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PROCEEDINGS

ANNUAL CASTOR RESEARCH WORKERS' GROUP MEETING

May 24-26, 1990

Held at

Directorate of Oilseeds Research
Rajendranagar, Hyderabad, (A.P.)



DOR 244

(Indian Council of Agricultural Research)

DIRECTORATE OF OILSEEDS RESEARCH

RAJENDRANAGAR, HYDERABAD-500 030.

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* P R O C E E D I N G S *
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RAJENDRANAGAR, HYDERABAD (A.P.)

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ANNUAL CASTOR RESEARCH WORKERS' GROUP MEETING

Venue: Directorate of Oilseeds Res.
Rajendranagar, Hyderabad

Dates: May 24-26, 1990

PROCEEDINGS OF THE SESSION-I: PRE-GROUP MEETING REVIEW
DISCUSSIONS - REVIEW OF RESEARCHES AND SEED PRODUCTION
UNDERTAKEN IN KHARIF 1989 AND DEVELOPMENT OF VIABLE AND
IMPLEMENTABLE RECOMMENDATIONS, ACTION REPORT ON LAST
KHARIF OILSEEDS WORKSHOP RECOMMENDATIONS, DENOTIFICATION
OF OLD AND OBSOLETE VARIETIES

Chairman: Dr.V.Ranga Rao
Project Director, DOR

Rapporteurs: 1. Dr.M.V.R.Prasad
2. Dr.M.Ramachandram

The Chairman Dr.V.Ranga Rao welcomed the delegates and initiated the deliberations of the above session. Dr.M.V.R. Prasad, Principal Scientist, DOR presented a review of action report from the recommendations of previous castor workshop held at GAU, Junagadh in April, 1989. The recommendations of the previous workshop, action taken and further discussions on each are given below:

1. Non-availability of adequate quantities of certified seed of GCH-4 or its late availability sometime in July much after the castor sowings are completed has been one of the major constraints in extending the acreage under improved hybrids in castor growing areas outside Gujarat. The Gujarat State Seed Certification Agency and the State Division, Ministry of Agriculture may look into the above problems and take up appropriate steps to ensure availability of certified seeds of hybrids to farmers outside Gujarat particularly Andhra Pradesh, Karnataka, Tamil Nadu by mid May. Since the commercial hybrid GCH-4 possesses distinguishable morphological characters and identifiable from parental materials and other varieties right in seedling stage, Gujarat state Seed Certification Agency may explore the possibilities of reducing the duration of grow-out test.

Action: The above recommendation has been informed to Seeds Division, Ministry of Agriculture who in turn have agreed to the suggestions. There was comprehensive discussion on this particular aspect Dr.Yogeswara Rao of NSC and others suggested conducting of grow-out test at two stages of certification, the first being around January and the second in March. Presently a single stage growout test is being conducted following certification in the end of March. In case the process has to be speeded up, an earlier cut-off date should be identified or certification at two different stages has to be taken up. Dr.Yogeswara Rao of NSC and Sri V.L.Narasimha Rao of VORDI and several others expressed in favour of earlier cut-off date followed by certification at two.

stages. Finally it has been suggested that pending further information on seed quality in relation to different spikes, Gujarat State Seed Certification Agency may be requested to speed up the process and release the stock by early May. The farmers taking up seed production should be persuaded to submit the second lots by middle of March. The first sample for grow out test may be drawn by Feb. 15, and the certification agency may issue the tags by March 31. For second stage inspection, seed sample would be drawn by March 20 as at present and tags be issued by May 5. Meanwhile Dantiwada centre may come out with clear-cut information on seed quality in relation to different spikes and feasibilities of certification at two stages.

2. The AICORPO Centre (Castor), Sardarkrishinagar, GAU, Dantiwada has submitted proposals for pre-release identification of the variety SH-41 for all the castor growing areas in the country, of previous workshop. Since the proposals were received very late after the specific committee constituted for the purpose has finalised its recommendations and with a view to avoiding any possible delay in release of promising materials, the Project Director may constitute a special committee to go into merits of the proposals.

Action: The revised proposals in respect of variety SH-41 have not been submitted by SK Nagar, GAU Dantiwada as a perusal of the available data does not bring out any superiority of SH-41 variety. After review of the available data it has been decided that the above variety can not be considered for pre-release identification.

3. Currently certification of foundation seeds of female parent or commercial hybrids of castor is based on seedling morphological characters. Since the ultimate quality and quantity of hybrid seed obtained from seed production plots depends upon the proportion of pistillate plants in the female line, the Directorate of Oilseeds Research and AICORPO castor centre at Dantiwada may take up investigations to explore possibilities of inclusion of sex expression based on primordia in the certification standards so as to reduce the extent of roguing in the hybrid seed production plots and thereby improve productivity and bring down cost of production.

Action: DOR has already carried out the study and results reported. It would be possible to identify the plants producing monoecious spikes and the female spikes through histological studies at the time of primordia initiation. Similarly the electrophoretic studies will also be useful in achieving the above objective. Dantiwada centre however has not come out with any results due to paucity of facilities to conduct the study. After a comprehensive discussions on the matter it has been suggested that the studies could be taken up by Dantiwada and Palem centres in addition to the on-going work at DOR and come out with clear cut suggestions, for certification.

4. Limited data available in the project indicates that 43-1, the male parent of GCH-4 of castor not only confers resistance to wilt and root-rot but also possesses high yield potentials under high input and management. The workshop could not arrive at any decision on its merits as a variety, for want of adequate data. All the AICORPO centres may evaluate the productivity potentials of 43-1 in relation to the best local check including commercial hybrid GCH-4 and the elite variety in the advanced stages of testing, namely Sh-41 under high input - high level of management (irrigated) as well as low input - high management (rainfed) and generate adequate data for consideration of its identification or otherwise.

Action: The special varietal trial on the above lines was to be proposed at 15 centres, out of which only 6 centres namely Junagadh, Lantivada, Raichur, Palem, Jalgaon and Tindivanam carried out the trial. The limited data available did not indicate any conclusive results. Therefore, it has been decided that the trial be conducted at the selected centres where the potential of the material could be realised. The trial need not be given to Nanpur, Dholi and Semiliga centres in view of the poor performance of the crop and inadequate reporting of the data.

5. Preliminary data generated at the DOR indicate distinct possibilities of reducing the proportion of monoecist plants in the female parental line of hybrid GCH-4 from 40-60% to as low as 5-10% through utilisation of appropriate planting time. The AICORPO centre at Lantivada and the Project coordinating unit may intensify studies in this direction and work out feasibility and commercial viability of different systems of maintenance during the current year and suggest revision if any in the prevailing seed certification standards used for foundation seed by DOR.

Action: The study has been carried out and results reported a feasibility of exploring environmentally sensitive gene system for female maintenance which has also been demonstrated by DOR. After a comprehensive discussions, it has been decided that the data be generated by December, 1990 on quantity of seed that could be obtained adopting the above method on a fairly large scale as well as the cost of seed production as against normal procedure currently adopted. This will be taken up by Lantivada and Palem centres.

6. The perennial habit of castor and the associated multiple pickings has been one of the major difficulties in timely compilation, collection of data and preparation of annual report for advance circulation to the participants at the workshop. Keeping in view the time of planting, crop situations and the normal time of final pickings in different areas and with a view to enable the Directorate bring out full, comprehensive and detailed

annual report will be before the workshop, the workshop decided that all castor centres would hereafter make available the final data in respect of various coordinated trials to the Project Coordinator latest by 15th April, 1989.

Action: Several centres have not complied with the above recommendation. Some centres have not reported the data even by May 10th, 1990 resulting in lot of inconvenience to the coordinating unit in preparing the report. Therefore all the centres have once again been requested to stick to the deadline i.e., 15th April, 1990 for reporting of the data.

