4a. FALK, S., P.D. MANION and D.H. GRIFFIN. Clonal variation of Populus tremuloides to Hypoxyylon canker.
- 4b. MANION, P.D., F.A. VALENTINE and D.H. GRIFFIN. Genetic variability of Populus tremuloids families to Hypoxyylon canker.
- 4c. CATRANIS, C. and P.D. MANION. Impact of Cryptosphaeria canker on plantations of Populus tremuloides.
5. SANTOS, N.M. Discoporium populeum. Field inoculations.

ANSELM, N. Influence of poplar grove management on rhizosphere mycoflora.

4. LIST OF COMMUNICATIONS LEAF DISEASES

1. DE KAM, M. and PINON, J. Variability in Melampsora larici-populina in France, Belgium and the Netherlands.
2. SPIERS, A.G. Influence of temperature on the duration of incubation and infection severity of Marssonina species.
3. SPIERS, A.G. Influence of temperature on apothecial development of Drepanopeziza tremulae.
4. SPIERS, A.G. Pests and pathogens of Salix stoolbed nurseries in New Zealand.
5. LAHOUSTE, J.P. Influence of mineral deficiencies on leaf susceptibility of Populus x euramericana (Dode) Guinier cv. "Neeroeteren Regenerata" A. Marssonina brunnea (Ell. and Ev.) P. Magn
6. PRAKASH and HEATHER. Response to gamma irradiation and induced virulent mutation in Melampsora medusae of Poplars.
7. PRAKASH and HEATHER. Reaction of cultivars of Populus sp. to radiation induced virulent mutants of Melampsora medusae.
8. WICKREMASINGHE, HEATHER and GRIFFIN. Comparative study of removal of fungal spores from the leaf surfaces of Populus x euramericana.

5. LIST OF MISCELLANEOUS COMMUNICATIONS

1. NAIDENOV, I. Relationships between the dynamic of spot disease attacks and poplar plantation density.
2. CELLERINO, G.P. and ANSELMÍ, N. Results of a survey conducted in Casale Monferrato regarding the influence of spacing and fertilization on phytosanitary situation of poplar plantations.

Joint meeting of Committees and Working Parties on Breeding/Biomass/Insects/Diseases

This part of the afternoon meeting on 2/10 from 15h30 to 17h15 was held jointly by the ad hoc Committees on Poplar Breeding and Biomass and the Working Parties on INsect Pests and on Poplar Diseases.

Dr. THIELGES, professor, Department of Forestry, University of Kentucky, Unites States suggested new approaches for production of diseases-resistant poplars for developing countries. In light of recent information on disease epidemiology, it is now recognized that the search for horizontal resistance should be considered a priority, whereas a search for resistant genotypes and their vegetative propagation does not permit maximum exploitation of potentialities of the Populus genus. In this context, if interspecific hybrids are sought recombinations within parent species now seem to be a necessary preliminary to interspecific crossing. The strategies that should be suggested to developing countries must be simple and firm: conservation of resources, identification, and maintenance of a wide genetic base. Priority should be given to multi-clone plantations with random or mosaic distribution. The Populus deltoides breeding programme at the United States Centre has been adopted as a data base for proposal of models.

Dr. STEENACKERS, Director of the Station de Recherches sur les peupliers (Poplar Research Station) at Grammont, Belgium, then described how the programme started about 40 years ago by Mr. MUHLE LARSEN has developed. The purpose of the programme is to supply continuously renewed and improved material for wide spaced traditional poplar cultivation. The modern clones resulting from this programme have a pedigree derived from 2 or 3 species with a preliminary intraspecific recombination stage in each. The selection criteria consist of disease resistance to: Melampsora larici populina rusts, Marssonina brunnea, and Xanthomonas populi bacterial canker. Concerning rusts Mr. STEENACKERS said that the existence of new strains reported 2 years ago at Casale Monferrato have now been certified. He outlined the orientations of the programme he heads with regard to these new strains. The selection for resistance to Xanthomonas populi was mentioned as an excellent example of international collaboration. Finally, he said carrying out of back-crossing of inter-American hybrids with parent species could improve the quality of scions in terms of certain criteria such as wood quality without at the same time losing the vigour obtained in the F1.

After that Dr. OSTRY very instructively described the initially leaf and then lignous symptoms of Septoria musiva canker in balsam poplars. The subsequent discussion, referring back to the theme discussed in the plenary session of the morning on the same day, pointed out the need to totally suspend any intercontinental exchange of cuttings which could be carriers of absolutely undesirable germs such as Xanthomonas populi or Septoria musiva. Dr. OSTRY concluded his statement by describing how biotechnology could allow selection of genotypes resistant to different pathogens reducing the time factor at least 10 times.

