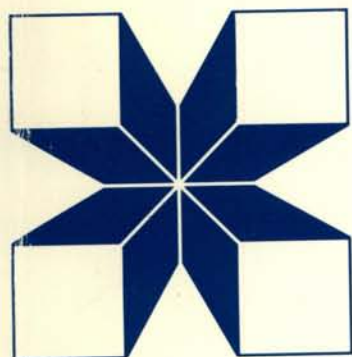


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**OIL CROPS:
PROCEEDINGS OF THE
THREE MEETINGS HELD
AT PANTNAGAR AND
HYDERABAD, INDIA,
4 – 17 JANUARY 1989**

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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.

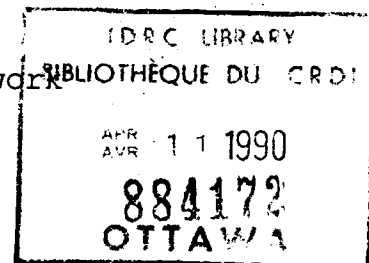
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**OIL CROPS:
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PANTNAGAR AND HYDERABAD, INDIA, 4-17 JANUARY 1989**

1. The Brassica Subnetwork-II
2. The Other Oil Crops Subnetwork-I
3. The Oil Crops Network Steering Committee-I

Edited by

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Organized by

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OILSEEDS RESEARCH IN INDIA: NETWORK, ITS SET UP, ORGANIZATION, PAST ACHIEVEMENTS AND CURRENT RESEARCH THRUSTS

V. Ranga Rao

Organizational Structure Of Indian Oilseeds Network

The annual oilseeds constitute very important agricultural commodity in India: at current levels they account for about 11% of gross cropped area and 10% of the value of the aggregate output from agriculture. India holds unique position in the world both in terms of acreage as well as the diversity of oil yielding species grown and the crop growing situations. Barring some sporadic and fragmented research efforts under either State/Centrally Sponsored Programmes oilseeds received little or no research support until late 60's. Realizing the stagnation in the production of oilseeds coupled with violent fluctuations in space and time, low per hectare yields and the multiplicity of production of problems plaguing the oilseeds front in the country and as a sequel to the recommendation of the sub-committee set up by the Government of India, the ICAR established the All India Coordinated Research Project on Oilseeds (AICORPO) in 1967. The project which marks a significant milestones in the history of oilseeds research and development in the country initially started with five oilseed crops namely, groundnut, Brassicas, sesame, linseed and castor and a modest outlay of 10 million rupees spread over 32 research centres. Over the years the AICORPO underwent rapid growth both in terms of research network as well as manpower engaged, investments and crops handled; today, the project has a network of 63 centres with 101 problem oriented multidisciplinary teams spread over 17 states covering 8 oilseed crops/crop commodities. The Directorate of

Oilseeds Research, Hyderabad (established in 1977) which is headquarters of the AICORPO is backed up by 7 crop coordinating units one each for principal crop(s)/crop commodities viz. groundnut (Junagadh, Gujarat), Rapeseed-Mustard (Hisar, Haryana), Sesame & Niger (Jabalpur, Madhya Pradesh), Safflower (Solapur, Maharashtra), Sunflower (Bangalore, Karnataka), Castor (Hyderabad, Andhra Pradesh) and Linseed (Kanpur, Uttar Pradesh) located in the heart of their respective crops cultivation in monitoring and coordination of the oilseeds research programmes in the country. The headquarters of crop coordinating units also serve as active centres of genetic resource conservation. Documentation, evaluation and exchange in their respective crop/crops. Besides, there is also a National Research Centre for groundnut (established in 1979) Junagadh to provide the needed basic research support to the AICORPO.

Major Research Achievements

The last two decades of organized and systematic research in oilseeds has indeed paid rich dividends. Breeding researches launched both within and outside the project since their inception have resulted in the release/identification of as many as 200 and odd improved varieties/hybrids of either specific regional or multi state importance in different annual oilseed crops. Included in this are also a number of commercial hybrids developed in crops like sunflower and castor. As compared to their traditional counterparts the new generations of varieties/hybrids are high yielding and carry in some cases one or the other superior

agronomic attributes such as in-built tolerance/resistance to major insects/diseases, early maturity, photo-thermo-insensitivity, etc. Of specific importance among these is the development of early maturing varieties of groundnut, sesame, sunflower, rapeseed and soybean which made introduction of oilseeds in double and multiple cropping systems possible in several rainfed and irrigated areas.

