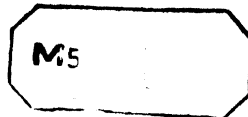


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Genetic Resources
Progress Report-39



Collection of Groundnut and Pearl Millet Germplasm in Maharashtra, India

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COLLECTION OF GROUNDNUT AND PEARL MILLET GERMPLASM IN MAHARASHTRA, INDIA

(October-November 1981)

V. Ramanatha Rao and C. Rajagopal Reddy*

SUMMARY

A germplasm collection mission was organized in Maharashtra State of India during 19th October-6th November, 1981, in collaboration with All India Coordinated Research Project on Oilseeds (AICRPO) and various Agricultural Universities. The main objective of the mission was to collect local cultivars of groundnut and pearl millet and other crops of interest to ICRISAT. The mission, which lasted for 19 days, was well timed with harvesting of groundnut and in many localities it coincided with the maturity of pearl millet too. The cooperation from various research workers in Maharashtra largely contributed to the success of the mission and a total of 385 samples were collected as listed below.

Groundnut	- 184	Finger millet	- 8
Pearl millet	- 127	Foxtail millet	- 5
Sorghum	- 47	Barnyard millet	- 3
Pigeonpea	- 5	Kodo millet	- 1
Chickpea	- 5		

Apart from these we obtained 24 samples of pearl millet collected in Solapur district during 1980 from Dr. Deokar, Plant Breeder, DLARS, Solapur.

Maharashtra is the fifth largest groundnut growing state in India. Some amount of collection was done long ago by the Oilseeds Specialist at Jalgaon.

However, extensive state wide search was not made earlier. In Maharashtra,

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SB-XI, AK-12-24, Kopergaon-3 are the recommended bunch cultivars of groundnut and K-4-11, Kopergaon-1 and AK-10 are the spreading cultivars. However, many farmers still grow old local types such as 'gunghri', 'dhobli' etc. using their own seed, for many generations. The area under groundnut cultivation in Maharashtra appears to be dwindling every year, specially in the drier tracts where the rains have been very precarious in the last few years. For example, Buldhana and Yeotmal districts which have been mainly groundnut growing districts, the area under cultivation is coming down. Yield per hectare in this area seems to be about 2 to 3 quintals. Similarly, Osmanabad and Bir districts have shown a drastic reduction in area under groundnut. In these districts sunflower is replacing groundnut. With very limited cost of cultivation, apart from labour, farmers seemed to be making good profit per hectare by growing sunflower during a normal year. Here the cost of seed is the main consideration, along with irregular mansoons. We came across many farmers who used to grow groundnut earlier, but have abandoned groundnut cultivation due to various problems. Almost all the local groundnut workers expressed that groundnut must be improved as quickly as possible to counter this trend.

Variability appears to be quite high in all the crops collected on this mission. In groundnut, all the types viz. spanish, valencia, virginia bunch and virginia runner were collected. Variability for pod shape and size, seed color and size is appreciable. In case of pearl millet, variability for length, thickness and shape of spike and grain size has been noted. Though almost all the sorghums belong to 'durra' race, appreciable variability for head shape and size, grain color and size has been obtained.

A total of 6,000 km distance was covered and samples were collected from 18 districts out of 28, five of which do not grow groundnut.

ACKNOWLEDGEMENTS

As it happens with any collection mission, our success depends on the kind cooperation and guidance of many people. We wish to acknowledge the same and express our deep sense of appreciation, specially to the following:

Dr. D.S. Naphade, Senior Breeder, PKV, Akola and his colleagues Messrs. R.D. Thakre, S.M. Bhojar and Srikhandkar for their assistance in Akola region.

Dr. P.S. Reddy, Coordinator, AICORPO, Akola for his guidance.

Dr. G.D. Patil, Oilseeds Specialist, MPKV, Jalgaon for providing excellent information on groundnut cultivation in Maharashtra.

Dr. G.R. Bhole, Groundnut Breeder, MPKV, Jalgaon who accompanied us for collection in Jalgaon region.

Dr. R.B. Patil, ARS, Digraj and his colleague Mr. V.M. Walke, for making necessary arrangements at Digraj.

Dr. Jagtap, ARS, Digraj, who accompanied us for collection in Satara, Sangli, Ratnagiri and Kolhapur areas.

Dr. A.B. Deokar and his colleague Mr. R.W. Bharud, who helped us in collection of germplasm in Solapur area.

Dr. M.A. Quadir and his colleague Mr. Deshpande who helped us in collection work in Osmanabad and Bir districts.

The financial support provided by the UNDP is gratefully acknowledged. Many others, whose names are not listed above, helped us in the mission and their help is gratefully acknowledged. We cannot fail to acknowledge the numerous farmers of Maharashtra who generously donated the samples.

INTRODUCTION

Maharashtra is one of the important groundnut cultivating states in India. Few samples of local types were collected earlier and these were obtained from Oilseeds Specialist, Jalgaon. However, considering the extent of cultivation in the state and various traditional types grown systematic collection was necessary. Pearl millet germplasm was collected by Dr. S. Appa Rao of ICRISAT during Sept.-Oct., 1978 from this state¹. As the present trip was planned to take a different route than that followed in the earlier trip, it was proposed to take the advantage and collect pearl millet germplasm from the new areas in Maharashtra. Accordingly, research workers in various locations were contacted in advance for guidance during the trip. This was forthcoming generously and the mission was launched during October-November, 1981.

COLLECTING TEAM

Dr. V. Ramanatha Rao, Botanist, Genetic Resources Unit, ICRISAT

Mr. C. Rajagopal Reddy, Technical Assistant, Genetic Resources Unit, ICRISAT.

The team was assisted by research workers at Mahatma Phule Krishi Vidyapeeth (MPKV), Punjabrao Krishi Vidyapeeth (PKV) and Marathwada Krishi Vidyapeeth (MKV), who contributed to the success of the mission.

GENERAL REMARKS²

The State of Maharashtra is situated between 25°1'-16°4' north and 72°6'-80°9' east. On the west Arabian sea forms the boundary. It is bounded

1/ GRU Progress Report No. 10, 1979.

2/ M.S. Randhawa *et al* (Ed) 1968. Farmers of India. Maharashtra Vol. 4. pp. 249-312, ICAR Publication; Times of India Directory 80-81; Agricultural Situation in India, Final Report, 1979-80.

by Gujarat in the north-west, Madhya Pradesh in the north-east, Andhra Pradesh in the south-west and Karnataka in the south. It is one of the large states in India with about 0.31 million square kilometers of area (slightly over 10% of the area of India). It has a population of about 50 million and about one third of which is engaged in agriculture on about 11.5 million hectares.

There are three distinct rainfall zones, nearly 500 mm-1000 mm (Deccan plateau), 1000-1500 mm (eastern side of Sahyadri) and 1500 over 3000 mm (Konkan region). There are places in Vidarbha and eastern Marathwada regions where the annual rainfall is less than 500 mm. Deep and medium vertisols predominate all over the state. Other types like lateritic, alluvial, saline and shallow clay loams also occur.

The main food crops in the state are jowar (6.8 m. ha.), Bajra (1.4 m. ha.), rice (1.5 m. ha.), wheat (1.2 m. ha.), pigeonpea (0.66 m. ha.) and groundnut (0.74 m. ha.). Among other crops, cotton (2.6 m. ha.), and sugarcane (0.22 m. ha.) are important. Minor millets are also grown in about 0.22 m. ha. in this state.

VARIABILITY IN THE COLLECTIONS

Groundnut: In Maharashtra, groundnut is an important oil seed crop. AK-12-24, SB-XI, Kopergaon-3, and Phule Pragati (bunch), Kopergaon-1, AK-10 (spreading bunch) and Karad 4-11 (runner) are the recommended cultivars in the state. However, still many farmers grow non-descript local types such as 'gunghri', 'barik gunghri', 'jhumki', 'moti', 'dhobli' etc., which they have been cultivating for many decades. The variability in the samples collected appears to be appreciable (Fig.2). All different habit groups belonging to ssp. hypogaea and ssp.



