



DOR

Directorate of Oilseeds Research

Hyderabad

Courses

1. Hybrid Seed Production Technology in Sunflower, Castor and Safflower
2. Hybrid Purity Assessment using Molecular Markers in Sunflower, Safflower and Castor
3. Production Technology of Sunflower, Castor and Safflower-based Cropping Systems
4. Integrated Pest Management in Sunflower, Safflower and Castor
5. Microbial Control of Insect Pests and Plant Diseases

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Directorate of Oilseeds Research is the only organization exclusively committed to promote greater productivity and profitability of oilseed crops, viz sunflower, safflower and castor with the simultaneous concern for public health, protection of environment and sustenance of their production. DOR had its beginning as the All India Coordinated Research Project on Oilseeds in April 1967 and subsequently elevated to the status of Directorate on 1 August 1977. At this Directorate, molecular markers have been developed for assessing the genetic purity of hybrids in sunflower and castor.

1. Hybrid Seed Production Technology in Sunflower, Castor and Safflower

Sunflower, castor and safflower are the important oilseed crops in India cultivated both under irrigated and rainfed conditions. One of the major factors for the poor spread of hybrids for yield enhancement is non-availability of quality seed. Hybrid seed production is highly skilled and location specific and the DOR has developed low input cost hybrid seed production technology for sunflower, castor and safflower. The course aims to acquaint the scientists, subject matter specialists and technical personnel of public and private sector, seed producing agencies about the latest technology on hybrid seed production of sunflower, castor and safflower.

Faculty

Senior scientists of the institute will constitute the faculty.

Course Director	: Dr A R G Ranganatha
Duration	: 3 weeks (2-22 January 2009)
Course fee	: US \$ 1,500 per trainee
No. of trainees per course	: 15-20
Accommodation	: It will be arranged in hostel
Eligibility	: Scientists, subject matter specialists and technical personnel engaged in seed production and research

Course Contents

- Theoretical and practical training on maintenance of the parental lines and certified hybrid seed production of sunflower, castor and safflower
- Production and protection technology of parental lines and certified hybrid seed production, seed certification standards
- Lectures on breeding, seed technology, agronomy, pathology and entomology in the respective crops and field visits, group discussions and practicals



2. Hybrid Purity Assessment using Molecular Markers in Sunflower, Safflower and Castor

It is well known that the success of improved variety/hybrid in the farmers' fields depend upon the availability of seeds with high genetic purity and a seeds of provenance is the most critical input which decides the effect of all other inputs in increasing the productivity. Therefore, assessing the genetic purity is of utmost importance before the seed reaches the farmers field. Also, in the context of IPR, identification of the cultivar has assumed increased significance. Conventionally, the purity of seeds is assessed using morphological markers in the field based 'Grow-Out-Test'. However, this method has several disadvantages including the environmental influence, limited variability observed for the characters, subjectivity, etc. DNA-based markers hold greater promise with several advantages, viz. high polymorphism, insensitivity to environment, stability, developmental stage independence etc. Several molecular markers have been developed and used successfully for varietal discrimination. Once the specific molecular markers are identified for each variety or hybrid, they could be used successfully to assess the genetic purity and thus could avoid the laborious GOT.

Faculty

Senior scientists of the Directorate having expertise in different disciplines will constitute the faculty.

Course Director	: Dr V Dinesh Kumar
Duration	: 2 weeks (1-15 July 2009)
Course fee	: US \$ 1,500 per trainee
No. of trainees per course	: 8-10
Accommodation	: To be provided in institute hostel
Eligibility	: Scientists, subject matter specialists and technical personnel engaged in seed certification and purity assessment

Course Contents

- Isolation of genomic DNA
- Quantification of genomic DNA
- Gel electrophoresis
- Screening of RAPD primers to identify the markers giving robust PCR profiles
- Identification of male specific RAPD marker
- Validation of identified RAPD markers at individual plant level
- Screening of SSR primers to identify male specific markers
- Validation of the identified SSR marker at individual plant

3. Production Technology of Sunflower, Castor and Safflower-based Cropping Systems

Horizontal expansion of area under oilseeds is limited due to the declining per capita arable land and competing crops. Many efficient cropping systems involving oilseeds have been identified for different agro-ecological regions of the country. Many newer and non-traditional areas, such as paddy fallows offer great potential for extending profitable cultivation of oilseeds. The requirement of production factors for cropping systems differs from that of managing the sole crops. Concerted research efforts in working with many aspects of oilseeds including cropping systems have resulted in identification of location-specific technologies. Adopting recommended oilseeds production technologies in cropping system would result in efficient resource utilization and crop production with economic gain and sustainability.