Lastly, Dr. CAVALCASELLE informed the meeting of the establishment of a joint programme between Spain and Italy for selection for resistance to Cryptorhyncies lapathi and Phloeomyzus passerini.

REPORT OF THE WORKING PARTY ON POPLAR INSECTS

Introduction

The working party on poplar insects and other animal pests held its 10th session in Ottawa on 1, 2 and 3 October 1984. Because of the absence of the chairman, Mr. D. Cadahia, Mr. R.C. Morris was asked to replace him in the chairmanship during the session.

The following attended the meeting:

Abramhamson, L.P.	(U.S.A.)
Allen, D.	(U.S.A.)
Cavalcaselle, B.	(Italy)
Hamsen, R.	(Canada)
Moore, L.	(U.S.A.)
Morris, R.C.	(U.S.A.)
Robredo, P.	(Spain)
Shuchun Chen	(China)
Solomon, J.D.	(U.S.A.)
West, A.	(Canada)

1. Adoption of the Agenda

Opening the session the technical secretary, Mr. B. Cavalcaselle prepared the following tentative agenda:

1. Adoption of the agenda.
2. Reports on the sanitary situation of poplar and willow plantations in the different countries (see Reports of the National Commissions).
3. New insect pests and control methods.
4. Special papers.
5. Research on poplar resistance to insects.
6. Other business.

The agenda was approved by the participants.

2. Reports on the sanitary situation of poplar and willow plantations in different countries

Reports from the National Commissions of Canada, China, Italy, Spain and the United States were presented.

In Canada, the most important pests of poplars are Crystorhynchus lapathi among the xylophagous, and Malacosma disstria among the defoliators. The poplar leaf roll midge, Procdiplosis morrisi. Gagne is also an important pest in some places, and Mr. R.C. Morris reports that in Brockville (Ontario) some specimens of the midge were found to be parasitized by a Chalcidoidea belonging to the genus Platygaster (Platygastridae).

In China, at least 214 insect species are signaled as attacking poplar plantations. Among the most detrimental and widely distributed species, there are nine xylophagous insects: (Cossus mongolicus, Anoplophora glabripennis, Anoplophora nobilis, Apriona gemara, Ratocera horsefieldi, Paranthrene tabaniformis, Melanophila picta spp., decastigma, Cryptorhynchus lapathi and Saperda populnea), ten leaf eaters (Chrysomela populi, Plagiodera versicolor, Clostera anachoreta, Cerura menciaana, Stilpnotia salicis, Stilpnotia candida, Lymantria dispar, Apocheima cinerarius, Litnocolletis populifoliella, Tettigoniella viradis) and two sap-sucking insects (Quadraspidiotus gigas and Constokisspis perniciosus).

Control was carried out in some places with chemical insecticides and when it was possible (for example in the case of Apocheima cinerarius) by spraying against the young larvae with NEV at doses of 2-3 x10⁻⁰ PIB/ha. 1/

The propagation of a Bethyloid wasp (Scleroderma guani) was also carried out to protect poplars from the damages of the small poplar borer, Saperda populnea.

For Italy, the most important damages were caused by the xylophagous insects: Saperda carcharias, Cryptorhynchus lapathi in the plantations, and Paranthrene tabaniformis in the nurseries. Damages in the nurseries caused by the shoot moth Gypsonoma aceriana were recorded mainly in north Italy, while in central and south Italy during the summer drought of 1983, heavy attacks of the buprestid beetles Melanophila picta. Agrilus, Suvorovi populneus and Poecilonota varioles have been observed.

As concerns control methods, some new insecticides, (Acephate, Chlorpyrifosmethyl, Jodphenphos, Etrimpfos, Cypermethrine, Deltamethrine, etc.) have been tested successfully against Cryptorhynchus lapathi and Saperda carcharias. A systemic insecticide (Carbofuran), distributed by the drop irrigation method in the nursery, proved effective against the shoot moth Gypsonoma aceriana. Three species of nematodes (Steinernema feltiae, Steinernema bibionis and Herterorhabditis spp.) were also tested in a biological control trial against Cryptorhynchus lapathi and Paranthrene tabaniformis larvae.

Pheromone traps for monitoring the populations of Paranthrene tabaniformis and Gypsonoma aceriana have been tested on a large scale, with the purpose of reducing the number of summer treatments in the poplar nurseries. Insect resistance research on Phloeomyzus passerini and Cryptorhynchus lapathi has also been carried out.

