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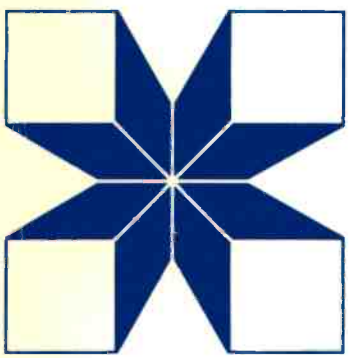

CANADA

OIL CROPS: SESAME AND SUNFLOWER SUBNETWORKS

PROCEEDINGS OF THE JOINT SECOND WORKSHOP HELD IN CAIRO, EGYPT, 9–12 SEPTEMBER 1989

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This series includes meeting documents, internal reports, and preliminary technical documents that may later form the basis of a formal publication. A Manuscript Report is given a small distribution to a highly specialized audience.

La présente série est réservée aux documents issus de colloques, aux rapports internes et aux documents techniques susceptibles d'être publiés plus tard dans une série de publications plus soignées. D'un tirage restreint, le rapport manuscrit est destiné à un public très spécialisé.

Esta serie incluye ponencias de reuniones, informes internos y documentos técnicos que pueden posteriormente conformar la base de una publicación formal. El informe recibe distribución limitada entre una audiencia altamente especializada.

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OIL CROPS:
SESAME AND SUNFLOWER SUBNETWORKS

Proceedings of the Joint Second Workshop held in Cairo, Egypt, 9–12 September 1989

Edited by
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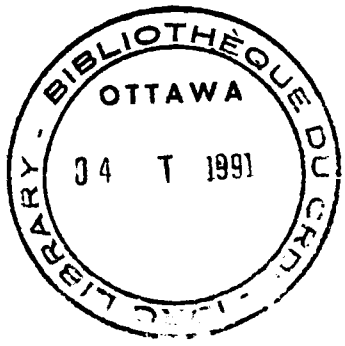

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FOREWORD

In September 1989, the Sunflower and Sesame subnetworks held their bi-annual meetings in Cairo, Egypt. The meetings were well attended and papers, presented in these proceedings, provide a very informative overview of some of the cropping systems, management practices, production constraints and research highlights for both crops in several countries.

Chronic edible oil deficit is a major problem facing many developing countries in Africa and Asia where most countries are forced to import large quantities to satisfy the requirements of their growing populations. With the present rates of population increase and the improvement of nutrition standards it is likely that the consumption of edible oil will rise over the years, increasingly drawing on scarce foreign exchange for the importation of this vital food staple. For this reason, several countries have opted to increase self-sufficiency in edible oil.

Production deficits are due to a number of factors, among which neglect in oilcrops research, in both developed and developing countries has been a major one. This is particularly true for minor crops such as sesame. In the context of the IDRC oilcrops network, initiated in 1981, the interchange of information and the sharing of results between scientists have proved to be very useful and beneficial for the generation of scientific knowledge and the stimulation of research in this important area. It is hoped that conclusions and recommendations of this meeting will stimulate further research and development in the future.

A second important reason for limited national production has been the exceptionally low levels of world prices for oils and fats in the 1980's and the comparative advantage of importation over production for developing countries. The description of a case study using a system's approach to analysis the Vegetable Oil/Protein System of Kenya has stirred much interest during the Cairo meetings and it is hoped that similar work can be carried out in other countries in the future.

The Cairo meetings will also unfortunately be remembered as the one which has witnessed the diagnosis of the fatal disease of late Dr. Hiruy Belayneh, Chairman of the Brassica Subnetwork. We will all regret his absence.

On behalf of IDRC and of all participants, I would like to thank the Government of Egypt for its hospitality, the organizers for the excellent arrangements and all those who contributed to the success of these meetings by their presentations and discussions.

Eglal Rached,
Senior Program Officer,
IDRC, Cairo

CONTENTS

REVIEW AND PROSPECTS ON SESAME PRODUCTION IN CHINA[1]

Tu Lichuan

Review

Sesame (*Sesamum indicum* L.) has been cultivated in China for more than 2,000 years, and it remains to be a major oilcrop in the country. Sesame is rich in oil and other nutrient ingredients. Its oil possesses a pleasant flavor and is regarded as a superior grade vegetable oil. Besides extracting oil, sesame is also broadly used in food, confectionery, medicine, perfume and other light industries. In comparison with other major oil crops, however, its yield is lower and more unstable, and owing to its shattering characters it can not be harvested by machine.