Besides evolution of new varieties/hybrids in different oilseed crops, research efforts so far made have also opened a wide range of new avenues for improving area, production and productivity of oilseed crops and minimize instabilities so often associated with their cultivation. Based on the efficient areas and situations identified for cultivation of different annual oilseeds in the country possible areas of diversification of prevailing crop base, feasible and viable inter and sequential cropping systems with oilseeds either as base or inter/mixed/sequence or relay crop have also been perfected for each of the crops and crop growing situations in the country. The exploitation of oilseeds in sole/sequence/relay and inter and mixed cropping systems in all their proven and efficient areas of cultivation is expected to lead to sizeable increase in their acreage and production.

Yet another significant output of the past researches is the refinement of agro-production and protection technologies required to derive the full potentials of oilseeds in sole, sequential and intercropping systems. Considering the economy of the bulk of the farmers and the prevailing farming practices, major emphasis on the agronomic front is laid on cost reducing or simple low-cost technologies such as optimal planting time, precession and

timeliness of crucial operations like weeding, minimal irrigation, fertilizer application; seeding rates, devices, quality seed, scientific crop rotation, interculture, etc. Research data so far available from different crops and regions show that farmers can easily raise their yields and incomes from oilseeds in both rainfed and irrigated areas by as much as 20-50% just by switching over to such simple low-cost practices.

Apart from development of fertilizer schedules, their rate, time and method of application, integrated management practices for minimizing losses from insect pests and diseases oilseeds researches in the country also established crucial role of life saving/minimal irrigation at sensitive stages of crop growth or whenever soil moisture and rainfall conditions warrant. Crops which benefited from such life saving or minimal irrigation yielded additional yields to the tune of 30-40% over control plots. The inherent low water requirements of oilseeds and their higher demonstrable yields per unit area, time, input and water has in fact paved way for increasing popularization of oilseeds in place of those requiring too frequent and excessive irrigation such as winter/summer groundnut in place of rice; safflower and rapeseed-mustard in place of wheat etc. in the command areas of various major and minor irrigation projects particularly under conditions of limited water availability.

Results of on-farm trials available from different agro-ecological and crop growing situations highlight the vast untapped yield reservoir that exists even with the currently recommended improved varieties and production and protection technologies generated. Based on the demonstrable potentials of

presently available crop varieties and technologies increasing thrust in the country's oilseeds development programmes is laid on:

1. Exploitation of available agro-production and protection technologies and crop varieties;
2. Diversification of crop base with more profitable and efficient oilseed crops in different areas/situations;
3. Introduction of oilseeds as intercrops in cereals, millets legumes and non-legumes to improve yield and returns from drylands;
4. Exploitation of feasible and viable oilseed-based double and multiple crop sequences; harnessing the superior potentials of oilseeds under limited irrigation.

Considering the crucial role of quality seed which is a basic input the project has also been laying considerable emphasis on production of basic and breeder seed of various annual oilseed crops. During 1988-89 the project has produced as much as 1061 tons of breeder seed which include 755 tons of groundnut; 5 tons of rapeseed-mustard, 27 tons of sunflower; 254 tons of soybean and 20 tons of other oilseeds.

Major Research Thrusts/Priorities In The On-Going Programs

While no doubt researches have made significant advances for improving area, production and productivity of oilseeds there are nevertheless, a multitude of unsolved problems which continue to limit the realization of the full genetic potentials of oilseeds and elude breakthroughs on the productivity front. High vulnerability of most of the currently available cultivars of different oilseed crops to various biotic and abiotic stresses and the associated

instability in acreage, production and productivity in space and time is one of the most important constraints which calls for immediate attention. Besides this, there are a number of other research gaps viz. low per hectare yields coupled often with low biological efficiency, lack of appropriate post harvest technologies, non-exploitation of biocontrol agents (predators, parasites, fungi, viruses, etc.) in pest and disease management, low tempo of research in the quality of oil and oilseed extractions, etc. To tackle these and numerous other productivity problems, the on-going researches have been reoriented with special thrusts on the following areas:

1. Development of high yielding varieties/hybrids with required maturity duration and inbuilt resistance/tolerance to major biotic/abiotic stresses.
2. Refinement of agronomy of oilseeds in diverse agro-ecological and crop growing situations both traditional and non-traditional areas, seasons and situations with emphasis on efficient management of costly inputs like fertilizers, irrigation on systems approach for maximizing returns per unit input, time and area.
3. On-farm researches for bridging the untapped yield reservoirs.
4. Refinement of seed production agronomy.
5. Development of efficient post harvest technologies.
6. Genetic resource conservation, evaluation, documentation and utilization.
7. Improvement in seed oil content and its quality;
8. Exploitation of hybrid vigour in crops such as safflower, rapeseed-mustard, sunflower and castor, and
9. Basic researches in priority areas.