In Spain, the damages caused by the xylophagous insects in the last two years seem to be less severe than in the past, because some poplar plantations that were heavily infested have been eliminated. Among the xylophagous, the most important insect Cryptorhynchus lapathi in poplar and basket willow plantations. In the last case, ground treatments were carried out against the adult weevil with Phenitrothion (powder, 5% pf A.I.) at a dose of 15-20 kg/ha. Results were very satisfactory. Sapera carcharias is also an important pest in the Ebro valley, and Melanophila picta is endemic in gravelly or sandy soils, where poplars suffers from drought during the summer.

Leaf defoliators have also provoked severe damages in some areas: in the Duero basin, more than 2000 ha of poplar plantations have been attacked by the Satin moth Stilpnotia (Leucma) salicis; aerial treatments have been carried out with 250 g/ha of Diflubenzuron (25% A.I., wettable powder) diluted in 20 litres of water.

1/ NFV: Nuclear polyhedrosis virus
 PIB: Polyhedral inclusions bodies

Severe infestations of the woolly aphid (Phloeomyzus passerini) were also recorded. Good results were obtained by spraying Pirimicarb and mineral oil, but usually the thinning of the plantations is sufficient to reduce considerably the damages.

As concerns the United States, in the North, damages are reported from the xylophagous Cryptorhynchus lapathi and Paranthrene dollii, while in the South, the cottonwood borer (Plectrodera scalator) and the clearwing moths seriously damaged the poplar nurseries. Studies on the cottonwood borer biology revealed a 1-year life cycle in roots of young eastern cottonwoods. Before this discovery, only a 2-year life cycle had been known. The shorter life cycle explains the rapid increase of borers in the nurseries. Chlorpyrifos and diazinon directed toward eggs and early larval stage at the root collar, significantly reduced the borer population. Three weekly applications of carbaryl, diazinon or chlorpyrifos should control adult beetles.

Damage on the leaves and on the young sprouts was controlled by aerial application of chlorpyrifos. Rates of 140, 211 and 281 g.a.i./ha averaged 98% or better control of larvae and adults combined, while the lowest rate of 71 g.a.i./ha gave 95% or better control. The treatment also killed 50% to 85% of the ladybeetles Colemagilla maculata, a major predator of cottonwood beetle eggs.

Release trials with C. maculata collected totally in Mississippi and Hippodamia convergens, collected in California, were made for young eastern cottonwood plantations infested with Chrysomela scripta. Ladybeetle predation seems to be effective, but the decline in C. scripta population was partially attributed to unusually hot dry weather.

Damage caused by beaver (Castor canadensis) was also reported from the Mississippi valley. The other National reports concerning poplar damages caused by insects and other animal pests were then examined.

A very exhaustive report has been prepared by the Belgian working group on poplar insects. Damages were caused mainly from defoliators Leucolma (stilpnotia) salica, Chalchoides aurata, Operophtera brumata, Phyllochistia suffusella 2, Zeugophora flavicollis and Stigmella trimaculella. Damages caused by the shoot moth Gypsonoma aceriana were also reported. The research work carried out by the Belgian working group during the period 1980-84 has been concentrated mainly in evaluating the resistance of several clones to Phratora vitollinae, Gypsonoma aceriana, Phyllocostis suffusella, Zeugophora flavicollis and Stigmella trimaculella.

For several of the above mentioned studies, a method has been developed in order to allow quantitative comparison of the sensibility of the various clones for a certain insect. The method allows the use of observations of even incomplete or heterogenous populeta. As only non-parametric tests are used, the method presents little restraint.

The first stage consists in a comparison of the three main clone groups taken as a whole: P. deltoides x nigrum, P. trichocarpa and P. trichocarpa x deltoides. A Kendall concordance test is then applied and secondly, the "relative sensibility" is calculated by comparing, within each populetum, the number of times each clone is more injured than another clone and by adding up the results for all the populeta.

Finally, the significance of the differences between clones is determined by a Wilcoxon or a Walsh test.

3. New insect pests and control methods

Five new poplar insect defoliators have been reported from New Zealand. They have been discovered in the Auckland area in 1980-82 and probably have been introduced from Australia (Hyalophora cecizopia, Samia cynthia and Antheraea pernyi) and from India (Dictyoploca simla and Actias selene). Korean infestations were destroyed and in 1983, only one live adult of Samia cynthia was found and it is thought that the other silkmoth species did not survive the winter.

All of the above mentioned Lepidoptera are considered a potential threat to deciduous trees and shrubs in the warmer part of New Zealand.

4. Special Papers

The following special papers were presented.

