Indian Cocoa, Arecanut & Spices Journal, Vol. XIII, No. 4

COORDINATED RESEARCH ON SPICES WITH SPECIAL REFERENCE ON SEED SPICES

S. EDISON

National Research Centre for Spices, Marikunnu P.O., Calicut - 673 012

1. Research infrastructure

The first-ever organised research on spices was started on pepper by the Madras Government by sanctioning a pepper scheme for Panniyur during 1949; two more research stations were added for pepper in due course. The Spices Enquiry Committee of 1953 had made strong recommendations to commence specific research stations on spices and accordingly, the cardamom research was started at Mudigere and Pampadumpara, pepper research at Panniyur, Chethalli, Dergaon (Assam) and Sirsi, for ginger and turmeric at Kandaghat (Punjab), Tasgaon (Maharashtra) and Thodupuzha and Ambalavayal (Kerala), clove and nutmeg at Burliar (Tamil Nadu), minor spices/condiments at Fulia (West Bengal), Coimbatore (Tamil Nadu) etc. The pre-plan period also had research schemes for cardamom in Madras (Tamil Nadu) and Orissa, for ginger in Kerala and for turmeric in Orissa. The first Five Year Plan emphasised research on pepper, cardamom, clove, nutmeg and the minor spices like cumin, coriander, fennel and fenugreek. During the second and third Five Year Plans, scope of research on spices increased in a number of states including Orissa, Andhra Pradesh, West Bengal etc. and additional research schemes on minor spices and vanilla were initiated. Thus, the research on spice crops in India was limited to standardisation of input requirements on a regional basis by the State Departments of Agriculture till the end of the Fourth Five Year Plan. The establishment of the All India Coordinated Spices and Cashewnut Improvement Project (AICSCIP) by the Indian Council of Agricultural Research (ICAR) in 1971 with its headquarters at Kasaragod was the first major step towards a concerted programme of research on spices. With the increasing importance of spices as one of the major sources for foreign exchange earnings and the crucial role it played in the economy of the country, the ICAR established a Regional Station of the Central Plantation Crops Research Institute (CPCRI) at Calicut in 1975 for conducting research on crop production, protection and technological aspects of black pepper, ginger, turmeric, cinnamon, clove, nutmeg and allspice. The experimental farm of the Research Station is situated at Peruvannamuzhi, 51 km away from Calicut city. A significant landmark in the history of spices research in the country was the upgrading of the Regional Station at Calicut as the National Research Centre for Spices (NRCS) during the Seventh Plan Period. Consequent to the establishment of NRCS, the AICSCIP was also bifurcated by the end of the Sixth Plan and the headquarters of the Coordinated Project on Spices was shifted to NRCS, Calicut. The project has four centres on minor spices at Coimbatore (Tamil Nadu), Guntur (Andhra Pradesh), Jobner (Rajasthan) and Jagudan (Gujarat) besides 11 centres on major spices.

2. Coordinated research project on spices

The All India Coordinated Research Project on Spices envisages coordinated research on pepper, cardamom, ginger, turmeric, cumin, coriander, fennel, fenugreek and large cardamom. The objectives of the Project are:

(i) evolving high yielding varieties resistant/tolerant to diseases and pests;

(ii) standardisation of agro-techniques for the crops under different agroclimatic conditions;

(iii) evolving control measures for major pests and diseases; and

(iv) working as an inter-face and feed back between the Agricultural Universities and the Central Plantation Crops Research Institute/National Research Centre for Spices and ICAR.

The Project during its existence for the last 18 years has made the following significant achievements:

(a) Four varieties of spices viz. 'Suprabha' in ginger, 'Roma' in turmeric, 'Gujarat Fennel-1' and 'Cumin Rz-19' have been evolved and released by the Central Sub-Committee on Variety Release.

(b) Recently, two varieties of turmeric from NRCS, Calicut, two varieties of pepper each from NRCS, Calicut and Pepper Research Station, Panniyur (Coordinating Centres), two varieties of coriander from APAU, Guntur (Coordinating Centre) have been recommended for release.

The varieties/advanced cultures/cultivars that are available for large scale cultivation are listed in the Annexure along with the centres responsible for the production of the basic planting material.

(c) Fertiliser recommendation for pepper has been standardised at 60, 50, 150 gm/NPK/vine/year.

(d) Seed treatment of ginger seed rhizomes with Blitox-50 @ 0.3% helped reducing the loss due to rhizome rot in storage. Intercropping with french bean is profitable. Application of 0.025% Ekalux effectively controlled scale insects in storage.

(e) Cumin blight was controlled by spraying of Dithane M-45 @ 0.2%.

(f) Dual purpose varieties for use as greens and for grain were developed in coriander; variety Co-2 was released from Tamil Nadu Agril. University.

(g) Fertiliser dosage for fennel was standardised @ 15 kg N/ha and 50 kg P/ha as basal dose, followed by 15 kg N/ha as top dressing and this increased the yield.

(h) A dual purpose fenugreek variety viz. Co-1 has been released in Tamil Nadu which matures in 90 days. Root rot disease was controlled by drenching with 0.1% Carbendazim.

(i) Optimum time of sowing of seed spices has been adjudged to be the first fortnight of November.

3. Accent on seed spices

Impressive lads have been made through research on spices like cumin, coriander, fennel and fenugreek. Several technologies have already been made available which had made impact in farmer's fields as well as some are ready for testing under field conditions. The following are the salient achievements:

1. *Cumin*

Varieties: RZ 19 and Gujarat Cumin-1 have been recommended for the irrigated areas in Rajasthan and Gujarat respectively. Above 600 kg of improved seeds were distributed in Gujarat.