Fig. 1. Stripping of groundnut in Nasik region of Maharashtra

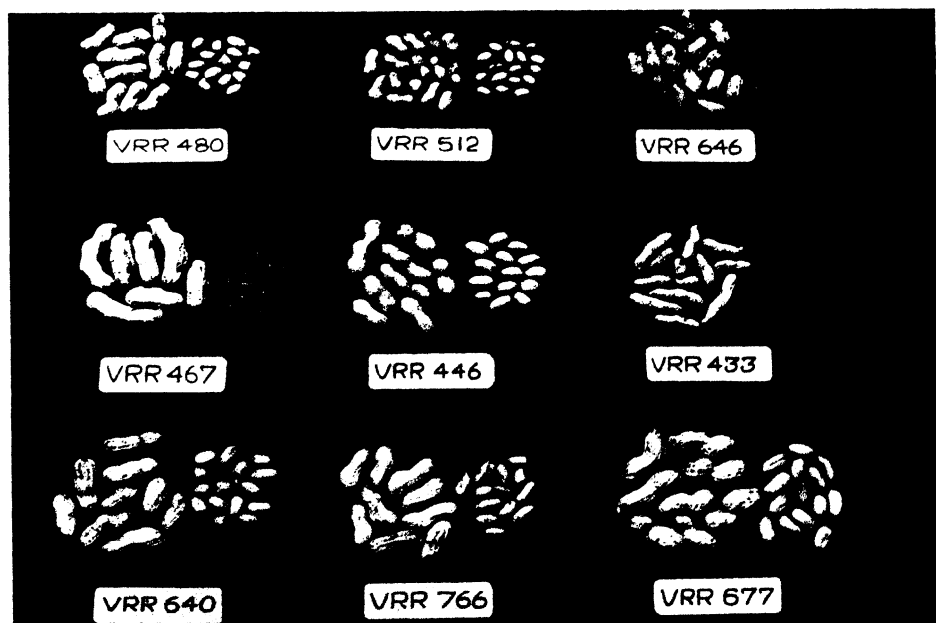


Fig. 2. Variation for pod and seed size in groundnut collected in Maharashtra

fastigiata have been collected which included all the three botanical varieties hypogaea (both virginia runner and virginia bunch) fastigiata (valencia) and vulgaris (spanish). Seed color was generally rose, tan or red. Farmers stated that maturity ranged between 100-165 days. Appreciable variability was found in pod and seed size, very small ('barik gunghri', 22 g/100 seed) to bold ('chanuri', 75 g/100 seed) (Fig. 2). One particular collection in Javali taluk of Satara district (VRR-677) had bold seed which the farmer claimed to be growing for last 40 years or more. Such large seeded types are not known to be cultivated in India. No recommended cultivar, apart from M-13, has such bold seed and it was definitely not M-13. In general, nodulation, was poor except in Solapur district. Some samples were observed to nodulate in hypocotyl region.

The local names of some of the samples collected are given below with their meaning.

Barik gunghri	Indicates very small seed size
Jhunki/Gunghri	Indicates small seed size
Pasara/Pasiri	Runner or spreading bunch
Uppet seng/Uparsul	Bunch forms
Moti - (Pearly)	Good looking seed
Other local names are	Bija, Punda, Gunji, Tappani, Japani, Chanuri, Jawari, Thorela, Dhobli, and Jabli.

Pearl Millet: The variation for some morphological characters observed in the samples collected from Maharashtra seems to be appreciable (Fig.3). Though commercial hybrids like BJ-104, BK-560 etc., have replaced most of the landraces, farmers still grow the old traditional types for domestic consumption due to taste

preferences. Since these are grown in the same area, physical mixtures of the two were observed. However, in many areas sole crop of primitive cultivars was noticed in large tracts. Due to severe drought in some areas (eastern taluks of Sangli district, parts of Solapur, Osmanabad and Bir districts) the plant height and spike length etc. were drastically reduced. Mostly non-bristled types were grown, with some percent of bristled types mixed. Plants were short to tall with small to medium long heads. Seed color was generally grey with some variation, while grain size was from small to very bold. Appreciable variability existed in agronomic score, some types appearing to be uniform and high yielding. The duration varied between two and half months to over five months. Some of the local names are given below:

Gaorani	: Grown around the village, local
Adchi (2.5 months)	: Indicating early maturity
Motichur (pieces of pearls)	: Indicating good seed quality
Jawari	: Local

Other names are Khadkya, Nandgaon, Sajgari, and Sajji. Following wild relatives of pearl millet were also collected.

Pennisetum pedicellatum

Pennisetum purpureum

Pennisetum hohenackeri

Cenchrus ciliaris

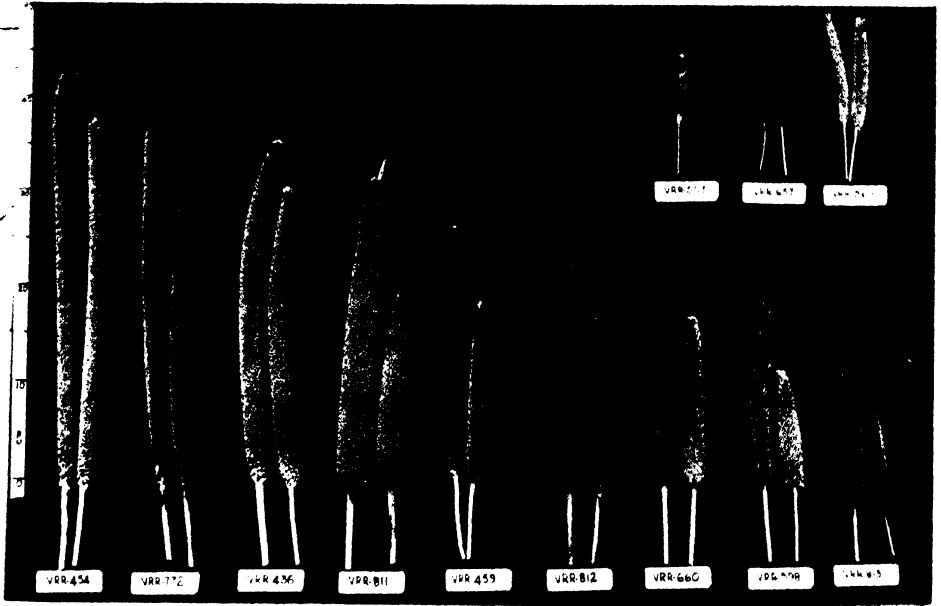


Fig. 3. Variation for head size and shape in pearl millet collected in Maharashtra

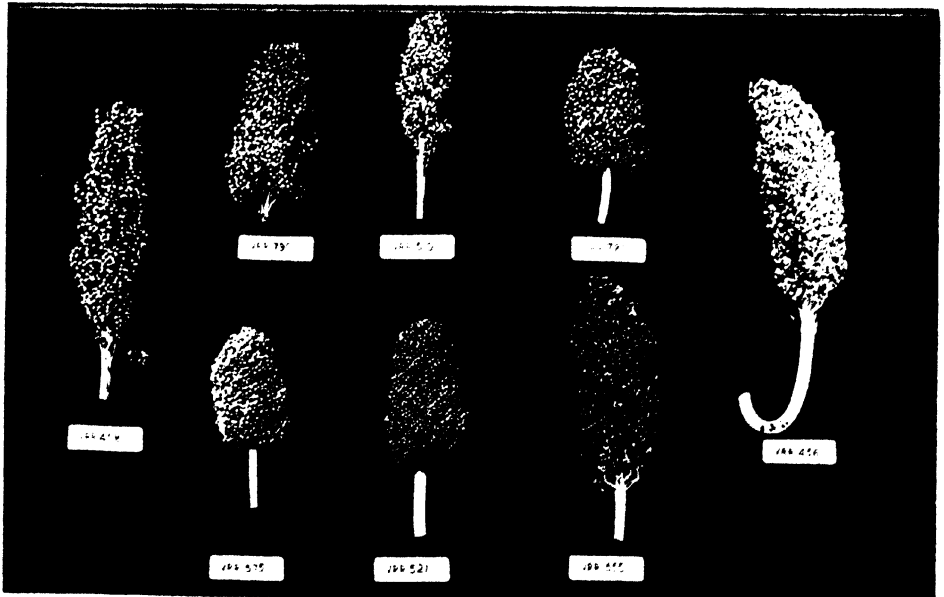


Fig. 4. Variability in sorghum collected in Maharashtra

Sorghum: Forty seven samples of sorghum were collected and all belong to durra type. Variation in plant height, and duration was appreciable. Head size, seed size and seed color showed considerable variation (Fig.4). Exclusive sorghum types used for papad (chikini) and popping (phatfat) were obtained. There are many commonly used local names to differentiate sorghums some of which are given below:

Chintamani, Pandharpur, Saliapur, Damana, Parbhani, Rathamwada, Kolm, Gandadi, Satpani, Bhorse, Khondya, Maldandi, Dagadi: Indicate the place from where originally the farmer had obtained the seed.