4.1 The poplar and willow borer, Cryptorhynchus lapathi (L.) (Coleoptera: Curculionidae) an introduced pest in Canada and the United States, submitted by R.C. Morris RPE.

After a short introduction, giving details on the host plants and the economic importance of the weevil in North America, the author examines the behaviour of the insect in Ontario, the natural and artificial control means and the different clonal susceptibility, as it results from observations carried out in the past years. Slides were also presented, illustrating the insect biology and damages.

4.2 New insects, affecting Populus spp. submitted by R.C. Morris RPE.

In a short communication, the author indicates that from the pupae of the poplar leaf roll midge, Prodiplosis morrisi Gagne, some Chalcidid wasps belonging to the Platygastridae emerged and were identified in May 1983 as Platygaster spp.; a new record for the United States.

4.3 Potential insect pest load on hybrid poplars - R. Harmsen

The author considers the risks of wide-spread new hybrid poplar plantations near the natural broadleaf forest stands. If potential insect pest species with sufficient genetic flexibility for adaptation to hybrid poplars do exist, we can expect a series of major new pest outbreaks, and it is doubtful if the use of different clones will help alleviate the severity of the outbreaks. He suggests starting a program of standard rearing for a dozen of potentially dangerous species, using selection techniques aiming to test the genetic flexibility of the different species and the potential risks that should arise.

The paper was discussed by the participants and the different opinions were reported as an appendix (see FO:IPC/I/84/5).

5. Research on poplar resistance to insects

After a wide discussion on the paper presented by Mr. Morris, the group agreed on taking the opportunity of organizing a common research program for the selection of poplars resistant to Cryptorhynchus lapathi and Phloeomyzus passerinii. The following conclusions were drawn:

- as concerns the selection of poplar clones resistant to Phloeomyzus, only Spain and Italy are interested at present in a common research program utilizing the method applied at the Poplar Experimental Institute of Casale Monferrato to evaluate the susceptibility. The common research will initiate as soon as possible and possibly other countries (Iran, Belgium, Yugoslavia) will join in the future;

- as concerns the selection of clones resistant to Cryptorhynchus, two different research lines seems to be important:

- a) the screening in the field of the new clones recently obtained from the breeders (check control of the attack percentages at the end of the weevil's larval activity period). A common methodology for the screening will be adopted from the researchers of the interested countries (Canada, Italy, Spain and the United States);

- b) the evaluation of the feeding and ovipositional activity carried out with the method of Defauce and Cadahia (v. Bull. SROP 1977/8. Eucarpia/IOBC Working group "Breeding for resistance to insects and mites", pp. 103-7). This method was already tested in Spain and was tentatively applied even for a small trial in 1984 in Italy, but it needs perhaps to be improved.

A common methodology therefore will be decided and tested in Italy and Spain in 1985, possibly in the future, also in other interested countries.

6. Other business

The technical secretary informed the group that Mr. L. Nef (Centre d'Etude en Ecologie et Silviculture - Bokrijk-B-3600 GENK) proposed that the next session of the group should be held in Belgium. The proposal was unanimously accepted.

As concerns the choice of a new chairman and technical secretary for the next period of activity, Mr. R.C. Morris suggested the names of Prof. R. Cavalcaselle (as chairman) and Mr. F. Robredo (as technical secretary). The proposal was accepted and the newly charged, on behalf of all those present, expressed their gratitude to Mr. Morris and Mr. Cadahia for their dedication of the working party.

After a short discussion on the future activities of the group, all the present joined in recognizing the necessity of a more strict cooperation and suggested that at least two circulars each year be sent to the participant, with information about group research. Obviously, for a better circulation of information, the participants have to inform periodically the technical secretary of their activities.

Details on the time and the programme for the next meeting will be decided in cooperation with Mr. Nef and quickly communicated to the group by the technical secretary. The session was then closed.

REPORT OF THE WORKING PARTY ON LOGGING
AND UTILIZATION OF POPLAR WOOD

Introduction

The Working Party on Logging and Utilization of Poplar Wood met in Ottawa on 1, 2 and 3 October, 1984, during the 17th Session of the IPC. The three meetings were attended by 40 participants, representing 14 countries. The meetings were chaired by Mr. J.J. Balatinecz of Canada. The technical secretary was Mr. A. Leclercq of Belgium. Dr. V.N.P. Mathur of Canada was moderator for the Monday morning technical session.

Technical Sessions

The full-day technical session on 1 October dealt with the theme of "Advances in Harvesting and Utilization Practices for Poplars and Willows". Twelve papers were presented on this theme, and an additional four were submitted for distribution. The Working Party intends to publish the proceedings of the meeting.