Subsequently Dr. M.V.R. Prasad presented a detailed summary of castor research and seed production carried out in Kharif 1989-90. This was followed by the presentation of report by Dr. V. Ranga Rao, Project Director on Cess Fund supported adhoc project on on-farm researches. Later a review of progress of castor activity milestones in VII Plan has been carried out by Dr. V. Ranga Rao and Dr. M. Ramachandram following which the revised activity milestones for VIII Plan were formulated.

During this session it has been decided to carry out an experiment to fix up range of variation for quantitative characters in the standard varieties of castor. This has been taken up in view of some confusion in the certification agencies in fixing standards of certification in castor varietal populations grown in non-traditional areas which exhibit potential for higher yields. The above study is to be taken up at Palem and Bantiwada centres, for which identical seed stocks will be used in order to ward-off any possibilities of variation due to source of seed. In addition Bantiwada centre has been requested to carry out a survey on seed production in Gujarat State.

The next item taken up was the identification of old and obsolete varieties for the purpose of denotification.

The varieties and hybrids of castor released and notified so far, have been considered for this purpose and finally the following varieties which are obsolete have been suggested for denotification.

State	Variety	Yr. of Release	Yr. of notification
Gujarat	GCH-3(hybrid)	1968	1976
	J-1	1969 in Gujarat	1984
Tamil Nadu	TMV-4	1981	1984
Uttar Pradesh	T-3	1939	1978

The centres in the above state have been requested to review the matter thoroughly and send proposals for denotification of the old and obsolete varieties.

ANNUAL CASTOR RESEARCH WORKERS' GROUP MEETING

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Dates: May 24-26, 1990

PROCEEDINGS OF CASTOR BREEDING SESSION HELD ON MAY 24, 1990

Chairman: Dr.V.Ranga Rao
Project Director, DOR

Rapporteurs: 1. Dr.M.Ramachandram
2. Dr.D.R.Patel

While reviewing the centrewise progress of activity milestones assigned in the VII Plan the Chairman drew the attention of the castor group to a number of critical research gaps and deficiencies on castor front viz. limited breakthroughs on varietal and hybrid front with specific reference to earliness, insect-pests and disease tolerance/resistance, low tempo of breeding activity at many centres, non-exploitation of available pistillate line(s), narrow genetic base of pistillate line and the associated problems of low recovery of females in certified seed production plots, high cost of production, poor quality of seed etc. While commending Dantiwada centre for the excellent progress made on the hybrid front Dr.Rao expressed serious concern at the reported rejection of large number of seed plots every year for one reason or the other and underlined the need to tighten some of the existing seed certification standards with specific reference to isolation distance, cut off dates for submission of lots for seed certification, percent of permissible monoecists in breeders and foundation seed production plots, inclusion of sex as one of the variable in certification and foundation seed production plots of female etc. Referring to the perpetual problems of non-availability of certified seed stocks of hybrids in states outside Gujarat and the clarifications sought by the Seeds Division of DOAC on the last kharif workshop's proposals for introduction of two stage certification one for the first picking and the second one for other pickings Dr.Rao called upon the group to critically re-examine the various issues raised by the Seeds Division and come out with alternate strategies/suggestions as/instance /for advancing the cut off date for submission of seed stocks for certification, speeding up grow-out tests etc. Referring to the reports of rejection of foundation and certified seed production plots of castor by certifying agencies on account of delayed plantings or deviation for some diagnostic characters when grown in non-conventional areas and seasons, the Chairman asked all castor breeders to re-examine the varietal behaviour in different seed producing areas and situations and fix up limits of variation for the guidance of certifying agencies. The Chairman also listed out a number of priority areas on which breeding efforts need to be directed and adaptive researches taken up to achieve major breakthroughs on productivity front. Based on indepth discussion that followed on the results of preceding crop season the following technical programmes have been formulated.

TECHNICAL PROGRAMME FOR CASTOR BREEDING
(1990-91)

2.1 Collection, characterization, evaluation and maintenance of germplasm.

(i) Evaluation of germplasm for qualitative and quantitative characters.

<u>Number of accessions:</u>	150 (to be supplied by GIU)
<u>Experimental design</u>	Augmented
<u>Plot size</u>	: Single row of 5.0m length.
<u>Standard checks</u>	: Aruna, TMV-5, RC-8, SHB-18 and GAUCH-1.
<u>Centres</u>	: Dantiwada, Palem, Raichur, Mandore and Jalna (MAHYCO)
<u>Observations</u>	: All important qualitative and quantitative characters (Seed yield, oil content and nodes upto primary spike, number of effective spikes, number of capsule per spike, hundred seed weight including reaction to insect pests and diseases).

(ii) Characterization of fresh collections

Out of 1651 total accessions 1003 have been characterized in respect of different morphological features. GIU will take up the characterization of rest of the accessions during 1990-91 for morphological and yield components under limited irrigation. The remaining will be taken up in two equal segments in subsequent years.

2.2 Development of varieties and superior combiners.

(i) Generation advancement of available breeding materials.

Early and advanced breeding materials generated so far would be screened as per the activity milestones assigned to the centres.

CENTRES: SK.Nagar, Junagadh, Palem, Tindivanam and Mandore.

(ii) Fresh hybridization.

Take up objective oriented crosses utilizing proven sources of resistance to wilt/dieback (CO-1, JM-6, HO, HC-6 etc.,).

CENTRES: SK. Nagar, Palem, Tindivanam, Semiliguda.

2.3 Diversification of pistillate lines.

CENTRES : SK. Nagar, Palem, Raichur, Tindivanam, Mandore.

Sources of pistillate characters : V.P-1, 240, JP-65 and SKP-4.

- Sources of economic characters. (a) Improved local base
(b) Best entries of NET
(c) Stable sources of resistance for Jassids, white flies, root rot/die back and wilt.

2.4 Detection of sex expression at primordial initiation in VP-1.

SK. Nagar and Palem will take up studies on microscopic differences between monoecious and pistillate plants of VP-1 at primordial initiation (25-35 days after planting) so as to know the sex phenotype of VP-1 in grow out tests.

Note:- The scientists may follow the techniques used by DOR for purpose.

2.5 Demonstration of production potentials of GCH-4 in traditional and non-traditional areas (Associate the concerned agronomist).

Each centre will organize 10 demonstrations of 0.4 ha. each under the following cropping situations.

Category	Centres
(1) Improved crop management (GCH-4 hybrid) v/s Farmers prevailing practice. With emphasis on critical cost reducing factors (quality seed, irrigation, fertilizer, rotation, need based protection etc.,)	S.K.Nagar.
(2) Production potential of GCH-4, Vs popular varieties in most potential areas and situations under improved management (kharif/rabi/limited irrigation/normal irrigation, different soils etc.,)	Palem, Raichur, Tindivanam, Semiliguda, Mandore, Hisar, Jhabua, Jalgaon, Mauranipur.

2.6 Demonstration of certified seed production of GCH-4 hybrid.

- S.K.Nagar and Junagadh : Superior quality seed of female parent produced by improved method in relation to currently followed method of hybrid seed production in the state. There will be 10 demonstrations at S.K.Nagar and another 10 at Junagadh of 0.2 ha. each.
- Palem : Organize five hybrid seed production demonstrations utilizing the seed of female parent produced by refined method.

- Raichur * : Organize two hybrid seed production demonstrations either at Siruguppa and/or Gangavati Research Farms using conventional method.
- Tindivanam * : Organize atleast one hybrid seed production of GCH-4 at Research Farm.
- DOR : Organize five hybrid seed production demonstrations of 0.2 ha each around Hyderabad by utilizing the seed of female and male produced at DOR using refined self reproduction system for the former.