Sesame production in China passed through the periods of decline (1956-1977), recovery (1978-1984) and development (1985-) over the past four decades. In 1955, the sesame area in China had reached as much as 1,147,000 ha, but was reduced continuously afterwards. In 1975, it dropped to the lowest point, only 534,000 ha. In the mean time, production also dropped from 521,000 MT in 1953 to 151,000 MT in 1960. A reduction of 70% occurred within this period. In more than 20 years, 1956-1977, the area and production of sesame in China remained rather in a low level, Figure 1. This is because, China is a developing country with huge population, it has to give priority to develop high yielding cereals and oilcrops to meet the demands of the people.

Since 1978, along with the growth of the nation's economy, and progress of the scientific research in sesame itself, the production has then turned to a recovery stage. In 1985, the sesame area again expanded to 1,052,000 ha, almost equal to the area of 1955, Figure 1. The sesame production of that year was 691,000 MT, 32.6% higher than the historic record in 1953. In the recent 10 years, from 1976 to 1985, sesame area increased by 87.5%, and the production increased from 229 to 691,000 MT, almost tripled. Figure 1 shows that the yield is very unstable. This is because sesame is very susceptible to any undesirable weather conditions such as drought, too much precipitation, low temperature, etc., and the irrigation and drainage facilities in fields are not sufficient. On a grand scale, however, the yield has improved steadily in every decade: 370 kg/ha in 1950s, 388 kg/ha in 1960s, 434 kg/ha in 1970s and 502 kg/ha in 1980s, Table 1. The average yield of 1981-1987 was 49.2% higher than that of the 1950s. In 1985, the sesame production in China reached a record high of 660 kg/ha. This achievement was made mainly due to:

1. New varieties with characteristics of high yield, disease resistance and tolerance to water-logging were bred and released.

2. Extension to the farmers, of improved agronomic approaches, such as optimum sowing date, proper rotation of crops, rational close planting and prevention and control of diseases and pests,

[1] Paper sent but not presented.