On Tuesday afternoon a joint meeting was held between the Ad Hoc Committee on Biomass Production Systems in Saliceceae, the Working Party on Logging and Utilization and the Ad Hoc Committee on Breeding. The joint session was attended by about 90 participants. The key-note paper dealt with the topic of "Possibilities for the Integrated Utilization of Hybrid Poplars".

Business Meeting

The business meeting of the Working Party was held in the afternoon of 3 October. The topic of discussion was future plans for activities by the Working Party. The following specific items were discussed.

1. Development of a directory of researchers and research institutions conducting R&D work in IPC member countries in the field of Logging, Utilization and Economics. Participants supported this idea and agreed to assist in its implementation. This task will be undertaken during 1985. The Secretariat of IPC will be informed and asked to assist with the distribution of the directory.
2. Development of a directory of Poplar and Willow user industries in IPC member countries. In addition a listing of equipment and machinery suppliers for Poplar and Willow harvesting and processing will be generated. Several good suggestions were put forward by participants on how to achieve the assembling of the directory. This task will be undertaken during 1986. Member countries of IPC will be asked to assist in the implementation of this plan.
3. Periodic Survey of Poplar and Willow Statistics and Economics. The Group discussed the proposal to computerize future surveys. It was generally agreed that this is a good idea. It was also recognized that while it would be useful to carry out the survey every two years, four year intervals are probably the best compromise because of the complexities of data collection. The main benefits of the data are the indication of production, cost and price trends. The data would also indicate the emergence of new user industries. FAO will be contacted for assistance and advice on how to best collect the data.

It was also suggested to redesign and simplify the questionnaire, as well as delete reference to legislative measures which are usually difficult to quantify.

The target date for the completion of the next survey is 1988.

4. Suggestions for next meeting. Recommendations were made to choose good meeting themes to attract participation from the industry sector. Also, to publicize the meeting well in advance.

REPORT OF THE MEETING OF THE AD HOC COMMITTEE
FOR THE BREEDING OF POPLAR
OF THE INTERNATIONAL POPLAR COMMISSION
AND OF THE WORKING GROUPS
IUFRO S2.02.10 "ORIGINS OF POPLAR"
AND S2.03.07 "BREEDING OF POPLAR"

Monday, October 1, 1984

The representatives of the National Commissions of the United States and Canada provided information regarding the improvement of poplars and willows in their countries. For the United States, the disappearance is noted of management programs of the groups in Stoneville, Mississippi, Durham and New Hampshire for economic reasons. In general, as elsewhere, the efforts have been changed from pure selection to improvement through inter and intra specific hybridization. In the section Leuce the Institute at Appleton, Wisconsin, works on local and European species. Progress has been made on the resistance to Hypoxylon canker through the technique of in vitro evaluation. For the sections Tacamahaca and Algeiros most groups have obtained hybrids between Populus trichocarpa and P. deltoides of which the performance is quite superior to these of the balsam parent. With regard to P. deltoides 5 clones of Stoneville are now kept for plantations but only one of three provenance trials taken up by the Southern Hardwood Laboratory has been planted. Finally, the University of Illinois suggests utilizing specific hybridization fitness for the production of uniform and homogeneous offspring.

In Canada the principal program deals with studies of indigenous species, hybridization, cytology, vegetative propagation and the arboretum development. The native species studied are P. trichocarpa, P. tremuloides and several willows. These are regional studies. Only the international test of IUFRO provenances of P. trichocarpa deal with the overall extent of the species. Interspecific hybridization regarding exotic species started in the 30's are now followed up in Quebec, Ontario and Manitoba. Clonal tests taking place in the majority of the provinces deal with Canadian and American and several European clones.

REPORT ON THE JOINT MEETING OF THE IPC AD HOC COMMITTEE
ON POPLAR BREEDING IUFRO WORKING PARTY
S2.03.10 POPLAR PROVENANCES
IUFRO WORKING PARTY S2.03.07 BREEDING POPLARS

Wednesday, October 3, 1984 Afternoon

Topic: The identification and surmounting of crossability barriers in Poplar and Willow species.

Two methods of overcoming crossability barriers were discussed by the authors. The first method involved the utilization of interspecific hybrids as parents. The second involved the physical and/or chemical treatment of the stigmatic surface.

Interspecific hybrids were created to examine both crossability patterns and clarify the taxonomic relationship between the parents. The creation of these hybrids allowed the breeder to combine desirable characteristics from each parent into the hybrid (i.e. frost hardiness, drought tolerance). It is recommended that a greater number of these crosses be made to enlarge the gene pool from which promising hybrids are selected. Many of these hybrids show varying degrees of vigor; large numbers drop out of field trials after several years. Vigorous hybrids may be produced by back-crossing the original F_1 hybrids to one of the parent species.