Faculty

Senior scientists of the institute will constitute the faculty.

Course Director	: Dr B N Reddy
Duration	: 3 weeks (September 2009)
Course fee	: US \$ 1,500 per trainee
No. of trainees per course	: 15-20
Accommodation	: To be provided in institute hostel
Eligibility	: Agronomists involved in oilseed-based cultural management programmes

Course Contents

- Lectures on concepts of cropping systems
- Choice of varieties/hybrids, fertilizer management, weed, pest and disease management including economics of oilseeds raised under monocrop, intercrop and sequential systems in diversified agro-ecological situations

4. Integrated Pest Management in Sunflower, Safflower and Castor

Spodoptera, *Heliothis*, jassids, *Alternaria* and downy mildew are the major insect pests and diseases of sunflower. Red hairy caterpillar and semilooper are the major insect pests and wilt and *Macrophomina* root rot are the major diseases of castor. Wilt, *Alternaria* and aphids are the major biotic stresses of safflower. These pests pose a serious threat to the production of these oilseed crops. In the recent past, the over reliance and indiscriminate use of pesticides has led to acquired pesticide resistance in pests, pest resurgence and development of secondary pests besides environmental pollution and various health hazards. The plausible approach is therefore, the Integrated Pest Management to minimise the problem of various pests.

Course Director	: Dr Harvir Singh
Duration	: 3 weeks (October 2009)
Course fee	: US \$ 1,500 per trainee
No. of trainees per course	: 15-20
Accommodation	: To be provided in institute hostel
Eligibility	: Research workers, extension personnel involved in crop protection measures in oilseeds

Course Contents

- Theoretical lectures on concept of IPM; IPM approaches in Sunflower, Castor and Safflower etc.; use of bio-control and microbial agents, botanical pesticides; management of weeds etc.
- Interactions, group discussions, field visits and practicals



5.

Microbial Control of Insect Pests and Plant Diseases

The approach to insect pest and disease management has seen a significant change over the years from chemical control to integrated pest management (IPM) with emphasis currently on Bio-intensive integrated management (BIPM). The shift in this paradigm is an outcome of the continuing search for eco-friendly pest management strategies driven by the impact of the ill-effects of injudicious use of chemical pesticides on human health and environment. The immediate need for sustainable, eco-friendly pest management has been felt very strongly providing an impetus to research and development of microbial pesticides. Majority of the microbial pesticides can be easily multiplied on artificial media with an immense scope for ensuring their timely availability – a pre-requisite for their effective integration into the BIPM modules. It is in this context that expertise development for effective handling and exploitation of the potential microbial agents gains utmost importance.

Faculty

Senior scientists of the institute form the faculty.

Course Director	: Dr P S Vimala Devi and Dr D R D Prasad
Duration	: 3 weeks (2-22 November 2009)
Course fee	: US \$ 1,500 per trainee
No. of trainees per course	: 15-20
Accommodation	: To be provided in institute hostel
Eligibility	: Scientists, subject matter specialists and technical personnel involved in microbial control of crop pests and diseases

Course Contents

- Lectures on the potential microbial agents
- Hands on training on various microbial techniques— Isolation, identification, maintenance and storage
- Mass multiplication of *Bacillus thuringiensis*, entomopatho-genic fungi (*Nomuraea rileyi*, *Beauveria bassiana*, *Metarhizium anisopliae* etc.), fungal and bacterial antagonists for plant disease management (*Trichoderma* spp and *Pseudomonas* spp)
- Fermentation and downstream processing
- Formulation and quality testing
- Characterization through morphological and molecular techniques
- Interactions, group discussions and visits to microbial agents production units