Chikini: An exclusive sorghum type used for making papad (thin strip or circle of dough fried in oil)

Phatfat/Fatfati: An exclusive sorghum type used for popping

Pili/Pivla: Yellow grain

Mani: White seed

Apsari: Good quality of seed

Other Crops

Pigeonpea (Mahori) would be ready for harvest in about a month and we were informed that local types are mostly grown. We picked up some seed from last years produce. Similarly, chickpea (Harbhara) plantings were in progress and we collected few samples from farmer's store.

Finger millet (Nagli or Nachini) is important in the hilly regions where it is grown along with rice. We also collected few samples of foxtail (Wadli), Barnyard (Bhagar) and Kodo (Varain) millets.

ITINERARY

- 19-10-1981 - Hyderabad - Nanded - Akola
- 20-10-1981 - Akola - Khamgaon - Nandura - Malkapur - Talni - Nandura - Akola
- 21-10-1981 - Akola - Murtizapur - Daryapur - Akot - Anjangaon - Achalpur - Chandur Bazar - Amravati - Akola
- 22-10-1981 - Akola - Barshitkali - Mangrul pir - Manora - Digras - Darwha - Ner - Bandera - Akola
- 23-10-1981 - Akola - Khamgaon - Bhuswal - Jalgaon
- 24-10-1981 - Jalgaon - Erandol - Parola - Koolgaon - Bhadgaon - Pachora - Pahur - Neri - Jalgaon.
- 25-10-1981 - Jalgaon - Erandol - Dhule - Songir - Dondaicha - Nandurabar
- 26-10-1981 - Nandurbar - Sakri - Satana - Pimpalgaon - Nasik
- 27-10-1981 - Nasik - Igatpuri - Rajur - Akole - Sangamner - Loni - Shirdi - Rahuri
- 28-10-1981 - Rahuri - Ahmadnagar - Sirur - Pabal - Rajguru Nagar - Manchar - Narayangaon - Junnar - Rajguru Nagar - Pune.
- 29-10-1981 - Pune - Satara - Karad - Islampur - Ashta - Digraj - Sangli
- 30-10-1981 - Sangli - Islampur - Peth - Karad - Satara - Mahabaleswar - Pauladarpura - Khed - Dapoli
- 31-10-1981 - Dapoli - K.K.V. Farm - Chiplun - Koyana Nagar - Karad - Tasgaon - Sangli - Miraj
- 1- 11-1981 - Miraj - Jaisingpur - Kolhapur - Kagal - Nipani - Sipur - Kothuru - Gargoti - Radhanagari - Kolhapur - Miraj
- 2- 11-1981 - Miraj - Kavathe Mahankal - Jath - Shegaon - Avundi - Waipal - Sangola - Pandharpur - Mohol - Solapur.
- 3- 11-1981 - Solapur - Mohol - Shetfal - Kurdwadi - Barsi - Vairag - Solapur
- 4- 11-1981 - Solapur - Tuljapur - Osmanabad - Yedsi - Dhoki - Murud - Latur
- 5- 11-1981 - Latur - Chakur - Sirur - Ahmadpur - Ambajogai - Kaij - Latur
- 6- 11-1981 - Latur - Ausa - Lamjona - Umarga - Zaheerabad - Hyderabad.

TRAVEL NOTES

19/10/1981: Our main objective was to reach Akola so we did not stop at many places on the way. The soils were medium to deep vertisols and we could notice lot of hybrid sorghum, and some late sorghums. Mainly sorghum, pigeonpea and cotton intercropping could be noticed. We reached Akola and met Dr. Naphade, Senior Oilseeds Breeder, PKV and discussed the programme for next three days.

20/10/1981: In the morning we met Dr. P.S. Reddy, Project Coordinator (Groundnut), AICORPO and saw some of the groundnut trials on the farm. Lateron, accompanied by Dr. Naphade, we covered parts of Akola and Buldhana districts. In Buldhana, traditionally a groundnut area, the area under groundnut cultivation has been reduced drastically. The farmers reported low yields (2-4 Q/ha.). Generally local bunch types, commonly called 'barik gunghri', mixtures of SB-XI, JL-24 and locals were grown. In few places we noticed 'gaorani', local pearl millet, a mixture of short, early, with small heads and late type with long stout heads grown as a border to cotton, sorghum, and pigeonpea fields. One pearl millet sample (VRR-435) looked good with stout long heads. Rust and leaf spot were present in the groundnut fields visited.

21/10/1981: Mr. Srikandhkar, JRA, accompanied us and we covered parts of Akola and Amravati districts. Cotton and hybrid sorghum were most common crops. Two seeded and 2-3 seeded groundnut types, three different types of millet and two types of sorghum (Chintamani and Pandharpur) were collected. Rust and leaf spot on groundnut, ergot and downy mildew on pearl millet were common diseases.

22/10/1981: Senior Research Assistants, Mr. R.D. Thakre and Mr. S.M. Bhojar accompanied us and we covered S. Akola and parts of Yeotmal district. Some good looking sorghum and pigeonpea samples were obtained. Pennisetum pedicellatum was found in a groundnut field which was collected.

23/10/1981: We thanked and took leave of Dr. Naphade and his colleagues and also of Professor Ekbote. Professor Ekbote strongly felt that if there was no quick improvement in groundnut it might be replaced by other oilseed crops such as sunflower. We reached Jalgaon at about 1530 hrs. and went to Oilseeds Specialist Office and met Dr. Patil (Pathologist), Dr. Bhole (Breeder) and Prof. G.D. Patil, Oilseeds Specialist at the farm. We also met other members of the staff. Jalgaon is one of the important oil seed research stations in Maharashtra with Mahatma Phule Krishi Vidyapeeth (MPKV). Apart from an office in city, they have two farms, one for other oil seed crops (medium-deep black soils) and the other with lighter soils for groundnut which we visited and had a brief look at the groundnut germplasm material which was ready for harvest.

24/10/1981: We covered western and southern part of Jalgaon district accompanied by Dr. Bhole, Groundnut Breeder. 'Gunghri' (local), SB-X1 and JL-24 cultivars of groundnut were commonly grown. JL-24 or 'phule pragati', a new groundnut cultivar released from Jalgaon station, seemed to be doing well in this area. Some farmers informed that they were getting yields around 3000 kg/ha with this cultivar during rainy season. Mostly hybrid millet was found to be grown. We collected three good locals and one primitive pearl millet. Though, commercially only hybrid sorghum (CSH-1, 5 & 6) were predominantly grown, we could notice good variability in this crop. 'Chikini' a red grained sorghum is grown for preparing 'papad', while 'mani' and 'satpani' were other local types grown by a number of farmers.

From today on for next four to five days we had problem in meeting people due to Diwali festival.

25/10/1981: We reached Dhule and at the Agricultural College we met Dr. B.N. Manake, Professor of Agricultural Botany. Then we went to Nandurbar via Songir and Dondaicha. It was very dry tract and tribal area. Mostly SB-X1 groundnut was found to be grown. Near Vavad we found a primitive looking pearl millet in rocky soil, 'Adchi' (meaning 2½ months) - quite uniform and might be good under drought conditions. We also observed local method of stripping of groundnut (Fig.1).