Physical and chemical methods overcoming crossability barriers are being studied at the University of Lyon in France. Research is centered on the determination of the sporophytic and/or gametophytic mechanisms characterizing the compatibility barriers. A project has been initiated to identify the substances involved in the pollen-stigma recognition process. Using these results, the researchers are attempting to develop a standard technique, or series of techniques, in overcoming compatibility barriers. The methods developed by these researchers will facilitate the production of viable hybrids.

Topic: In vitro culture and poplar breeding

Based on the development of mass-propagated, superior clones (genotypes) the Hann Munden team has proposed that in vitro culture be used as a breeding technique. They have developed a system that begins with explants (meristematic tissue) and concludes with a rooted plantlet (clone) in three weeks.

This technique has wide application in the rapid screening of clones for disease resistance. The canker disease caused by Xanthomonas populi subsp. populi (Ride) was used to infect plants raised from tissue culture. Susceptible clones rapidly exhibited disease symptoms. This technique could be employed in screening for other diseases as well as damage caused by abiotic factors.

The technique can be used to determine ploidy levels and could be used in field of genetic engineering when protoplast fusion becomes practical.

In vitro culture may be applied to storing germplasm in gene banks. Tissue culture may facilitate the exchange of plant material with other countries, thereby avoiding the risk of importing contaminants (insects and disease).

The committee wishes to support recommendations 3 and 4 proposed by the Ad Hoc Committee on Biomass.

The committee wishes to work together with the Working Party on Diseases to develop a definition of vertical and horizontal resistance associated with each economically important disease affecting poplar.

At the end of the session the committee unanimously supported the nomination of Dr. Vic Steenackers as the chairman of the IPC Ad Hoc Committee on Poplar Breeding.

K. Falusi
October 3, 1984

REPORT OF THE AD HOC COMMITTEE ON BIOMASS PRODUCTION

SYSTEMS IN SALICACEAE

The 3rd meeting of the Ad Hoc Committee on Biomass Production Systems in Salicaceae was held in Ottawa, Canada, October 1 to 3, 1984. The meeting agenda was prepared according to a programme accepted at the 2nd meeting of the Ad Hoc Committee. Delegates from 15 countries for a total of 50 persons participated in the meeting.

Two key-note papers were presented: "The opportunities for and limitations to biomass production for energy" by Dr. M. Prevosto, Italy, and "Critical aspects influencing production and economics of biomass systems", by L. Zsuffa and C.S. Papadopol, Canada. The discussion on these reports concluded that:

- in some industrialized countries, members of IPC, the current socio-economical situation favours traditional poplar culture, oriented to growing regular, large size trees and whole tree utilization (biomass utilization) in such systems.

- in other industrialized countries, with available land base, the socio-economics of biomass plantations appear favourable and the governments examine biomass plantations as a solution for fuel and fibre supply.

- in developing countries biomass production and utilization in rural areas can provide a significant and steady local supply of fuel and fodder and improve regional socio-economics.

- there is a considerable amount of information available for the implementation of the biomass plantation and utilization concept.

- the research has to continue on critical aspects such as genetic improvement, cultural treatments, protection and mechanization.

The meeting continued with papers presented by representatives of Canada, Federal Republic of Germany, Hungary, Sweden, U.S.A, and Yugoslavia covering various aspects of biomass production research and management, such as: the influence of fertilization and irrigation, new planting techniques, clonal trials, economics and current experiments. Delegates from Pakistan and Turkey submitted documents but were not present. A total of 20 papers were submitted to the meeting of the Ad Hoc Committee.

The biomass terminology as applied to production and utilization in its different forms was a topic of discussion. The Ad Hoc Committee agreed on the proposal given in Appendix 1. Dr. A. Dre, U.S.A. agreed to develop further guidelines for the use of terminology appropriate to biomass production systems.

A proposal for a tree for biomass plantations was another topic of discussion. It was concluded that the criteria be presented to the joint meeting with the Ad Hoc Committee on Genetics.

In the afternoon of Oct. 2, 1984, two joint sessions of the Ad Hoc Committee on Biomass took place, with the Ad Hoc Committee on Genetics and Working Parties on Logging and Utilization, Diseases and Insects. Several papers were presented, and 90 persons attended these meetings. Discussions centred on breeding for biomass quality, diseases and on the tree for biomass plantations. It was agreed that a Committee headed by Dr. Papadopol, Canada, with Dr. Dickmann, U.S.A., and Dr. Steenackers, Belgium, review the list of criteria, and submit a final proposal. This proposal is given in Appendix 2.