* Foundation seed to be obtained from S.K.Nagar.

2.7 Demonstration of improved method of multiplication/self reproduction of VP-1.

Centres: S.K.Nagar, Palem and DOR.

Each centre will organize atleast 0.3 ha VP-1 seed production under improved method and work out the economics in relation to conventional method of multiplication/maintenance.

Raichur and Tindivanam: Will produce adequate/sufficient quantities of 48-1 and VP-1 seed during the year for organizing demonstrations in 1991-92.

2.8 Managements/maintenance of female parents (VP-1) in non-traditional areas of VP-1 (also associate agronomist)

Centres: Palem, Tindivanam, Raichur.

Source of seed: Foundation seed of VP-1 from S.K.Nagar (conventional methods for the present)

Experimental design : Split Plot

Treatments : Main plots : Dates of sowing (=3)

D1 = 1st June

D2 = 15th June

D3 = 30th June

Sub-plots : Fertilizer levels (=5)

F1 = No fertilizer (Control)

F2 = 40 KgN+40KgP₂O₅/ha as basal dose

F3 = Basal dose (F2) + 20 kg N/ha at 35-40 days after sowing.

F4 = F-3+ 20 kgN/ha at 70 days after sowing.

F5 = F-4 + 20KgN/ha at 105 days after sowing.

Replications : Three
 Plot size : 5.4m (6 rows) x 6m (sub-plots)
 Spacing : 90 x 30cm

Observations: 1. Number of pistillate and monoecious plants at flowering in primary spike.
 2. Reversion in secondary, tertiary, quaternary branches. Record number of plants reverted in each plot.
 3. Number of female plants exhibiting environmentally sensitive staminate flowers.
 4. Pickingwise yield on plant basis (5 representative plants in each plot) and plot yield.
 5. Number of capsules on primary spike (5 representative plants).
 6. Primary spike length (on) 5 representative plants in each plot.
 7. 100-seed weight.
 8. Oil content.

Note: Remove and destroy all monoecious plants before flowering in primary spike.

2.9 Management of certified hybrid seed production plots. (Associate Agronomist)

Centres : Palém, Raichur, Tindivanam.
 Seed : VP-1 (Foundation) and 48-1 (Foundation) to be obtained from S.K.Nagar.

Row proportions : 3:1 female and male uniform for all the plots.

Experimental design : Split Plot.

Treatments:

Main Plots: Dates of planting (=5)

1. 15th August
2. 30th August
3. 15th September
4. 30th September
5. 15th October

Sub-plots : Fertilizer levels (=5)

1. No fertilizer (control)
2. 40kgN/ha+50kg P₂O₅/ha as basal dose. (F2)
3. F2 + 20 kgN/ha at 35 days after sowing (F3)
4. F3 + 20 kgN/ha at 70 days after sowing (F4)
5. F4 + 20 kgN/ha at 105 days after sowing

Replications : Three
 Plot size : 9.0 x 7.2m
 Spacing : 90 x 60cm for male; 90 x 30cm for female
 Irrigations : As per the requirement at 7 to 12 days interval uniform for all plots.

1. Proportion of pistillate and monoecious plants at flowering in primary spike.
2. No. of plants reverted to monoecism in secondary, tertiary and quaternary orders.
3. No. of plants bearing interspersed staminate flowers.
4. Yield components such as length of primary spike, no. of capsules on primary spike, 100 seed weight etc., on five plants in each plot.
5. Initial and final population in female and male rows.
6. Yield of hybrid seed and yield of male parent per plot.

seed

2.10 Quality of hybrid/inrelation to sequential branching and harvesting time.

Centres: S.K.Nagar, Palem/DOR.

Experimental procedure:

1. Select 15-20 representative hybrid seed production plots.
2. At the time of each picking collect about 0.5 kg representative hybrid seed sample from every plot; specify the sequential orders from which the seed is harvested at each picking.
3. After the 1st harvest take up grow out test with 600 seeds from each sample and record the observations in respect of genetic purity as per standard procedures; the remaining seed material of each sample may be utilized for the assessment of physical purity i.e., seed size seed weight and germination per cent.

2.11 Determination of optimum proportion of monoecious plants to be retained in female parental seed production (VP-1) plots for obtaining economic yields and higher recovery of female plants in foundation and certified seed production plots.

Seed source; To be obtained from S.K.Nagar (conventional method).

Centres : DOR, S.K.Nagar, Palem, Raichur and Tindivanam.

S.K.Nagar:	Produce VP-1 seed by retaining 5% monoecists.
DOR :	Produce VP-1 seed by retaining 10%
Palem :	Produce VP-1 seed by retaining 15% "
Raichur :	Produce VP-1 seed by retaining 20% "
Tindivanam:	Produce VP-1 seed by retaining 25% "

Plot size: 0.15 ha.

Date of sowing: 15th July, 1990.

Experimental Procedures: Plant breeder seed of VP - 1 in 0.15 ha area as per the existing management practices. At the time flower initiation identify pistillate plants conforming to all stipulated standards and tag by using red label. Count the monoecious plants and retain defined percent of monoecious counterparts and remove the rest before flowering in the primary spike. Observe the female plants periodically for possible reversion in different sequential orders till harvest and record the observations.

In pistillate plants which revert to monoecism in secondary, tertiary and quarternary order remove the tag and also strip off all reverted branches and destroy them. At the end, collect the seed from stable female plants which continue as females beyond quarternary order branching. Continue harvesting from stable female plants upto 20th March 1991. Delete the seeds from the early reverts. The seed produced by different centres will be pooled and assessed for the extent of pistillate and monoecious plants during 1991-92 in multilocation trials.

2.12. COORDINATED VARIETAL/HYBRID TRIALS

i) Initial Varietal Trial-I (Early Group: Mean node number ≤ 12)

Sl. No.	Entry	Pedigree	Nominating centre
1.	SKI-49	{SKP-4 x SPS 43-3} x {SKP-2 x SKP 6}	S.K.Nagar
2.	SKI-58	{SKP-48 x SPS-35-50} x {SKP-2 x OTC 30-18}	S.K.Nagar
3.	SKI-75	Selection from SKP-38	S.K.Nagar
4.	SKI-78	Selection from 48-1	S.K.Nagar
5.	REC-2	Bhagya x Co.1	DOR, Hyderabad
6.	REC-3	Bhagya x Co.1	"
7.	REC-4	Bhagya x Co.1	"
8.	REC-5	240 x Bhagya	"
9.	REC-6-1	240 x Bhagya	"
10.	REC-6-2	240 x Bhagya	"
11.	REC-9	240 x Bhagya	"
12.	REC-116	Bhagya x H.C.8	"
13.	REC-163	Selection from H.86	"
14.	REC-262	Bhagya x HC.8	"
15.	JI-89	VP-1 x J-1	Junagadh
16.	PCS-4	{Pb-1 x 157.B} x {JI-44 x 144}	Palem
17.	Bhagya (Early check)	-	
18.	Local check (VI-9/Aruna)	-	

<u>Entries</u>	16 + 2 (checks)		
<u>Design</u>	R.B.D.		
	<u>Replications</u> : Three		
<u>Plot size</u>	Gross 2.4 m x 5.4 m		Rainfed and
	Net 1.2 m x 4.5 m		Irrigated
<u>Spacing</u>	60 x 45 cm (Rainfed and Irrigated)		
<u>Fertilizer(kg/ha)</u>	N	P	K
	40	40	00 For rainfed
	75	50	00 For irrigated
<u>Locations</u>	<u>Rainfed</u>	<u>Irrigated</u>	
	1. Palem	1. S.K.Nagar	
	2. Raichur	2. D.O.R.	
		3. Mandore	
Seed supply	350 gm/entry		

ii) Initial Hybrid Trial-I (Early group: Mean node number ≤ 12)

