There were 92 participants from 23 countries. The many professional disciplines represented included research workers from universities and institutes, Directors of research, and representatives of branches of the potato industry.

The proceedings of the Conference will be published in a special issue of the international journal *Plant and Soil*. Participants will receive a free copy. Non-participants can order the proceedings in due time (ca August 1989) at one of the following addresses:

Kluwer Academic Publishers  
Distributiecentrum  
P.O. Box 322  
3300 AH Dordrecht  
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Kluwer Academic Publishers  
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P.O. Box 358  
Accord Station  
Hingham, MA 02018-0358  
U.S.A.

Conclusions of the Conference and recommendations for further research, prepared by Dr. D.E. van der Zaag, follow hereafter.

The Conference was the first one under the joint auspices of the EAPR and PAA. It was a stimulating event which, hopefully, will not remain the only one in its kind.

J. Vos  
Chairman of the organizing committee

CONCLUSIONS AND RECOMMENDATIONS FOR FURTHER RESEARCH

INTRODUCTION

This report outlines current knowledge of the effects of crop rotation on potato production in temperate zones and summarizes recommendations for further research. It is based on seven invited review papers and on twenty-seven papers that were presented and discussed during the Conference. This report has not been discussed at the Conference; it represents the personal views of the author.

CONCLUSIONS

1. The area cropped with potatoes has decreased because although consumption has remained stable the yield per unit area has increased. This decrease will not and has not affected the frequency of the potato crop in rotation systems because there is a trend towards specialization in agriculture in general and in potato production in particular which, in some of the main potato producing regions in Western Europe, may result in even shorter potato rotations. However,
specialization alone, through better growing techniques, may compensate in part for the adverse effects of short rotations on tuber yield.

2. The effect of short rotations on tuber yield and tuber quality varies greatly. For example, in the absence of potato cyst nematodes, the decreases in yields from 3-year compared to 6-year rotations can range from 5 to 15%. The effects on tuber quality, difficult to quantify, include changes in tuber size and increases in tuber malformations and in the incidence of attacks by pathogens and pests. The effects on both yield and quality are caused by wide variations in and interactions between:
   a. soil type and soil structure (the chemical and physical fertility of the soil),
   b. climate,
   c. other crops in the rotation and weeds,
   d. the incidence of a wide range of soil-borne organisms which affect production potential of the potato crop.

3. Crop rotations affect chemical and physical soil properties. For example, if potato rotations are too short, soil structure, in particular of clay or silt soils, can deteriorate and the soil may become compacted to extents which depend on soil type and on the techniques of mechanization used. However, in time these effects may largely be overcome by using appropriate fertilizer rates, growing techniques, and green manure in the rotation. It is noteworthy that the crop preceding potatoes often has a greater effect than the length of the rotation.

4. The effects of micro-organisms on yield and quality are much greater than those of chemical or physical soil properties. Soil-borne pathogens and pests, some of which are mentioned below, play a predominant role in effects of crop rotation on tuber yield and quality.

**NEMATODES**

The most important nematodes affecting yield and quality are: Potato cyst nematodes (*Globodera* spp.) and non-cyst forming nematodes such as *Meloidogyne hapla* and *M. chitwoodi*, *Paratrichodorus* spp. and *Trichodorus* spp., *Ditylenchus destructor* and *Pratylenchus* spp. Of these, *Globodera* spp. have the greatest potential for reducing yield and they are also an important quarantine pest. There are good quantitative reports on the populations of potato cyst nematodes and their effects on yield as influenced by crop rotation, the use of resistant cultivars, and the application of nematicides.