26/10/1981: We left Nandurbar and proceeded towards Nasik. Groundnut harvesting was almost over and mainly SB-X1, 'gunghri' and valencia cultivars were grown. 'Adchi' was found again to be cultivated as sole crop extensively between Nandurbar - Sakri. We collected one sorghum type locally known as 'phatapat' used for popping. Between Nandurbar and Sakri we noticed rabi sorghum which was planted about 45 days back. In these soils this was the first crop, no crop being taken in the rainy season. We were told that the sorghum matured in about five months. Around Nandurbar white grub and rust were severe on groundnut.

27/10/1981: Between Nasik and Igatpuri it was mainly rice and finger millet. Between Igatpuri and Akola we passed through hilly tract (500-750 m) and main crops were rice and finger millet with occasional groundnut. No sorghum or pearl millet could be found. Between Akole and Rahuri it was mostly sugarcane and rice with few patches of groundnut and pearl millet. The rabi sorghum appeared to be coming up well. Groundnut was mainly spreading bunch type. In the evening at Rahuri we were met by Dr. N.D. Patil, Director of Instruction, and Dr. D.G. Bhapkar, Director of Research, MPKV and discussed some of the problems of groundnut

cultivation in Maharashtra. I was informed that there was possibility of bringing about 0.2 to 0.3 million hectares under irrigated groundnut during summer and evaluation of the material for summer condition should be taken up to capitalize on this. I promised to talk to our groundnut breeders about the same.

28/10/1981: Between Rahuri and Ahmadnagar it was mainly sugarcane and rabi sorghum. The area between Nagar and Sirur appeared to be experiencing severe drought. We found groundnut fields which farmers had abandoned as there were very few pods. Upto Junnar we found mainly runner type of groundnut grown, some of which could be AK-10 or Kopergaon-1. We collected one long duration runner type, 'dhobli', which takes up 5 to 5½ months to mature, on our way to Pune. Pearl millet was found to be quite uniform. On groundnut, apart from rust and leaf spot, which were not very severe, we noticed damage by termites and hairy caterpillars. We saw lot of moth bean (Phaseolus acconitifolius) which appeared to come up reasonably well under drier conditions. Later on during the trip we saw this crop grown under extreme dry conditions where no other crop was grown.

29/10/1981: We travelled to Digraj (Sangli) through mainly hilly areas on the eastern side of western ghats at about 700 m. One farmer in Baveda near Satara, gave us four different types of groundnut apart from local pearl millet and sorghum. We could see mainly runner type and some red spanish and valencia type groundnut. Leaf spot and rust were very severe in this region. We collected one pearl millet type, tall with stout conical heads which looked much different from the other types grown in this area. At Digraj we met Mr. Walke, JRA, at Agricultural Research Station.

30/10/1981: In the morning, we met Drs. Patil and Jagtap at Digraj and discussed groundnut collection in Satara, Sangli, Kolhapur area. Dr. Jagtap (who had worked in Dapoli earlier and hails from Satara) accompanied us and we proceeded to Dapoli. Between Digraj and Satara it was mainly sugarcane, sorghum and groundnut. We collected few spanish, valencia and runner types. We collected good groundnut types near the foot hills of Mahabaleswar. One particular bold seeded runner type was exciting. Dr. Jagtap remembered a bold seeded type which he had eaten in his childhood (he is from this locality in Javali Taluq) and we were successful in obtaining a sample of the same. He also recalled a tasty type called 'deshi' but we failed to obtain a sample. Dr. Jagtap arranged with a farmer from that region to obtain a sample of the same. Pearl millet became scarce in this high rainfall and high altitude region.

31/10/1981: In the morning we were interested to obtain information on groundnut cultivation in the Konkan region which is on the west coast. This region, with high rainfall (1500-2000 mm) and hilly tract has much area under rice and finger millet grown on the terraced mountain slopes. Work was in progress to develop plantation and horticultural crops. Groundnut was introduced recently and grown to a small extent in the southern districts. This information was obtained from Dr. Savant, Professor of Extension. Later we met Dr. Dhanukshe, Assistant Professor, Department of Botany. He informed us that he was maintaining about 1200 accessions of finger millet collected locally in the Konkan region. We told him about 'ICRISAT's' interest in this crop and promised that we will inform Mr. Prasada Rao for future exchange purposes. He showed interest to share the material with ICRISAT. Later we went to the University farm, 13 km. from Dapoli, and met Dr. Khadrekar, the

Dean and Dr. Birari, Head, Department of Botany. Dean had a brief discussion on groundnut and informed that he would be looking forward to cooperation with ICRISAT. Later on we discussed with Dr. Birari and his colleagues. He showed much interest in trying hexaploid groundnut for forage purposes on hill slopes. We visited briefly groundnut plot where they were multiplying M-13 cultivar which showed spreading bunch habit instead of runner habit. We would like to check whether it was a case of a mix up or environmental effect. We did not see any groundnut till we reached near about Patan. We were mostly travelling in hilly region through forests. On the banks of river Vasisth we collected Pennisetum purpureum. Groundnut rust and leaf spot were severe in this area.

1/11/1981: We left Miraj early along with Dr. Jagtap and covered parts of Sangli and Kolhapur districts. Between Miraj and Kolhapur it was good cultivation of groundnut, pearl millet and sorghum. Today we observed space planting of groundnut in Kolhapur district (45x45 cm.). We also noticed planting on ridges near Nipani. In Ajra-Gargoti region the groundnut appeared to have been planted late and was yet to attain maturity. We collected one runner type called 'moti'. Between Gargoti and Radhanagri we observed rainfed sorghum and sugarcane and rice under lift irrigation. Near Radhanagri, Gargoti, Kolhapur junction of roads (600 m.) we collected Pennisetum hohenackeri.

2/11/1981: We left Miraj after breakfast and proceeded to Solapur via Kavathe and Jath. There was some sugarcane in Miraj taluq. Later it became very dry and hardly any crop could be seen growing. The farmers informed that rains had failed for two consecutive years. Soils were mostly rocky and gravelly and whatever pearl millet we saw was highly stunted. Finally, at Jath marketyard, we obtained some local types of groundnut, pearl millet and sorghum. This region again was

very dry with few crops. In some areas farmers had planted rabi sorghum by taking the advantage of late rains. In this area ergot was very severe on pearl millet.

3/11/1981: In the morning, we went to Dryland Agricultural Research Station (DLARS), Solapur, and met Dr. A.B. Deokar, Plant Breeder. Briefly, we saw the trial consisting mainly of lines developed at Digraj. Later on, along with Dr. Deokar, we went to Mohol, Shetfal, Kurdwadi, Barsi and Vairag. In this region, rabi planting of sorghum (6-8 rows) and sunflower (1-2 rows) was complete. There was some groundnut under wells, mostly spreading bunch or runner types. First time we saw good nodulation in this trip. We observed bud necrosis upto 2-5%. Leaf spot was less severe. It appears sunflower would replace groundnut in this district. We saw large fields of sunflower, ready for harvest. There was very little pearl millet and ergot was severe. Dr. Deokar kindly donated 24 samples of local pearl millet collected during 1980. We were lucky that they still had some original collection sample.

4/11/1981: We left Solapur along with Mr. Bharud, SRA, passing through Tuljapur, Osmanabad, Yedsi, Dhoki and Murud to reach Latur. We left Mr. Bharud at the S.T. Stand in Osmanabad who took a bus back to Solapur. We saw plenty of groundnut (mainly local runner types), pearl millet (locals), pigeonpea, sorghum (M-35-1, Maldandi). The region between Tuljapur, Osmanabad and Latur was very dry and sorghum-pigeonpea combination was common. Pearl millet was present to a limited extent mixed with sorghum. Groundnut appeared to be similar type (spreading bunch) either 2-seeded or with occasional three seed. Bud necrosis was observed in few fields upto 5-10%. We reached Latur and met Dr. M.A. Quadir and his colleagues at the Oilseeds Research Station (ORS), MKV, where harvesting of groundnut trials

was in progress. Dr. Quadir informed us that groundnut cultivation had come down drastically in Osmanabad (from 40,000 ha. to 10,000 ha.) and Bir districts and sunflower was picking up very fast. He also stated that most of the farmers, who still grew groundnut planted different local types. With the help of Dr. Quadir we finalized program for 5th.