Sl. No.	Entry	Pedigree	Nominating centre
1.	PCH.15	LRES 17 x 116	DOR, Hyderabad
2.	PCH.16	LRES 17 x 34.3	"
3.	PCH.17	LRES 17 x 163.17	"
4.	PCH.18	NES 6 x 163.17	"
5.	PCH.19	LRES 17 x REC.7	"
6.	SHB.111	SKP.93 x SKI.12	S.K.Nagar
7.	SHB.112	SKP.4 x VP.(Mono)	"
8.	SHB.113	SKP 85 x 1379	"
9.	SHB 114	SKP.93 x JI.77	"
10.	SHB.115	SKP.93 x JH.128	"
11.	SHB.116	SKP.93 x SKI.34	"
12.	GCH.4 (NC)		
13.	Local		

<u>Entries</u>	11 + 2 (checks)		
<u>Design</u>	R.B.D. Replications: Three		
<u>Plot size</u>	Gross: 2.4m x 5.4m (Rainfed and Net: 1.2m x 4.5m Irrigated)		
<u>Spacing</u>	60 x 45cm (Rainfed and Irrigated)		
<u>Fertilizers (kg/ha)</u>	N	P	K
	40	40	0
	75	50	0
			For Rainfed
			For Irrigated
<u>Locations</u>	<u>Rainfed</u>		<u>Irrigated</u>
	1. Palem		1. S.K.Nagar
	2. Raichur		2. D.O.R.
			3. Mandore
<u>Seed supply</u>	350 gm/entry		

iii) Initial Varietal Trial-II (Medium group: Mean node number ≥ 13)

Sl. No.	Entry	Pedigree	Nominating centre
1.	SKI-60	Selection from 48-1	SK Nagar
2.	SKI-73	1-21 x VI-9	
3.	RCG-1	Selection from Germplasm	Raichur
4.	JI-86	SKP-2 x OTC 30-18	Junagadh
5.	JI-87	SHB.27 (20-1-1)	"
6.	JI-88	SKP-2 x OTC 30-18	"
7.	JI-90	SKP-2 x OTC 30-16	"
8.	JI-91	SKP-2 x OTC 30-18	"
9.	JI-92	SKP-2 x OTC 30-18	"
10.	RSC-1	Selection from Germplasm	DOR, Hyderabad
11.	KC-9001	-	Kanpur
12.	KC-9002	-	-do-
13.	KC-9003	-	-do-
14.	KC-9004	-	-do-
15.	GCH-4(NC)		-do-
16.	Local check		

Entries: 14 +2 (Checks)

Design : R.B.D Replications: Three

Plot size: Gross 3.6 m x 6.0m (Rainfed & Irrigated)

Net 1.8m x 4.8 m Irrigated

1.8m x 5.4 m Rainfed

Spacing : 90 x 60 cm (Irrigated)

90 x 30 cm (Irrigated)

<u>Fertilizers (kg/ha):</u>	N.	P.	K.
	40	40	0 for rainfed
	75	50	0 for Irrigated

<u>Locations:</u>	<u>Rainfed</u>	<u>Irrigated</u>
	1. Palem(3 sets)	1. Dantiwada
	2. Raichur	2. Junagadh
	3. Tindivanam	3. Mandore
	4. Semiliguda*	4. Mahyco, Jalna
	5. Kanpur	

Seed Supply: 1000 gm/entry.

* Subject to shifting to plains in the district

(iv) Initial Hybrid Trial-II (Medium Group: Mean node number 13)

Sl.No.	Entry	Pedigree	Nominating Centre
1.	JHB-648	VP-1 x JH-105	Junagadh
2.	" -649	VP-1 x JI-81	"
3.	" -650	VP-1 x SA-2	"
4.	" -651	VP-1 x VH-75-1-7	"
5.	" -652	VP-1 x VI-13-2	"
6.	" -653	VP-1 x JI-2	"
7.	" -654	VP-1 x 71-2-8	"
8.	" -655	VP-1 x JI-82	"
9.	" -656	VP-1 x JI-85	"
10.	" -657	VP-1 x HC-1	"
11.	SHB-110	SKP.5 x J.1	SK Nagar
12.	SHB-117	SKP-6 x SH-21	"
13.	SHB-118	VP.1 x SH.62	"
14.	SHB-119	VP.1 x SH.63	"
15.	SHB-120	SKP.93 x SKI.60	"
16.	SHB-121	Geeta x SH-41	"
17.	GCH-4 (NC)		
18.	Local Check		

Entries: 16 + 2 (Checks)

Design: R.B.D. Replications: Three

Plot size: Gross: 3.6 x 6.0 m (Rainfed & Irrigated)
 Net : 1.8 x 4.8 m Irrigated
 1.8 x 5.40 m Rainfed

Spacing : 90 x 60 cm (Irrigated)
 90 x 30 cm (Rainfed)

Fertilizers: N. P. K.
 (Kg/ha) 40 40 0 For Rainfed
 75 50 0 For Irrigated

Locations: Rainfed Irrigated
 1. Palem(3 sets) 1. Dantiwada
 2. Raichur 2. Junagadh
 3. Tindivanam 3. Mandore
 4. Semiliguda* 4. Mahyco, Jalna
 5. Kanpur

Seed supply : 1000 gm/entry

* Subject to shifting to plains in the District.

(v) Advanced Varietal Trial-I

Sl.No.	Entry	Pedigree	Nominating Centre
1.	SKI-34	SKP-1 x SKP-18	S.K.Nagar
2.	SKI-41	(SKP-4 x SPS-35-50) x (SKP-2 x OTC-30-18)	"
3.	SKI-50	(SKP-4 x SP-43-3) x (SKP-2 x SKI-6)	"
4.	SH-74	HO x VI-9	"
5.	SKI-40	(SKP-4 x SPS-35-50) x (SKP-2 x OTC-30-18)	"
6.	SKI-22	T-4 x VI-9	"
7.	SKI-29	HC-8 x Masalio	"
8.	JI-82	SKP-2 x OTC-30-18	Junagadh
9.	43-1(check)		
10.	SH-41 (MC)		
11.	GCH-4 (MC)		
12.	Local check		

Entries: 8 + 4 (Checks)

Design : R.B.D. Replications: Three

Plot size: Gross: 5.4 m x 7.2 m (Rainfed & Irrigated)

Net : 3.6 m x 6.0 m (Irrigated)

3.6 m x 6.6 m (Rainfed)

Spacing: 90 x 60 cm (Irrigated)

90 x 30 cm (Rainfed)

Fertilizer (Kg/ha):

N	P	K	
40	40	0	For rainfed
75	50	0	For Irrigated

Locations

Rainfed

Irrigated

1. Palen(3sets)	1. S.K.Nagar
2. Tindiyanam	2. Junagadh
3. Semiliguda*	3. Mandore
4. Raichur	4. Mahyco, Jalna
5. Kanpur	
6. UAS, Bangalore	

Seed supply: 1200 gm/entry

(vi) Advanced Hybrid Trial-I

Sl.No.	Entry	Pedigree	Nominating Centre
1.	SHB-94	SKP-2 x 48-1	S.K.Nagar
2.	JHB-645	VP-1 x JH-16	Junagadh
3.	JHB-641	VP-1 x JI-74	Junagadh
4.	PCH-8	LRIS-17 x 126	DOR, Hyd.
5.	SHB-106	SKP-97 x 43-1	S.K.Nagar
6.	SHB-103	SKP-69 x 48-1	S.K.Nagar
7.	JHB-644	VP-1 x RUS-1	Junagadh
8.	JHB-642	VP-1 x JI-77	
9.	GCH-4(NC)		
10.	Local check		