In the afternoon of Oct 3, 1984, the National report of China was presented and an over-view of activities related to biomass production systems in IUFRO, IEA and other FAO groups was given. It was concluded that the cooperation with these groups is beneficial and recommended. Finally, a programme proposal for the next period was discussed and agreed upon. This proposal is given in Appendix 3.

The participants concluded, that the Ad Hoc Committee has to continue with monitoring and identifying critical problem areas and with studies in order to find solutions for the same, aiming at optimum production technologies. Special attention has to be given to the needs of developing countries, member of IPC.

Breeding for tolerance to disease and pests is an important factor of stability in biomass plantations and is highly recommended. The breeding for specific clonal qualities in biomass appears promising in view of considerable clonal variation detected. Such breeding is, however, justified only in the case of known, stable and specific markets.

C.S. Papadopol
L. Zsuffa Secretary
Chairman

Definitions of Forest Biomass and its Product

Whole tree - all of the aboveground biomass of a tree, including leaves, bark and branches, and stem to ground level.

Complete tree - all of the above - and below ground biomass of a tree.

Standing crop biomass - wet or dry weight or volume of living and dead material per unit area or individual; the forest or plantation may be considered a tree crop.

Standing dead biomass - wet or dry weight or volume of dead material per unit area or individual.

Forest or tree biomass - a general term often equatable with standing crop biomass, but less explicit.

Biomass Forests or Plantations - those stands of trees in which the harvesting and utilization of whole or complete trees is the objective at the time of establishment; a natural forest could be whole-tree harvested, but should not, strictly speaking, be considered a "biomass forest".

Forest biomass utilization system - a term referring to the process of establishment of biomass forest and plantations, their cultivation, and consequent harvesting and processing on a whole or complete tree basis.

Forest or biomass productivity - the increase in wet or dry weight or volume of living and dead material per unit area or individual per unit per time; a similar term, mean annual increment (m.a.i.), refers to the increase in stem or bole weight or volume per unit area per unit time. The terms, "gross" and "net", then may be applied to m.a.i. to refer to the inclusion or exclusion, respectively, of dead material. Biomass production may be expressed on the basis of the whole tree or parts thereof, or the complete tree. Alternative terms are "aboveground", "belowground" and "total biomass production".

Note: Units for expression of biomass and biomass production should be metric or International System.

Proposed Tree for Biomass Plantations

1. Fast juvenile growth.
2. High and constant sprouting ability.
3. Immunity towards foliar diseases.
4. Resistance to stem diseases.
5. High capacity for healing of cuts and low stump decay rate.
6. Responsiveness to increased cultural inputs.
7. Non-preference from insect pests.
8. Narrow crown with relatively few ascending branches.
9. Ability to fully use the growing season.
10. Dark foliage with high specific leaf weight.
11. Tolerance to post-planting herbicides.

Criteria are listed in descending order of importance.

Ad Hoc Committee on Biomass Production Systems Program of Workproposal for 1984-88

1. Evaluate FAO sponsored reports on biomass production in Asia and N. America in the view of the needs of developing countries. Make contacts with countries and propose actions for assistance. Ask FAO support for the project.
2. Produce a manual for biomass production based on FAO sponsored reports and other sources, specifically for use by developing countries. Ask for FAO support.
3. Develop common data base in order to improve the efficiency of biomass production. Identify critical factors in systems by production functions, growth modelling, analysis of energetic balance and economic studies. Cooperate with other international organizations and groups in this task. Ask for FAO support.
4. Develop a compendium of information on qualities and variation on species, provenance, family and clonal levels in the traits which are important in growing and utilization of Populus and Salix. Cooperate with IPC groups, other international groups and organizations, and obtain FAO support for this task.
5. Develop standards for Populus and Salix biomass qualities to assist breeding, culture, and utilization. Ask IPC working party on logging and utilization to coordinate this task, with FAO's financial assistance and in cooperation with IEA/FE cooperative project on this task, as well as with this Ad Hoc Committee and the Ad Hoc Committee on Genetics.
6. Specify further and perfect the tree for biomass plantations proposed at this session. Cooperate with Ad Hoc Committee on Genetics on this task.
7. Develop further the biomass production and utilization terminology and definitions proposed at this session. Obtain comments from IPC and other FAO, IUFRO, and IEA groups concerned and try to achieve an agreement for uniform usage.
8. Survey periodically the state of art of biomass programmes in IPC countries and facilitate information exchange.
9. Develop active cooperation with international organizations involved with biomass production systems in order to improve efficiency. Organizations with which cooperation should be sought include FAO/CNRE, other sections of FAO Forestry Department, IUFRO groups and the IEA Forestry Energy Agreement. Contribute articles and reports to Forest Energy Newsletter published by IEA/FE.