5/11/1981: Mr. Deshpande, Agricultural Assistant, ORS, accompanied us and we travelled through Osmanabad and Bir districts. We saw mostly sorghum, pigeonpea with some pearl millet. We observed in Ahmadpur and Ambajogai taluqas very good pearl millet sole crop with long, stout heads maturing in about 5 months and we collected sample of the same. We could see large fields of sunflower, either just harvested or ready for harvest. The variability in groundnut collected today appeared to be very low consisting of one or two runner types. Groundnut rust, leaf spot were severe in many fields and bud necrosis was observed in some fields upto 10%. Fields were very weedy. Large groundnut fields showing chlorosis were observed and wilt was noticed in pigeonpea.

6/11/1981: We left Latur at about 0730 hrs. and passed through Lamjona, Umarga (Maharashtra), Homnabad (Karnataka) on our way back to Hyderabad. Sorghum + pigeonpea + pearl millet combination was predominant. Only in this region we observed groundnut + pigeonpea combination. Sunflower and niger were being harvested. Few good types of pearl millets were collected near Homnabad.

LIST OF GERMLASM COLLECTION IN MAHARASHTRA, INDIA

(October–November 1981)

Site	Collector Number	Crop	District	Taluka	Nearest Village/ Location	Altitude (m)	Sample Source	Local Name	Remarks
(1)	(2)	(3)	(4)	(5)	(6)	(6)	(8)	(9)	(10)
1/10/81	VRR-429	PM	Parbhani	Hingoli	Kalmakuri	-	F	-	Medium long, stout, spindle shaped non-bristled heads.
"	-430	PM	"	"	"	-	F	-	Bristled heads from 429 population
"	-431	GN	"	"	Kanhargaon	-	M	-	Tan seed color
"	-432	PM	"	"	"	-	M	-	1 kg sample.
1/10/81	-433	GN	Akola	Akola	Akola	-	I	-	Resistant population from GO-343
"	-434	PM	"	Khamgaon	Kaneri	-	F	Gaorani	Small heads; early
"	-435	PM	"	"	"	-	F	-	Late; long, stout heads
"	-436	PM	"	"	Shelad	-	F	-	Long, stout bristled heads; late
"	-437	PM	"	"	"	-	F	-	Long, stout non bristled heads from 436 population
"	-438	GN	Buldhana	Nandura	Taroda	250	F	Barik Gunghri	Rust and L.S; small seeds; EB
"	-439	GN	"	"	"	250	F	"	" " "
"	-440	GN	"	"	Pimparla	250	T	"	-
"	-441	GN	"	"	Sutala	270	T	"	-
"	-442	PM	"	"	Vadi	-	F	-	-
"	-443	GN	"	"	"	-	-	-	Slightly larger than 438; EB
"	-444	GN	"	Malkapur	Talni	280	F	-	Rust and L.S; drought stress; EB
"	-445	GN	"	"	"	"	F	-	Rust and L.S. severe

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
20/10/81	VRR-446	GN	Buldhana	Malkapur	Talni	280	S	-	Mixtures
"	-447	SG	"	"	"	"	S	-	-
"	-448	SG	"	"	"	"	S	-	-
"	-449	GN	"	"	"	"	T	-	EB
21/10/81	-450	PM	Akola	Murtijapur	Kolumbi	230	F	-	-
"	-451	PM	"	"	Murtijapur	230	F	-	Severe ergot
"	-452	GN	"	"	Lakhpuri	225	F	-	Rust and L.S; iron chlorosis
"	-453	PM	"	"	"	"	F	-	Medium-to long, stout heads
"	-454	PM	"	"	"	"	F	-	Very long, thin compact heads
"	-455	PM	Amravathi	Daryapur	3 km after Daryapur-Akot		F	-	Short, stout, conical heads
"	-456	SG	"	"	Wadner Gangai	250	F	Chintamani	Large, semi-compact heads; early
"	-457	GN	"	"	"	250	F	-	-
"	-458	SG	"	"	"	"	F	Pandharpur	Good heads; early
"	-459	PM	Amravati	"	"	"	F	-	Good variability in a single field
"	-460	FT	"	"	"	"	F	Bhadli	Long spikes
"	-461	PM	Akola	Akot	5 km after Akot-Anjangaon	310	F	-	Medium-late; DM and ergot
"	-462	GN	"	"	Devthana	310	F	-	2 and 2-3 seeded
"	-463	GN	"	"	"	"	F	-	2 seeded
"	-464	SG	"	"	"	"	F	Salaipur	Small, compact heads
"	-465	GN	Amravati	Anjangaon	Bhandarath	"	F	-	2-3 seeded
"	-466	BM	"	"	"	"	F	Bhagar	-
"	-467	GN	"	"	Pathrot	315	F	-	3 seeded
"	-468	PM	"	Achalpur	Achalpur	330	F	-	Grown as border to cotton + SG
"	-469	PM	"	Chandur Bazar	Hydatpur	"	F	-	Primitive; small heads
"	-470	GN	"	Amravati	Dhamangaon	"	S	-	-

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
21/10/81	VRR-471	PM	Amravati	Amravati	Lehgaon	-	F	Gaorani	Long, stout heads
"	-472	GN	"	"	Rahatgaon	-	T	-	EB
22/10/81	-473	PM	Akola	Akola	Alanda	-	F	-	-
"	-474	GN	"	"	Tiwasa	-	F	Gunghri	EB
"	-475	GN	"	"	"	-	S	-	-
"	-476	PM	"	"	"	-	S	-	-
"	-477	GN	"	"	"	-	S	-	-
"	-478	PM	"	"	"	-	S	Gaorani	-
"	-479	PM	"	"	"	-	S	-	-
"	-480	GN	"	Barshitkali	Mahan	-	F	-	2 types mixed, iron chlorosis
"	-481	GN	"	"	Vanoja	-	F	-	Rust and L.S.
"	-482	GN	"	Mangrur pir	Mangrur pir	365	S	Jhumki	EB
"	-483	PM	"	"	"	"	F	-	Tall; late; stout heads; fodder type?
"	-484	PM	"	"	Sakardoe	340	F	Gaorani	Long, stout heads
"	-485	GN	"	Manora	Kolar	325	S	Jhumki	105 days, EB
"	-486	PM	"	"	"	"	S	-	Medium (105 days) duration
"	-487	SG	"	"	"	"	S	Dhamana	150 days; good quality grain and fodder
"	-488	PP	"	"	"	"	S	-	Early
"	-489	SG	"	"	"	"	S	Pandharpur/ Parbhani	Early, poor quality
"	-490	GN	"	"	Vitholi	310	S	Jhumki	EB
"	-491	CP	"	"	"	"	S	-	Kabuli
"	-492	SG	"	"	"	"	S	Rathamwada	Early (105 days)
"	-493	PM	"	"	"	"	S	-	-
"	-494	PP	"	"	"	"	S	Mahori	Off-white seed color
"	-495	PM	Yoetmal	Digras	Chincholi	270	F	-	Severe ergot