Plots: 8 + 2 (Checks)

Design : R.B.D. Replications: Three

Plot size: Gross: 5.4 m x 7.2 m (Rainfed & Irrigated)

Net : 3.6 m x 6.0 m Irrigated

3.6 m x 6.6 m Rainfed

Spacing: 90 x 60 cm Irrigated

90 x 30 cm Rainfed

<u>Fertilizers (Kg/ha)</u>	N	P	K
	40	40	0 For Rainfed
	75	50	0 For Irrigated

<u>Locations</u> :	<u>Rainfed</u>	<u>Irrigated</u>
	1. Palem (3 sets)	1. S.K.Nagar
	2. Tindivanam	2. Junagadh
	3. Semiliguda	3. Mandore
	4. Kanpur	4. Raichur
	5. UAS, Bangalore	5. Mahyco, Jalna

Seed Supply: 1200 gm/entry

(vii) Advanced Varietal Trial-II

Sl.No.	Entry	Pedigree	Nominating Centre
1.	SH-66	(HC-8 x 413 H) x JH-120	S.K.Nagar
2.	1221	Selection from Germplasm	DOR, Hyd.
3.	SH-63	HC-8 x Masaliõ	S.K.Nagar
4.	SKI-14	(SKP-4 x SPS-43-3) x (SKP-2 x OTC-30-18)	"
5.	SH-52-1	Sel. from SH-52	"
6.	SH-21	HC-8 x Co-1	"
7.	48-1 (check)		
8.	SH-41(MC)		
9.	GCH-4 (NC)		
10.	Local check		

Entries: 8 + 2 (Check)

Design : R.B.D. Replications: Four

Plot size: Gross: 9.0 m x 7.2 m (Rainfed & Irrigated)
 Net : 3.6 m x 6.0 m Irrigated
 3.6 m x 6.6 m Rainfed

Spacing : 90 x 60 cm Irrigated
 90 x 30 cm Rainfed

Fertilizer (Kg/ha):

N	P	K	
40	40	0	For rainfed
75	50	0	For irrigated

<u>Locations</u>	<u>Rainfed</u>	<u>Irrigated</u>
1. Palem (3sets)	1. S.K.Nagar	
2. Tindivanam	2. Junagadh	
3. Semiliguda	3. Mandore	
4. Raichur	4. Mahyco, Jalna	
5. Kanpur		
6. UAS Bangalore		
7. Jalgaon		
8. Indo-American Hybrids, Bangalore.		
9. Jabua (JNKVV)		
10. Mairanipur		
11. Hisar/Dawal		

Seed supply: 3500 gm/entry

(viii) Advanced Hybrid Trial-II

Sl.No.	Entry	Pedigree	Nominating Centre
1.	JHB-633	SKP-23 x 454	Junagadh
2.	JHB-635	JP-65 x SH-16	"
3.	PCH-1	LRES-17 x 27	DOR, Hyd.
4.	SHB-72	SKP-23 x SPS-65-10	S.K.Nagar
5.	GCH-4		
6.	Local check		

Entries: 4 +2 (Check)

Design : R.B.D. Replications: Four

Plot size: Gross: 9.0 m 7.2 m (Rainfed & Irrigated)
 Net : 3.6 m 6.0 m Irrigated
 3.6 m 6.6 m Rainfed

Spacing : 90 x 60 cm Irrigated
 90 x 30 cm Rainfed

Fertilizers (Kg/ha):

	N	P	K	
	40	40	0	Rainfed
	75	50	0	Irrigated

<u>Locations</u>	<u>Rainfed</u>	<u>Irrigated</u>
	1. Palem	1. S.K.Nagar
	2. Tindivanam	2. Junagadh
	3. Semiliguda	3. Mandore
7. Jabua	4. Kanpur	4. Raichur
8. Mauranipur	5. UAS, Bangalore	5. Mahyco, Jalna
9. Hisar/Bawal	6. Indo-American Hybrids, Bangalore.	

Seed Supply: 3500 gm/entry

NOTE: THE SPECIFIC QUANTITY OF SEED MATERIALS OF DIFFERENT ENTRIES SHOULD BE REACH LATEST BY 9TH JUNE, 1990 TO THE PROJECT COORDINATED (CASTOR), DIRECTORATE OF OILSEEDS RESEARCH, RAJENDRANAGAR, HYDERABAD-500 030 (AP).

BREEDER SEED ALLOCATION FOR 1990-91

Sl.No.	Variety/ Parent	Target Quantity (q)	Producing Breeder
1.	Arūna	15.00	Scientist Incharge(Castor) Directorate of Oilseeds Research, Rajendranagar, Hyderabad-500 030
		10.00	Sr.Scientist (Oilseeds) RARS, APAU, Palem, Mahaboobnagar Dist. A.P.
		5.00	Jr.Breeder(Castor) Reg.Res.Station, Raichur.
2.	RC.8	0.25	Jr.Breeder(Castor) Reg.Res.Station, Raichur.
3.	Bhagya	1.00	Scientist I/c (Castor) Directorate of Oilseeds Research, Rajendranagar, Hyderabad-500 030
4.	TMV.5	0.30	Prof & Head Oilseeds Experimental Station, TNAU, Tindivanam(TN).
5.	GCH.4 (SHB.18) (i) VP.1 (F)	15.00	Research Scientist (Castor) Sardar Krishinagar, GAU, Gujarat.
		5.00	Scientist I/c (Castor), DOR, Hyderabad.
	(ii) 48-1(M)	5.00	-do-
		5.00	Research Scientist (Castor) S.K.Nagar, GAU, Gujarat.
6.	VI-9	1.00	Research Scientist (Castor) S.K.Nagar, GAU, Gujarat
		62.55	

LIST OF RESEARCH CENTRES FOR SEED SUPPLY

1. Research Scientist (Oilseeds)
GAU, Main Oilseeds Research Station,
Junagadh- 362 001 (Gujarat).
2. Research Scientist, (Castor)
Regional Res. Station,
GAU, S.K. Nagar,
Dantiwada-385 506 (Gujarat).
3. Sr. Scientist (Oilseeds),
Regional Agril. Research Station,
APAU, Palem-509 215.
Mahabubnagar Dist. (AP).
4. Jr. Breeder (Castor)
Regional Research Station,
P.B.No.24,
Raichur-584 101 (Karnataka).
5. Prof & Head,
Oilseeds Experiment Station,
Tamil Nadu Agril. University,
Tindivanam, South Arcot (TNE)
6. Sr. Scientist (Oilseeds),
Chandra Sekhar Azad University of
Agriculture & Technology,
Kanpur- 208 002 (UP).
7. Jr. Scientist (Oilseeds),
Agril. Research Station,
MSU, Mandore-342 304
Jodhpur Dist. (Rajasthan).
8. Jr. Breeder (Oilseeds),
Regional Research Station,
Semiliguda, P.B.No.10,
Sunabeda, Dist. Koraput (Orissa).
9. Dr. R.A. Sheriff,
Pl. Scientist (Oilseeds),
University of Agril. Sciences,
GKVK Campus,
Bangalore-560 065 (Karnataka).
10. Dr. R.R. Mishra,
Director Research,
Maharashtra Hybrid Seeds Co. Ltd.,
P.B.No.27,
Jalna-431 203 (MS).
11. The Oilseeds Specialist,
Agril. Research Station,
Jalgaon-425 001 (MS).
12. Shri S.S. Sindagi, Consultant (Oilseeds), Indo-American
Hybrid Seeds, No.72, Mruthunjanagar, Purvabadavane,
Ravebennur-581 115, Dist. Dharwar, (Karnataka).