LIST OF PAPERS PRESENTED TO WORKING GROUPS
THE SUBCOMMITTEE AND AD HOC COMMITTEES

Insect Pests of Poplars

<u>Number</u>	<u>Title</u>
FO:CIP:I/84/1	Situation sanitaire des plantations de Peuplier en Italie: Problèmes actuels et perspectives futures G. Lapietra, B. Cavalcaselle.
FO:CIP:I/84/2	The poplar and willow borer <u>Cryptorhynchus lapathi</u> (L) (Coleoptera: Curculionidae) an introduced pest in Canada and the United States R. Morris
FO:CIP:I/84/3	New insects affecting <u>Populus</u> spp. R. Morris
FO:CIP:I/84/4	Report of the Belgian Working Group on Entomology to the 17th Session of the International Poplar Commission L. Nef
FO:CIP:I/84/5	Potential Insect Pest Load on Hybrid Poplar R. Harmsen

A poster illustrating the damages caused by the most important poplar insects in the United States was presented by Mr. J.H. Solomon.

Logging and Utilisation of poplar wood

<u>Number</u>	<u>Title</u>
FO:CIP:N/84/1	Advances in harvesting technology for short rotation poplar and willow C.P. Mitchell
FO:CIP:N/84/2	Profitability in poplar growing system in Turkey A.S. Birler
FO:CIP:N/84/3	Economic benefits of intensive poplar cultivation Kung Fan-Wuan
FO:CIP:N/84/4	Composites thermoplastiques avec fibres du bois: Polyméthacrylate de Méthyle B. Kotka, P. Kamden, A. Beshay, C. Daneault
FO:CIP:N/84/5	Composites thermoplastiques: Polypropylène avec fibres du bois F. Dambale, B. Kotka, A.D. Beshay
FO:CIP:N/84/6	Utilisation des fibres de bois greffées dans les composites thermoplastiques F. Danbele, B.V. Kotka, C. Daneault

- FO:CIP:N/84/7 Propriétés physiques d'une pâte de bois modifiée avec des polyacrylates
C. Daneault, B.V. Kotka, J.L. Valade
- FO:CIP:N/84/8 Uses of fibres in thermoplastic composites: II Polyethylene
A.D. Beshay, B.V. Kotka, C. Daneault
- FO:CIP:N/84/9 Chemimechanical and Chemithermomechanical pulping of trembling aspen
K.N. Laso, M. Lapointe, S. N. Low, J.L. Valade
- FO:CIP:N/84/10 A report on thinning Black willow
M.L. Monroe
- FO:CIP:N/84/11 An overview of poplar and willow statistics and economics
J.J. Balatinecz, H.A. Van der Meiden

Diseases of poplars

- | <u>Number</u> | <u>Title</u> |
|----------------|--|
| FO:CIP:D/84/1 | Influence de la conduite en taillis du peuplier sur la mycoflore de la Rhizosphère
N. Anselmi |
| FO:CIP:D/84/2 | Results of a survey conducted in Casale Monferrato regarding the influence of spacing and fertilization on phytosanitary situation of poplar plantations
G.P. Cellerino, N. Anselmi |
| FO:CIP:C/84/3 | Resistance to <u>Melampsora larici-populina</u> of hybrid progenies from the cross <u>Populus deltoides</u> x <u>P. ciliata</u> A.G. Wilkinson |
| FO:CIP:C/84/4 | Brookfield populetum 1983, a gene pool of disease resistant poplars for New Zealand.
A.G. Wilkinson |
| FO:CIP:D/84/5 | Influences des déficiences minérales sur la sensibilité des feuilles de <u>Populus</u> x <u>euramericana</u> (Dode) Guinier.en "Regenerata de Meerokeren" a <u>Marssonina Brunnea</u> (Ell. et Ev.)
P. Magn.
J.P. Lahouste |
| FO:CIP:D/84/6 | Influence of temperature on apothecial development of <u>Drepanopeziza tremulae</u>
A.G. Spiers |
| FO:CIP:D/84/7 | Influence of temperature on the duration of incubation and infection severity of <u>Marssonina</u> species
A.G. Spiers |
| FO:CIP:D/84/8 | Pests and pathogens of <u>Salix</u> stoolbeds nurseries in New Zealand
A.G. Spiers |
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Nomenclature and registration of poplars

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Miscellaneous

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