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
22/10/81	VRR-496	GN	Yoetmal	Digras	Chincholi	270	T	-	-
"	-497	PM	"	Darwha	Lakhind	290	F	-	-
"	-498	GN	"	"	Tharoda	300	S	-	-
"	-499	GN	"	"	"	"	S	-	-
"	-500	PM	"	"	"	"	T	-	Thin, long heads
"	-501	SG	"	"	"	"	T	Khadkya	Very small heads
"	-502	PM	"	"	Brahmi	310	S	-	-
"	-503	SG	"	"	"	"	S	Dhamnaha	Pearl white grain
"	-504	PP	"	"	"	"	S	-	-
"	-505	GN	"	"	"	"	S	Gunghri	EB
"	-506	GN	Amravati	Ner	Kolora	300	S	"	EB
"	-507	PM	"	"	"	"	S	-	-
"	-508	SG	"	"	"	"	S	Kolmi	-
"	-509	GN	"	"	Shivini	250	T	Gunghri/Bija	EB
"	-510	SG	"	"	"	"	F	Chundadi	-
"	-511	GN	"	"	Shivini- Lasnapur	240	T	-	EB
23/10/81	-512	GN	Buldhana	Malkapur	Datarkhed	165	S	Chungri	EB
"	-513	GN	"	"	"	"	S	-	-
"	-514	SG	"	"	"	"	S	-	White, bold grain
"	-515	SG	"	"	"	"	S	-	Light yellow grain
"	-516	PM	"	"	"	"	S	-	-
"	-517	GN	"	Edalabad	Edalabad	"	F	-	-
24/10/81	-518	GN	Jalgaon	Erandol	Ekalagna	110	S	Chungri	EB
"	-519	GN	"	"	"	"	S	-	JL-24?
"	-520	GN	"	"	Vikran	120	F	-	Severe ergot; bird damage
"	-521	SG	"	"	Thuradkheda	140	T	Chikni	Small, compact head; red grain; used for papad.
"	-522	PM	"	"	"	"	T	Nagali	-
"	-523	SG	"	"	"	"	T	Mani	White seed; 100 days
"	-524	SG	"	"	"	"	T	Satpani	Red tinge on seed and glume; 120 days
"	-525	GN	"	"	"	"	S	-	SB-11?

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
24/10/81	VRR-526	GN	Jalgaon	Erandol	Thurodkheda	140	S	-	-
"	-527	GN	"	"	Maradkheda	140	S	Ghungri	-
"	-528	PM	"	Parola	Mahulehu	180	F	-	-
"	-529	PM	"	"	Adagaon	230	T	-	Seed from Ooswad (Nasik)
"	-530	SG	"	"	"	"	S	Mani	White seed; early
"	-531	GN	"	"	"	"	S	-	SB-11?
"	-532	SG	"	"	"	"	S	Chikni	Red grain; for papad
"	-533	GN	"	"	"	"	S	-	-
"	-534	GN	"	"	Tarwade	230	S	-	-
"	-535	GN	"	"	Koolgaon	210	S	-	Valencia
"	-536	GN	"	"	"	"	S	-	SB-11?
"	-537	FM	"	"	"	"	S	Nagli	-
"	-538	GN	"	"	"	"	S	-	-
"	-539	PM	"	"	"	"	S	Nandgaon	Seed from Nasik; high yield; K'79, produce little insect damage
"	-540	PM	"	Bhadgaon	Khedgaon	210	T	-	90 days; very good quality
"	-541	GN	"	"	"	"	S	-	Mixture of 2-3 types
"	-542	FM	"	"	"	"	S	-	-
"	-543	PP	"	"	"	"	S	-	-
"	-544	GN	"	"	"	"	S	Ghungri	Very small pod
"	-545	SG	"	"	"	"	S	Bhorshe	-
"	-546	GN	"	Pachora	Lohari	210	S	-	-
"	-547	GN	"	-	Malkheda	220	S	Ghungri	-
"	-548	PM	"	-	"	"	S	-	Early, 90 days
"	-549	GN	"	Jamner	Gondhegaon	240	T	-	-
"	-550	PM	"	"	"	"	T	-	-
"	-551	PM	"	"	4 km Patur- Jamner	210	F	-	Very primitive
25/10/81	-552	GN	"	Parola	Karanji	125	S	-	SB-11?
"	-553	PM	"	"	"	"	S	-	Very early (80-90 days)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
25/10/81	VRR-554	GN	Jalgaon	Parola	Karanji	125	S	Ghungri	-
"	-555	SG	"	"	"	"	S	Chikni	Large head; red grain; for papad
"	-556	SG	"	"	"	"	S	-	Red stinge on seed; tall
"	-557	PM	"	"	Saraddi	170	F	-	Very primitive
"	-558	GN	Dhule	Dhule	Nagaon	170	T	-	-
"	-559	PM	"	"	"	"	F	-	Very bold grain
"	-560	PM	"	"	"	"	F	-	Bristled type from 559
"	-561	GN	"	Songir	Songir	"	T	-	Mixture of SB-11 and Chungri
"	-562	GN	"	Sinkhinda	Chimatana	120	T	-	-
"	-563	SG	"	"	"	"	T	Mani	Small head; white seed with red tinge.
"	-564	GN	"	"	Dondaicha	110	T	Ghungri	-
"	-565	GN	"	Nandurbar	Nihali	"	S	-	-
"	-566	GN	"	"	"	"	S	Ghungri	-
"	-567	PM	"	"	"	"	S	-	Very small heads; early (75 days)
"	-568	SG	"	"	"	"	S	-	White grain with red tinge
"	-569	PM	"	"	Vavad	220	F	Adchi	Very primitive; uniform; drought tolerant? 2½ months; very tasty.
"	-570	GN	"	"	"	"	M	Ghungri	-
"	-571	GN	"	"	"	"	M	-	-
26/10/81	-572	SG	"	"	Ashte	190	S	Mani	White grain; red tinge
"	-573	GN	"	"	"	"	S	Ghungri	White grub problem severe
"	-574	GN	"	"	"	"	S	-	SB-11?
"	-575	SG	"	"	"	"	S	Phat phati	90-100 days; mainly for popping
"	-576	SG	"	"	"	"	S	Chikni	Red grain; used for papad
"	-577	PM	"	"	"	"	S	Motichur	90 days
"	-578	PM	"	"	12 km after N. Bar-Sakri	230	F	-	Very primitive
"	-579	PM	"	"	Thanpeda	310	F	Nagli	3 months
"	-580	GN	"	Sakri	Wazdana	340	F	-	SB-11?; iron chlorosis

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
26/10/81	VRR-581	PM	Dhule	Nandurbar	Wajdhara	340	F	-	Small heads
"	-582	GN	"	Sakri	Nizampur	"	F	-	Mixture
"	-583	GN	"	"	Malpur Kasana	350	T	-	-
"	-584	PM	"	"	"	"	T	Adchi/ Motichur	Small heads
"	-585	SG	"	"	"	"	T	Mani	-
"	-586	GN	"	"	Samoda	390	S	Ghungri	-
"	-587	GN	"	"	"	"	S	-	Valencia
"	-588	SG	"	"	"	"	S	Phat phati	Pop type
"	-589	PM	"	"	Pimpalner	430	F	-	Stout head; bold grain
"	-590	GN	Nasik	Taharabad	Taharabad	540	S	-	-
"	-591	PM	"	"	"	"	S	Gaorani	80 days; good quality
"	-592	GN	"	Satana	Avundana	500	T	-	-
"	-593	PM	"	"	Satana	480	F	-	Short, stout, conical heads; bold grain, severe ergot
"	-594	GN	"	"	Thengoda	530	F	-	Severe rust
"	-595	GN	"	Chandwad	Bhavude	610	F	-	-
"	-596	PM	"	"	"	"	F	Gaveti	Short, very loose heads; very bold grain
"	-597	PM	"	"	9 km to Chandwad from Satana	690	F	-	V. primitive; v. small heads drought tolerant? bold grain
"	-598	PM	"	"	"	"	F	-	Short, stout, conical heads; very bold grain
"	-599	FT	"	"	"	"	F	-	-
"	-600	GN	"	Pimpalgaon	Kadaja	530	T	-	Mixture of spanish and valencia
"	-601	PM	"	Nasik	Ozar	500	F	-	-