13. The Scientist (Plant Breeding),
Regional Agril. Res. Stn.,
J.N. Krishi Vigyan Kendra;
JHABUA (MP).
14. The Jr. Breeder,
Regional Res. Station,
Crop Research Farm,
CSAUA&T,
Mauranipur-204 001(UP)
15. The Senior Scientist, AICORPO,
Dept. of Plant Breeding,
Haryana Agril. University,
Hisar-125 004 (Haryana)

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ANNUAL CASTOR RESEARCH WORKERS' GROUP MEETING

Venue: Directorate of Oilseeds Research
Rajendranagar, Hyderabad.

Dates: May 24-26, 1990

PROCEEDINGS OF CASTOR ENTOMOLOGY SESSION HELD ON 25.5.90

Chairman: Dr.D.D.R.Reddy
Professor and Head
Dept. of Entomology, AUA, Hyd.

Rapporteurs : 1.Dr.A.Mani
2. Mr.M.Laxminarayana

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The session started with presentation of the results of technical programmes assigned to different centres during 1989-90. The Chairman Dr.D.D.R.Reddy, during discussion stressed the need for population build up of jassids/white flies/thrips by taking early sowing of infector rows before screening of germplasm is taken up.

Commenting on the abnormally low levels of incidence in most entomological experiments and their limited validity and use Dr.Rao, Project Director, suggested that all screening experiments to be taken up only under specific situations and areas where the incidence would be maximum. While referring to the serious problems posed by red hairy caterpillar and semilooper in certain areas such as Andhra Pradesh he called upon the group to formulate comprehensive trials incorporating all available low cost practices identified by the survey group with emphasis on integrated management. In this connection he referred to the work of biological control of castor semi-looper being carried out at the Directorate and asked the group to formulate adaptive trials and demonstrations to test the feasibility and viability of control strategies in problem areas.

Dr.Senghi, Zonal Coordinator of transfer of technology has readily agreed to coordinate and help in implementing the red hairy caterpillar management programme in coordination with Department of Agriculture and voluntary organisations. Project Director Dr.V.Ranga Rao pointed out that the use of synthetic pyrethroids should be discouraged against castor semilooper and the house also readily supported the suggestion. He also stressed the need for having uniform methodology of recording and reporting of data. After thorough discussion the following technical programme for the year 1990-91 has been formulated.

4.1.A. Survey and monitoring castor pests

The survey should be conducted not only in the research stations but also on the farmers fields in the surrounding area at suitable intervals starting from the beginning of the season. The observations should clearly indicate the population levels of different pests, their natural enemies to be reported along with weather parameters. The survey data on the incidence of various pests should be recorded as indicated in the experiment 4.2.A.

Centres: Dantiwada, Palem, Raichur and Mandore.

4.1.B. Survey, monitoring and management of red hairy caterpillar

The survey and monitoring of red hairy caterpillar will be carried out at two locations (Shamshabad and Shadnagar) in Andhra Pradesh.

Observations will be made on i) Emergence peaks of adult moths from June - August ii) Host range iii) Severity in different locations and crops iv) Monitoring the efficacy of light traps, bonfires and vegetative traps and v) Monitoring the efficacy of plant origin products in controlling RHC.

Centres: DCR and Palem in collaboration with TOT.

4.2. Screening for resistance against castor pests

(A) Screening of germplasm against various castor pests

The germplasm lines should be sown in single rows with susceptible/local check after every ten entries. Late sowing should be taken up specifically for screening against jassids, white flies and thrips. From each entry, two plants should be selected randomly and from each plant three leaves (lower, middle and top) should be examined for jassid nymphs, white fly pupae and the mean data on population/3 leaves/plant should be recorded.

(i) White fly: The absolute population of adult white fly may be recorded from top leaf. The data on white fly pupae recorded from three leaves/plant during peak infestation level should be presented in 0-5 scale where:

- 0 - No pupae
- 1 - 1 to 50 pupae
- 2 - 51 to 100 pupae
- 3 - 101 to 200 pupae
- 4 - 201 to 500 pupae
- 5 - More than 500 pupae and honey dew excretion with black sooty mould fungus.

(ii) Jassids: Observations should preferably be taken in the early morning. Hopper burn percentage for three leaves per plant should also be recorded.

(iii) Castor semilooper and Spodoptera: Absolute larval population should be recorded from each plant.

(iv) Castor capsule borer: Percentage capsule damage should be presented by recording the total number of capsules and number of damaged capsules per plant.

(v) Thrips: Absolute population per spike/plant should be recorded.

Centres:

Dantiwada	- White fly, thrips, jassids
Palem	- Jassid, white fly
Raichur	- Capsule borer, jassid
Mandore	- Mites

(B) Screening of advanced lines from coordinated varietal/hybrid trials against major castor pests

The advanced breeding materials entered into various varietal/hybrid trials should also be screened for their reaction to various pests of castor. The same procedure as indicated above should be followed for screening.

Centres: Dantiwada, Palem, Mandore and Raichur.

Note: The sponsoring breeders will supply seed material of their entries (about 25-30 seeds) to the above centres.

(C) Uniform pest nursery: The materials viz., germplasm and also advanced breeding materials reported to be resistant/tolerant to specific pests of castor should be screened at all the centres.

<u>Pest</u>	<u>Tolerant/resistant lines from Dantiwada</u>
Jassid	SPS-64/1, S2-48-2, VI-18, SPS-38-5, VI-B ³ , JMG, JI-44, VH-51, VH-70 1/5 B, CH-1, VI-15-2, VH-70 1/3, SPS-27-4, T-3, 4947-5, VI-13, SPS-59-10, SPS-3 8-5, VH 53 1/2 B, VH-68 2/5, VH-70 1/3 B, SPS-20-1, SPS 42-2.

About 100-200 seeds from each entry will be supplied by Dantiwada centre to each of the testing centres.

The trial should be laid out with 3 replications of 3 rows each. The data should be recorded as indicated in the germplasm screening.

Centres: Dantiwada, Palem and Raichur

4.3.A. Chemical control of insect-pests of castor

The experiment will continue with the following treatments.

1. Monocrotophos 0.05% @ 600-800 litres/ha
2. Acephate 0.075% "
3. Endosulfan 0.07% "
4. Phosalone 0.07% "
5. Chlorpyrifos 0.04% "
6. Quinalphos 1.5% dust @ 25 kg/ha "
7. Methyl parathion 2% dust " "
8. Untreated control

Note: Insecticides should be applied 2-3 times. The first application at the time of appearance of semilooper and second after 15-20 days of the first application. If required, the insecticides should again be applied when the sucking pests are in peak.

Design: R.B.D.

Replications: Three.

Centres: Dantiwada, Palem, Raichur.

- Note: 1. Observations are to be recorded on jassids, thrips, white flies, semilooper and Castor capsule borer before 24 hours and 72 hours after insecticidal application.
2. Insect population before and after insecticidal spraying should be reported instead of the % mortality of the insect pests.
3. Castor capsule borer damage should be recorded in terms of % capsule damage.
4. Treatmentwise yield data should be recorded.
5. Cost benefit ratios should be worked out.

4.3.B. Chemical control of castor capsule borer

Treatments

1. Monocrotophos 0.05%
2. Phosphomidon 0.05%
3. Carbaryl 0.2%
4. Acephate 0.075%
5. Methyl parathion 0.05%
6. Methyl perethion 2% D.
7. Untreated control

Design: R.B.D.

Replications: Three

Spraying/dusting: Two sprays are to be given, the first at 5-10% capsule damage and second 15-20 days after first application.