Sowing: Second fortnight of November is best.

Disease control:

Blight: Seed dressing with Bavistin 0.1% or Capton 0.1% as well as spraying with Dithane M. 45 0.3%.

Powdery mildew: Sulphur dusting or spraying of wettable sulphur.

2. *Coriander*

Varieties: RCr 41, CO-2, Gujarat Coriander-1 & Gujarat Coriander-2, CS-2, CS-4 & CS-6 have become popular in Rajasthan, Tamil Nadu, Gujarat and Andhra Pradesh respectively. About 600 kg and 200 kg of improved seeds have been distributed in Gujarat and Tamil Nadu respectively.

3. *Fennel*

Varieties: Gujarat Fennel-1 has been recommended for cultivation. This variety is of 120 days duration and yields an average of 7 quintal grain/ha. In addition, promising selections viz., UF 32, S-7-9 and PF 35 have become popular in parts of Rajasthan and Gujarat. About 400 kg of seeds have been distributed.

Spacing: 60 cm×45 cm for the irrigated crop and 45 cm × 10 cm for the rainfed crop.

4. *Fenugreek*

Variety: A dual purpose variety, viz., Co-1 has been released at Coimbatore; 75 kgs of Breeders' seed has been distributed. Variety 'Prabha' has been recommended in Rajasthan.

The following technologies which are found certainly promising at the research centres are yet to be popularised:

1. *Cumin*

Disease control: UC 198, exotic selection tolerant to cumin wilt is under advanced trials; this selection has high volatile oil content of 5.5 per cent. Soil amendments like neem cake, linseed cake etc. and seed treatment with 1:1 mixture of Bavistin+Captan @ 4 gm/kg of seed can give satisfactory control of cumin wilt.

2. *Coriander*

Varieties: Cv Nos. UD-21, UD-270, UD-374, CS-287 and Acc. No. 695 have shown promise with higher yields under irrigated conditions in Coimbatore.

Nutrition: Fertiliser application @ 40 kg N and 40 kg P_2O_5/ha has been standardised for Bihar and Gujarat.

Disease control: Powdery mildew can be controlled by dusting 300 mesh sulphur @ 25 kg/ha; this has to be applied 3 times at 15 days interval.

Root rot can be controlled by drenching with Bavistin 0.1% or Brassicol 0.1% This has to be applied twice.

3. *Fennel*

Sowing: Sowing during first week of November will give high yields in Gujarat.

Nutrition: Application of 45 kg N and 50 kg Phosphorus/ha can increase yield of fennel twice.

4. Future strategies

It has been estimated that we currently produce about 18 lakh MT of spices every year from about 20 lakh ha of land; the value of these spices during 1987-88 has been of the order of Rs. 4200 crores. During 1988-89, our export earnings stood at Rs. 282.79 crores from a quantity of 94,400 tonnes of spices and spice products. In view of the estimated world demand of spices during 1995 and 2000 A.D. being put at 3.45 and 4.04 lakh MT respectively, our country's target for export is of the order of 1.75 lakh MT for 2000 A.D. from all the spices. Concerted research and development efforts are therefore necessary to realise this target by increasing the productivity of spices crops.

ANNEXURE

List of varieties/advanced cultures released (pending release) on spices

Sl. No.	Crop	Variety/adv. sel.	State recommended	Centre responsible
1.	Coriander	Co-1- Co.2	Tamil Nadu	Coimbatore
		GAU 1, GAU 2	Gujarat	Jagudan
		RCr 41,	Rajasthan	Jobner
		RD 44	Bihar	Dholi
		Swathi, Sadhaa	Andhra Pradesh	Guntur
2.	Chilli	Pant 1, Pant 2	Uttar Pradesh	Pantnagar
		K 1, K 2	Tamil Nadu	Kovilpatti
		G 1 to G 5, Aparna, Kiran, Sindhur	Andhra Pradesh	Guntur
		Jawahar	Madhya Pradesh	Indore
		Guj. Chillies—1	Gujarat	Jagudan
		Co-1, Co,2, MDU 1	Tamil Nadu	Coimbatore
3.	Turmeric	Co 1, BSR 1	Tamil Nadu	Coimbatore & Bhavanisagar
		Suvarna, PCT 13, PCT 14	Kerala	Calicut
		Roma	Orissa	Pottangi
		Krishna	Maharashtra	Sangli
		Sugandham	Gujarat	Gandevi
		RH-10	Bihar	Dholi
4.	Ginger	Suprabha	Orissa	Pottangi
5.	Pepper	Panniyur 1, K.S. 14, K.S. 27, Panniyur-2, Panniyur-3	Kerala	Panniyur and Calicut
6.	Fenugreek	Co-1	Tamil Nadu	Coimbatore
		RMt 1, Methi 3	Rajasthan	Jobner
		RM-16	Bihar	Dholi
		Lamsel. 1 (Pre-release)	Andhra Pradesh	Guntur
7.	Cumin	MC 43, GC-1,	Gujarat	Jagudan
		RZ-19	Rajasthan	Jobner
8.	Fennel	Co-1	Tamil Nadu	Coimbatore
		GF-1	Gujarat	Jagudan
9.	Cardamom	Mudigere 1	Karnataka	Mudigere
		PV 1 (proposed)	Kerala	Pampadumpara