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
27/10/81	VER-602	FM	Nasik	Igatpuri	22 km Nasik-Igatpuri	540	F	Nachini	-
"	-603	KM	"	"	"	"	F	Varain	-
"	-604	GN	"	"	Pimplegaon	480	F	Punda	2-3 seeded; SB
"	-605	GN	Ahmadnagar	Akola	Nachli	680	F	-	"
"	-606	FM	"	"	"	"	F	Nachini	-
"	-607	GN	"	"	Kilunganwadi	670	F	-	-
"	-608	GN	"	"	Rajur	630	S	Ghungri	EB; red
"	-609	PM	"	"	"	"	S	Gaorani	Late (4 months); bold grain
"	-610	PM	"	"	Sugaon	500	F	-	Severe ergot
"	-611	CP	"	"	"	"	S	Harbara	-
"	-612	SG	"	"	"	"	S	Khondya	Early
"	-613	GN	"	"	"	"	S	-	SB-11?
"	-614	PM	"	"	"	"	S	Gaorani	90 days
"	-615	GN	"	Sangamner	Konkangaon	"	S	-	-
"	-616	GN	"	"	"	"	S	-	Valencia
"	-617	SG	"	"	"	"	S	-	Rabi sorghum
"	-618	PM	"	"	10 km before Loni-Sangamner	"	F	-	Severe drought; small heads
"	-619	PM	"	"	Loni	480	F	-	Short, conical heads; 90 days
"	-620	GN	"	Srirampur	Tiruchun-gaon wadi	475	F	-	-
28/10/81	-621	PM	"	A. Nagar	Dehra	500	F	-	-
"	-622	GN	"	"	"	"	S	-	-
"	-623	GN	"	"	Chas	610	F	Dhobli	SB; long duration; termite and RH caterpillar
"	-624	GN	"	"	"	"	F	Ghungri	EB; termite and RH caterpillar
"	-625	PM	"	"	"	"	F	Gaorani	Small, conical heads; bold grain

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
28/10/81	VRR-626	PM	Pune	Sirur	6 km after Sirur- Pabal	480	F	-	-
"	-627	GN	"	"	Maltan	500	T	-	-
"	-628	PM	"	"	"	"	T	Gaorani	90 days
"	-629	SC	"	"	"	580	T	Maldandi	5 months
"	-630	CP	"	"	"	"	S	Kabuli	Seed from Dhar (MP)
"	-631	CP	"	"	"	"	S	-	Local
"	-632	PP	"	"	"	"	S	-	-
"	-633	GN	"	"	"	"	F	Pasara	Runner
"	-634	GN	"	"	Sheshtabaj	590	F	-	SB/R; free from rust and leaf spot
"	-635	GN	"	"	Khairnagar	"	S	Chungri	-
"	-636	GN	"	"	"	"	S	-	Valencia
"	-637	SC	"	"	"	"	S	Apsari	5 months
"	-638	SC	"	"	"	"	S	Lakdi	-
"	-639	PM	"	"	"	"	S	Gaorani	90 days
"	-640	GN	"	Khed	Malegaon	710	F	-	-
"	-641	PM	"	"	Manchar	610	S	Gaoti	90 days
"	-642	SC	"	"	"	"	S	-	"
"	-643	GN	"	Junnar	Khanapur	620	S	Gunjli	Might be from Pandharpur
"	-644	PM	"	"	2 km before Junnar	630	S	-	Severe drought; small, conical heads
29/10/81	-645	GN	"	Bhor	Khairvada	600	F	-	EB; red seed; severe rust and L.S.
"	-646	GN	"	"	Shiral	520	F	-	"
"	-647	PM	"	"	"	"	T	-	90-100 days; small heads
"	-648	GN	Satara	Khandava	Paragaon	580	S	-	EB; red seed
"	-649	PM	"	"	"	"	T	-	Short conical heads; 90 days
"	-650	GN	"	Wai	Bedewadi	625	S	-	EB; red seed

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
29/10/81	VRR-651	GN	Satara	Wai	Badawadi	625	S	-	EB
"	-652	PM	"	"	"	"	S	-	Small heads; 100-110 days
"	-653	SG	"	"	"	"	T	-	-
"	-654	CP	"	"	"	"	T	-	-
"	-655	GN	"	"	"	"	T	Pasara	Runner
"	-656	GN	"	"	"	"	T	Tappani	Valencia; red seed
"	-657	PM	"	Karad	Walse	600	F	-	V. small heads; D.M.
"	-658	GN	"	"	"	"	F	-	SB; rust and L.S. severe; iron chlorosis.
"	-659	GN	"	"	Gote	580	F	Pasara	Runner
"	-660	PM	Sangli	Islampur	Islampur	"	F	-	Stout conical, different from earlier collection; smut
"	-661	GN	"	Sangli	Karandwadi	500	F	-	EB
"	-662	PM	"	"	"	"	F	-	Small heads; 90 days
"	-663	GN	"	"	"	"	S	-	EB
"	-664	GN	"	"	"	"	F	-	Runner
"	-665	GN	"	"	"	"	S	-	Valencia
"	-666	PM	"	"	"	"	S	-	-
"	-667	SG	"	"	"	"	S	Kar-Jondhara	-
"	-668	GN	"	Islampur	Peth	530	F	-	SB
"	-669	GN	"	"	"	"	F	-	"
30/10/81	-670	SG	"	"	"	"	S	Kar-Jondhara	-
"	-671	GN	Satara	Satara	Nune	630	F	Japani	SB
"	-672	GN	"	"	"	"	F	-	"
"	-673	GN	"	"	"	"	S	-	Valencia
"	-674	GN	"	"	"	"	S	Gunghri	EB; red & tan mixed
"	-675	SC	"	"	"	"	F	Dagadi	Compact head; white grain; late
"	-676	GN	"	Jawli	Vajare	680	F	-	Bud necrosis
"	-677	GN	"	"	Bibiwi	690	F	Chanuri	Runner; large pod
"	-678	GN	"	"	Medha	680	F	-	SB/R; 5½-6 months
"	-679	GN	"	"	Ambeghai	700	F	-	-

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
31/10/81	VRR-680	PM	Ratnagiri	Chiplun	Monda	40	W	-	<u>P. purpureum</u> ; on the banks of Vasisht river.
"	-681	GN	Satara	Patan	Rammala	580	F	-	-
"	-682	GN	"	"	Gojegaon	560	F	-	SB; severe rust & L.S.
"	-683	GN	"	"	"	"	F	-	SB
"	-684	GN	"	Karad	Merapur	570	F	-	SB/R
"	-685	PM	"	"	"	"	FB	-	<u>P. pedicillatum</u>
"	-686	GN	Sangli	Walwa	Senouli	560	F	-	SB
"	-687	PM	"	"	Machendragadh	570	F	-	D.M. & ergot; medium long head
1/11/81	-688	GN	Kolhapur	Shirola	Udgaon	490	F	-	SB; iron chlorosis
"	-689	PM	"	"	Chipata	500	F	-	D.M. ergot moderate; 90 days
"	-690	PM	"	"	"	"	F	-	V. small heads; sever stress
"	-691	GN	"	"	Jaisingpur	520	F	-	SB/R
"	-692	PM	"	"	"	"	F	-	-
"	-693	FT	"	"	"	"	F	-	Very thin heads
"	-694	GN	"	Hatkanagal	Hatkanagal	"	F	Uppet seng	-
"	-695	GN	"	"	Chaukahak	500	F	-	Kopergaon-1?
"	-696	PM	"	Kolhapur	Kolhapur	530	W	-	<u>P. pedicillatum</u>
"	-697	GN	"	Kakal	Vikaswadi	550	F	-	Ridge planting
"	-698*	GN	Belgaum	Nipani	Chikodi	570	F	Japani/ Jawari	SB/R
"	-699	PM	"	"	"	"	F	-	V. small to medium head; severe drought
"	-700	GN	"	Hukeri	Chippur	730	F	Jawari	SB/R; 6 months
"	-701	PM	"	"	Allur	710	F	-	D.M. ergot; small to medium heads.
"	-702	GN	"	"	"	"	F	-	SB
"	-703	GN	Kolhapur	Ajra	Bhaireswadi	720	F	-	SB
"	-704	PM	"	"	"	"	F	Nachini	-
"	-705	GN	"	"	Kuttur	620	F	-	-