Observations should be taken at each harvest on percentage capsules damaged. Yield data and cost benefit ratios should be reported.

(C) Feeler trial with plant/animal origin products against semilooper

Plant/animal origin products should be evaluated for their efficacy against semilooper.

Treatments

1. Repellin 0.05% (5 ml/lit)
2. Repellin 0.1% (10 ml/lit)
3. Padan 0.05% (1 gm/lit)
4. Padan 0.1% (2 g/lit)

Note: The respective treatments should be given to plants and the treated leaves are to be fed to 2nd instar semilooper larvae under laboratory conditions. Observations are to be recorded on various biological parameters of the pest.

Centres: DOR, Hyderabad and Dantiwada.

4.4. Extent of yield losses due to castor pests

Treatments

- | | | | |
|----|-------|---|---------------------|
| 1. | GCH.4 | - | No protection |
| 2. | GCH.4 | - | Complete protection |
| 3. | SH.41 | - | No protection |
| 4. | SH.41 | - | Complete protection |

Replications: Three/four. Plot size: 10 x 10 m.

Centres: Dantiwada, Palem, Raichur.

Observations: 1. Pest populations in the unprotected plots should be recorded periodically.
2. Yield data should be recorded.

Note: Raichur centre may also take up RC.8.

4.5. Bioecological studies on major castor pests

Bioecological studies on Tobacco caterpillar, Spodoptera litura

The observations on the tobacco caterpillar should be recorded at regular intervals starting from the appearance of the pest along with their natural parasites/diseases. The recorded data on weather parameters for the corresponding period should also be reported.

Centre: Palem

4.6. Feeler trial on the efficacy of the egg parasite, Trichogramma chilonis in controlling castor semilooper

The parasite is to be released after observing 1-2 semilooper eggs/plant at weekly intervals. 4-5 releases are to be made each 20,000 parasites/acre. The observations on per cent host egg parasitisation in the treated and untreated plots at regular intervals and yield data are to be reported.

The required number of parasites will be supplied by DCR.

Centre: Palem.

- Note:
1. Wherever specific positions do not exist, the scientist incharge of the centre will assign the programme to the Entomologist provided under oilseed project.
 2. The recording and reporting of observations should be done strictly according to the technical programme by all the centres.
 3. The fifteen entries reportedly free from capsule borer during 1989-90 from Palem should again be screened at the centre using susceptible checks.

PROCEEDINGS OF CASTOR PATHOLOGY SESSION HELD ON 25th MAY, 1990

Chairman: Dr.V.Ravindranath
Senior Scientist(Retd.)
IARI Reg.Res.Station,
Rajendranagar, Hyderabad.

Rapporteurs: 1. Dr.M.A.Rao of
2. Dr.(Mrs.) R.Kalpana Sastry

The Chairman invited the Scientists from Dantiwada, Palem, Mandore and DOR to present their reports briefly. The reports from Dholi, Kanpur, Junagadh, Tindivanam and Raichur were not presented.

The discussion evolved on the identification of the wilt disease based on symptomology and traditional observation that macrophomina disease occur under dryland conditions in light soils and fusarium wilt is common in irrigated areas of North Gujarat and in low lying and water logged fields under rainfed conditions. This view was supported by the Pathologists from S.K.Nagar and Palem Centres and by Dr.N.K.Sanghi, Zonal Coordinator(Lab-to-Land). Then Dr.Ravindranath raised the key issue of the means of delineation of the disease components based on the causal organism. However, from the experience of several pathologists the delineation of the damage caused by the two fungi based on symptomatology is not easy. Most of the time both pathogens are associated with wilt complex and it becomes difficult to delineate the two components. To this Dr.K.N. Rao suggested the use of different selective media and indepth studies. Dr.V.L. Narasimha Rao opined that the incidence of root rot disease is higher in fields where the previous crop was hybrid sorghum and the disease manifested even in the irrigated crop. Intervening in the presentation on the achievements of pathological group Dr.V.Ranga Rao, PD, suggested that the plant pathologists at AICORPO Centres should concentrate on major pathogens rather than diffusing their efforts and resources on all pathogens. He expressed serious concern at the continued confusion on wilts and root rots, their etiology, epidemiology, screening techniques hot spot areas, etc. and underlined the need for strong basic and applied research efforts including experiments for the integrated management both at DOR as well as in one or two other problem areas in the castor belt. In this connection he also drew the attention of the castor group to a number of deficiencies in reporting and conduct of the experiments and asked the scientists to follow standard format for screening and reporting.

TECHNICAL PROGRAMME FOR 1990-91

5.1 Report on the disease situation in the State/region:

Locations: S.K. Nagar, Palem, Mandore, Tindivanam, Raichur
and DOR, Hyderabad.

The objective of this programme is to gather information on the existing diseases prevalent in the castor growing areas in the farmers' fields. Seasonal fluctuations will also be considered along with the outbreak/incidence of any new disease.

INFORMATION TO BE COLLECTED

Location	Soil Type	Variety	Stage of the crop	Disease incidence	Previous crop	Appli- cation fall of F.Y.M.	Rain-
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Note: The disease should be recorded on percentage basis for wilt and root rot. Other diseases may be recorded as slight, moderate and severe (see appendix).

5.2 Studies on the fusarial wilt/ and macrophomina root rot:

Location: DOR, (Hyderabad), Palem

The objective of this programme is to have a thorough insight into the disease manifestation and symptomatic differences between the two diseases in major castor growing areas of Andhra Pradesh and Gujarat. It is envisaged that the group consisting of pathologists and breeders alongwith an expert in the field will visit the castor belt in the two states 3-4 times in the crop season. The detailed proforma will be circulated in due course. From the information to be collected it is felt that comprehensive analysis will throw light in better understanding of the problem.

5.3 Development of screening technique for fusarial wilt and macrophomina root rot :

Location: DOR, Hyderabad.

The following will be the areas of investigation:

1. Stage of the plant to be inoculated
2. Method of inoculation.
3. Scoring scales.
4. Identification of susceptible material.
5. Role of pycnidiospores in the development of aerial infection.

5.4 Screening of germplasm against major diseases.

Location : S.K. Nagar (Fusarial wilt)
Palem and DOR (Macrophomina disease)

The methodology of the data collection will be the same as in the previous year.

Number of entries to be tested: 50 germplasm lines each with 20 - 30 seeds is required to be supplied by Principal Scientist, incharge cistor, DOR to all the three locations.

5.5 Testing of advance varieties/hybrids against major diseases:

Location: S.K.Nagar, Palem, DOR, Mandore and Raichur.

It is understood that observations will be recorded in the breeders fields of IVT, IHT, CVT, CHT material under natural conditions. It is expected that the pathologists will be provided with one replication unprotected for disease evaluation.

Disease	Location	Method by data collection
Fusarial wilt, Macrophomina root rot.	S.K.Nagar, Palem, DOR, Raichur, Salem, Mandore.	Percentage basis.
Bacterial blight	Palem, DOR.	Appendix.
Alternaria blight		
Botrytis gray rot		

5.6 Uniform disease Nurser trials:

Locations	Disease
S.K.Nagar, Palem, DOR	Fusarial wilt/root rot.
Mandore	Alternaria blight and bacterial blight.

Entries: (10) 4589-A, 6209-B, 2-73-11, SH-17, SH-41, VH-75-2/6, JM-6, JI-53, Dwarf mutant, Majari-1, VP-1(L.C), JI-35(LC)

Replications: 3 in RBD.
Number of lines - 2,
Length of line : 5 metres.
Plant to plant distance : 30/30
Row to row distance : 60 cms.
Dat. collection as in Appendix.