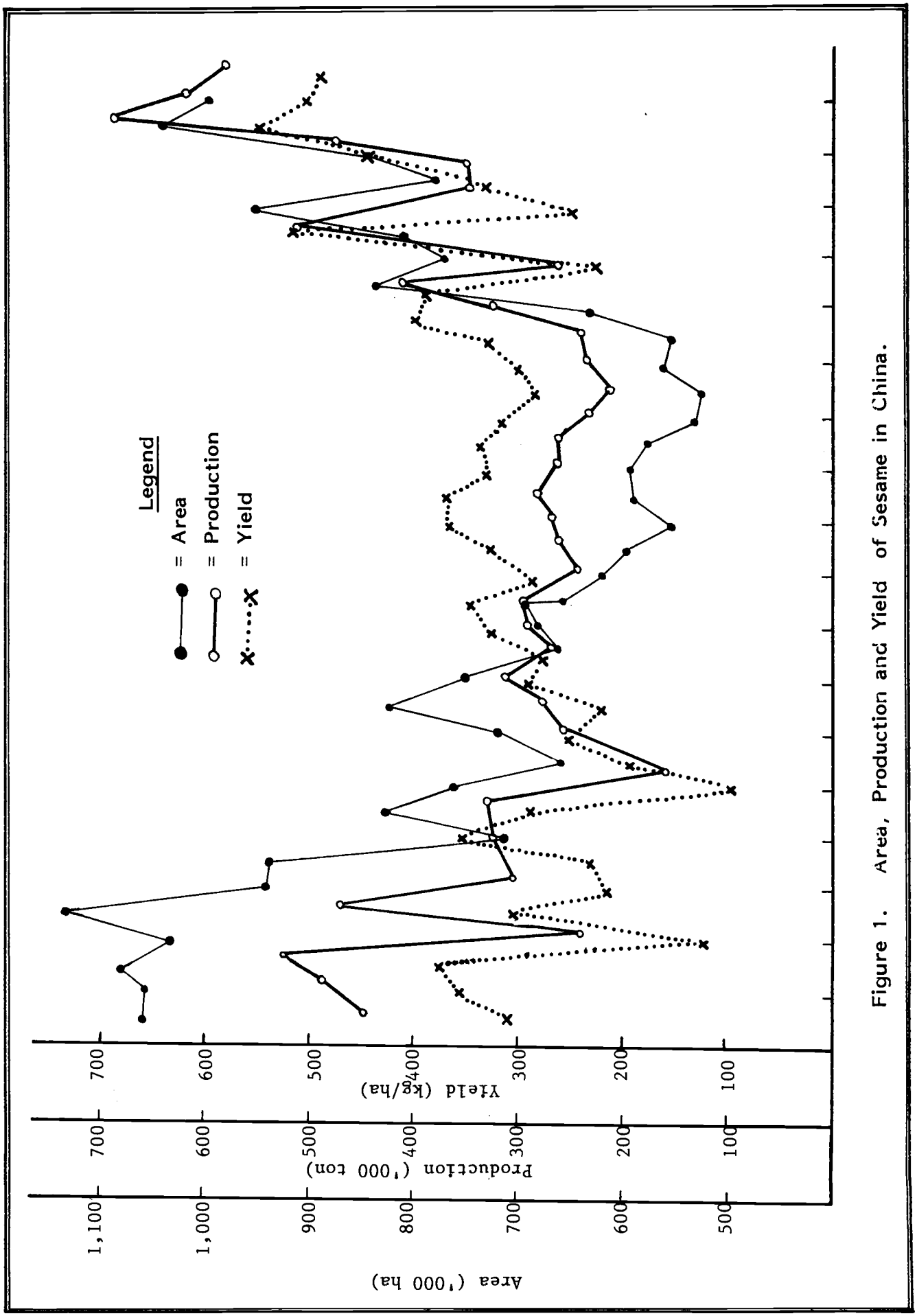

Figure 1. Area, Production and Yield of Sesame in China.

3. Improvement of basic conditions, such as irrigation-drainage engineering and fertilizer application.

4. Encouraging policy of the government for developing oil crops, and

5. The international scientific consultation and cooperation in sesame research and production.

Prospects

Although we have made some progress in sesame production in recent years, and have the confidence in its further development, we are still facing a series of tough tasks to be solved. As to our consideration, a minimum yield of 900 kg/ha is required to make sesame competitive with other crops, and this target might be reached through:

1. Reinforcing the breeding programs: It seems the most actual way to improve the sesame yield. If the cooperation in exchange of germplasm, breeding stocks and advanced breeding methods can be strengthened, it will speed up the breeding of new desirable and high yielding varieties.

2. Improving agronomic approaches: Many demonstrations showed that sesame yield in a small plot may be as high as 1,500 kg/ha or even higher. This indicates that great potentialities exist in sesame production. Applying advanced agronomic approaches is an important way to raise the yield.

3. Using heterosis and male-sterile strains: Experiments showed that heterosis in sesame do exists. The yield of a hybrid can surpass the best local variety by 50-60%. Although it is not practicable at present it is very promising in the future. The recessive genetic male-sterile strains in sesame have been selected. If these strains can be turned into dominant, they will hopefully be used in hybrid production.

4. Improving the field construction, especially the irrigation and drainage systems.

5. Encouragement of government policies, and

6. International cooperation: FAO and the IDRC's Oil Crops Network have done a series of admirable efforts to push forward the development of sesame research and production and the cooperation among scientists around the world. These efforts are effective and productive. They promote the improvement of sesame in many countries, and so also in China. We are looking forward to a close cooperation with our colleagues who are interested in this field.

Table 1. Average Area, Production and Yield of Sesame in China during 1950s, and 1980s.

	Area		Production		Yield	
Period	000 ha	% of (1)	000 MT	% of (1)	Kg/ha	% of (1)
(1) 1951-60	959	100.0	354	100.0	370	100.0
(2) 1961-70	679	70.6	263	74.3	388	104.9
(3) 1971-80	622	64.9	270	76.3	434	117.3
(4) 1981-87	908	94.7	502	141.8	552	149.2