5.7 Management of root rot and wilt

The committee discussed over this important issue, and decided that the pathologists will collaborate along with agronomist at Palem and Dantiwada where the agronomists have laid out similar trials.

S.K.Nagar : Intercropping trial and crop rotation trial
Palem : Intercropping trial.

Date on fusarial wilt/macrophomina root rot will be collected on percentage basis.

The DOR will collaborate with CRIDA wherever CRIDA is conducting such trials.

Address for correspondence:

1. The Plant Pathologist (Oilseeds), Regional Agril. Res. Station, APAU, Palem 509 215, Mahboobnagar Dist. A.P.
2. Assistant Research Scientist (Pl. Pathology), C/o Research Scientist, Regional Research Station, AICORPO (Castor) Sardarkrishinagar, 385 506, Benaskanta (Dist), Gujarat.
3. Plant Pathologist, Post Box. 24, Regional Research Station, University Agril. Sciences, Raichur - Karnataka.
4. Plant Pathologist, D.O.R, Rajendranagar, Hyderabad - 500 030.
5. Assistant Pathologist (Sesame), Agricultural Research Station, Mandore, Jodhpur (Rajasthan)
6. Professor and Head, Oilseeds Research Station, Tindivanam, 604 002 (Tamil Nadu).

APPENDIX

1. Seedling blight:
 - Grade: 1. Less: Lesion on one cotyledon.
 2. Moderate: Lesions on both the cotyledons
 3. Severe: Lesions on 1 or 2 true leaves.
2. Bacterial blight:
 - Grade: 1. Less: Few spots on lower leaves only.
 2. Moderate: Lesions coalesce, on lower and middle leaves.
 3. Severe: Leaves show ragged appearance.
3. Alternaria blight:
 - Grade: 1. Less: Few spots on lower leaves.
 2. Moderate: Spots coalesce, on lower leaves.
 3. Severe: blighting of lower leaves, spots on middle to top leaves.
4. Powdery mildew:
 - Grade: 1. Less: White patches on lower surface on leaves.
 2. Moderate: White patches on upper surface of leaves also.
 3. Severe: Defoliation.
5. Stem and Twig blight:
 - Grade : 1. No disease.
 2. One twig blighted.
 3. Two twigs blighted.
 4. Three or more twigs blighted.
 5. Lesions on stem/ branch.
 6. Lesions on stem and branches.
 7. Lesion on peduncle and main stem.
 8. Main stem or one or two branches dry up.
 9. Main stem and more than two branches dry up.
 10. Any combination of grades 2 - 7.

ratings x no. of plants

ANNUAL CASTOR RESEARCH WORKERS GROUP MEETING

Date: May 24-26, 1990

Venue: DOR, R'nagar,
Hyderabad-30.

PROCEEDINGS OF SESSION-III - IMPLEMENTABLE AND VIABLE AVAILABLE
PRODUCTION TECHNOLOGIES AND DEVELOPMENTAL STRATEGIES FOR
INCREASING PRODUCTION AND PRODUCTIVITY OF CASTOR

Chairman: Shri M.A. Rehman,
Addl. Director of Agriculture,
Department of Agriculture,
Andhra Pradesh, Hyderabad.

Rapporteurs: 1. Dr. R.V. Singh, DOD
2. Shri U.M. Lal, DOD

At the outset the Chairman welcomed the delegates and highlighted the problems of low productivity of castor in Andhra Pradesh. The main reasons for low productivity in castor crop were attributed to very poor quality of seed, endemic pests like red hairy caterpillar and castor semilooper, poor soils, non-adoption of package of practices due to resource constraint of castor farmers. The Chairman pointed out that the package of practices for castor crop are required for different situations like coastal Andhra Pradesh, Rayalaseema, etc and requested the scientists to come out with the location specific technology. With regard to seed production, he stated that the State Department of Agriculture, Andhra Pradesh had taken up an off-season crash programme for production of castor seed under irrigated conditions. However, the programme could not make much head-way due to high ratio of male flowers. He requested the Project Director, DOR to involve all seed producing agencies in castor seed production programme for AP., which is the largest castor growing state in the country.

Then the Chairman, Shri Rehman requested Dr. V. Ranga Rao, Project Director, DOR to present the viable and implementable agro-production and protection technologies of castor for different agro-ecological situations. Dr. V. Ranga Rao in his presentation made it clear that from the available data on demonstrations it should not be difficult to obtain productivity of 1 tonne per ha in AP and Karnataka and 2-3 tonnes in Gujarat. He emphasized the need for early planting coupled with integrated management and crop rotation to avoid the build up of pests and diseases. He mentioned that castor has immense potential as an intercrop with black gram, green gram and sesame, etc. Dr. V. Ranga Rao stressed the need for demonstrating seed production technology of castor hybrid in potential areas of Andhra Pradesh and Karnataka.

He suggested that the farmers should be imparted training for production of quality seed by the agencies engaged in seed production. He also felt the need for training of the personnel of state seed certification Agencies with regard to identification of varietal characters under different agro-climatic conditions.

Dr. N.K. Sanghi, Zonal Coordinator, TOT presented the review and feed back from transfer of technology programmes and findings of the team constituted to study the reasons for low productivity of castor in Andhra Pradesh. The reasons for low productivity of castor were mainly due to use of poor quality seed and severe incidence of red hairy caterpillar and castor semilooper. He also pointed out that the technology evolved by the scientists was too difficult to implement on field. Dr. Sanghi explained in detail about various alternatives for control of RHC and semilooper. On feed back for research, Dr. Sanghi wanted technology for castor cultivation for different situations in Andhra Pradesh. He also indicated in brief the indigenous methods adopted by the farmers like square system of planting, cross ploughing in standing crop, vegetative traps for control of RHC, etc.

The session was then opened for general discussions. Dr. Ranga Rao while referring to the need for location specific technology clarified that the existing technology with little modification depending on particular/specific situation could be adopted for different situations. Sri V.L.Narasimha Rao of VORDI wanted that the oil millers in the state should be involved in the distribution of castor seed. Dr. Yogeshwar Rao, Chief Production, NSC suggested that the concerned breeder may include the possible variations in characters of a variety/hybrid under different environmental conditions at the time of sending proposals for the release of variety/hybrid itself. However, for existing varieties the necessary modification if any, could be sent to the variety release committee. He also suggested that castor seed production programmes may be taken up during rabi/summer seasons. As per the suggestions of Dr. Ranga Rao, Project Director and Dr. M. Laxminaryana, Scientist, Directorate of Oilseeds Research, it was decided that the demonstrations for biological control of castor semilooper by releasing Trichogramma sp. in two blocks may be organised in collaboration with the Department of Agriculture.

The following action plan was chalked out for demonstrations and production of GCH.4 hybrid castor during rabi under tanks and wells in Andhra Pradesh.

1. Demonstration of production potentials of hybrid GCH.4 vis-a-vis best varietal check

Agency	Area(ha)	Quantity of GCH.4 seed required	Source of seed
TOT, Hyderabad	50	300	To be procured from MAHYCO/ITC
Department of Agril. A.P.	50	300	
ITC	5	30	Own source
MAHYCO	5	30	Own source

2. Production of certified Hybrid seed

Agency	Area (acr)	Source of Parential seed
MAHYCO	50(1 acre each plot)	Own source
ITC	50(-do-)	Own source
NSC	1(-do-)	To be arranged by PD, DOR
TOT & APSSDC	2(-do-)	-do-

3. Production programme of VP-1

Agency	Area(acres)	Source of Seed
MAHYCO	5(1 acre each plot)	To be arranged By PD, DOR through Seeds Division
ITC	5(-do-)	
APSSDC & TOT	2(-do-)	
NSC	3-5(-do-)	

The session concluded with vote of thanks to Chair.