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1/11/81	VRR-706	GN	Kolhapur	Bhdargadh	Pimpalgaon	580	F	Thorela Jowari	Runner
"	-707	FM	"	"	Bamane	570	F	-	V. loose panicle
"	-708	GN	"	"	Managura	"	F	Moti	Runner
"	-709	GN	"	"	Nanjangaon	700	F	Mahan	-
"	-710	GN	"	"	Kur	520	F	Uparasul	SB/R; severe jassid damage
"	-711	GN	"	"	Mudal	540	S	Sada	-
"	-712	GN	"	"	"	"	S	-	-
"	-713	GN	"	"	"	"	S	-	Kopergaon-3?
"	-714	GN	"	Radhanagari	Wanyachi Surali	605	F	-	SB/R
"	-715	PM	"	"	Kuduthri	600	W	-	<u>P. hohenackeri</u>
"	-716	GN	"	"	"	"	F	-	SB/R
2/11/81	-717	PM	Sangli	Miraj	Miraj	500	F	-	V. tall; late
"	-718	PM	"	"	Kolapi	530	F	-	Ergot moderate; V. late, long cylindrical heads with bristles
"	-719	PM	"	"	"	"	F	-	Severe ergot; conical heads; early
"	-720	GN	"	"	Bhose	600	F	-	SB
"	-721	PM	"	"	"	"	F	-	Ergot; medium, compact good heads; 5 months
"	-722	PM	"	Kavathe	Miraj-P. pur- Kavathe	580	F	-	Small heads; severe drought
"	-723	PM	"	"	Tavadewadi	570	F	-	Thin, medium-long heads; severe drought.
"	-724	PM	"	"	Malkhed	550	F	-	V. primitive; small heads; severe drought.
"	-725	PM	"	Jath	Jath	600	F	-	Ergot; medium long, thin heads; severe drought.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2/11/81	VRR-726	SC	Sangli	Jath	Jath	600	M	Shalu	5 months
"	-727	PM	"	"	"	"	M	Gorani	2½ months
"	-728	GN	"	"	"	"	M	Pasara	R
"	-729	GN	"	"	"	"	M	Gunghri	EB
"	-730	GN	"	"	Shegaon	520	F	Pasiri	R
"	-731	PM	"	"	Avundi	500	F	-	Good heads, severe drought
"	-732	GN	"	"	"	520	S	Gunghri	EB
"	-733	PM	Solapur	Sangola	Jawla	500	F	-	-
"	-734	GN	"	"	Wadegaon	460	F	-	-
"	-735	PM	"	"	DLAKS	400	FB	-	C. ciliaris
3/11/81	-736	GN	"	Mohol	Lamboti	"	F	-	2-5% BN; 5 months; good nodulation
"	-737	PM	"	"	Sajgwi	"	F	-	DM, smut; 100 days
"	-738	GN	"	"	Yavli	440	F	-	SB/R
"	-739	PM	"	"	"	"	F	-	-
"	-740	GN	"	"	Wadachiwadi	460	F	-	4 months
"	-741	BM	"	"	"	"	F	Bhagar	-
"	-742	GN	"	Mada	Laul	490	F	-	Termite damage; severe drought
"	-743	PM	"	"	"	"	F	-	Severe drought
"	-744	GN	"	Barsi	Alipur	"	F	Dhobli	5-6 months; SB/R
"	-745	GN	"	"	Pangaon	450	F	Jabli	SB/R
"	-746	PM	"	"	"	"	F	-	Severe ergot
"	-747	FT	"	"	"	"	F	-	-
"	-748	GN	"	"	Kalegaon	460	F	Pasari	SB/R
"	-749	GN	"	"	Malegaon	"	F	"	"
"	-750	GN	"	N.Solapur	Darpur	465	F	-	SB
"	-751	GN	"	S.Solapur	Ule	400	F	-	BN - upto 5%
4/11/81	-752	PM	"	"	"	"	F	-	Severe bird damage
"	-753	BM	"	"	"	"	F	-	-
"	-754	PM	"	N.Solapur	Tambuwadi	430	F	-	Ergot, downy mildew severe
"	-755	GN	"	"	Hunsal	420	F	-	-
"	-756	GN	Osmanabad	Tuljapur	Suratgaon	"	F	-	SB/R
"	-757	GN	"	"	Sangvimardi	"	F	-	-
"	-758	GN	"	Osmanabad	Bavi karul-	610	F	-	-
					dava				

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
4/11/81	VRR-759	PM	Osmanabad	Osmanabad	Bavi karuldava	610	F	-	2½-3 months
"	-760	SG	"	"	"	"	F	Pili	-
"	-761	GN	"	"	Alni	620	F	-	SB
"	-762	PM	"	Latur	Dhoki	"	F	-	-
"	-763	PM	"	"	Murud	630	F	-	Long, stout heads
"	-764	GN	"	"	Borgaon	620	F	-	-
"	-765	PM	"	"	"	"	F	-	-
5/11/81	-766	GN	"	Ahmadpur	Ashta	570	F	-	SB; rust and L.S. severe
"	-767	PM	"	"	"	"	F	-	Ergot, smut severe
"	-768	SG	"	"	"	"	F	-	M 35-1?
"	-769	GN	"	"	Gharni	560	F	-	-
"	-770	PM	"	"	"	"	F	-	-
"	-771	GN	"	"	Telgaon	570	F	-	SB/EB
"	-772	PM	"	"	Wadi	430	F	-	Free from ergot and DM; long stout heads.
"	-773	SG	"	"	"	"	F	-	PJ-8K?
"	-774	GN	"	"	Sonkhed	450	F	-	SB
"	-775	GN	"	"	Devkar	480	F	-	2% BN: D2/D3
"	-776	GN	Bir	Ambajogai	Zari	580	F	-	SB
"	-777	PM	"	"	"	"	F	-	-
"	-778	GN	"	"	Giroli	570	F	-	SB; BN.
"	-779	PM	"	"	Pipla	580	T	-	Medium stout, good head
"	-780	SG	"	"	"	"	T	Pili	-
"	-781	GN	"	"	Lokhandi Sargaon	600	F	-	SB
"	-782	GN	"	"	Chandan Sargaon	630	F	-	SB
"	-783	GN	"	Kaij	Pisegaon	640	F	-	SB
"	-784	PM	"	"	"	"	F	-	-
"	-785	FT	"	"	"	"	F	-	-
"	-786	PM	"	Ambajogai	Irde	"	F	Gaorani	Medium stout to V. stout, good heads, 3 months sever D.M.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
5/11/81	VRR-787	GN	Bir	Ambajogai	Khanapur	600	F	-	SB
"	-788	GN	"	"	Kumbhari	"	F	-	SB
"	-789	PM	"	"	"	"	F	-	5 months
"	-790	SG	"	"	"	"	F	Jhingri	"
"	-791	GN	"	"	Rajewadi	590	F	-	Runner, BN severe
"	-792	GN	"	"	"	"	F	-	SB, severe BN
"	-793	GN	Osmanabad	Latur	Latur	580	F	-	SB/EB; severe iron chlorosis
"	-794	PM	"	"	"	"	F	-	-
6/11/81	-795	GN	"	"	Wsingaon	"	F	-	SB
"	-796	PM	"	Ausa	Chodtalab	600	F	-	Stout, medium long, V. good heads
"	-797	SG	"	"	"	"	F	-	-
"	-798	GN	"	"	Poolmala	"	F	-	SB
"	-799	PM	"	"	"	"	F	-	V. tall, long, stout good heads
"	-800	PM	"	"	Ausa	630	F	-	Medium stout heads
"	-801	GN	"	"	Chalburuga	620	F	-	SB
"	-802	PM	"	"	Chalburuga	"	F	-	V. small heads
"	-803	GN	"	"	Lamjona	590	F	-	SB
"	-804	PM	"	"	"	"	F	Sajgari	Red long, stout heads; 4 months
"	-805	SG	"	"	"	"	F	Pivla	5 months
"	-806	GN	"	Umarga	Koyata	540	F	-	SB; non-dormant?
"	-807	GN	"	"	Madag	580	F	-	SB
"	-808	PM	"	"	Koregaonwadi	560	F	-	V. small to small heads; few intermediate types
"	-809	GN	"	"	Turori	540	F	-	SB
"	-810	PM	"	"	"	580	F	-	V. small, spindle to conical spikes
"	-811*	PM	Bidar	Basavakalyan	Chandikapur	600	F	-	V. long, V. stout, good heads
"	-812	PM	"	Hosnabad	Athilapuram	630	F	Jawari	Medium long, stout, V. good heads; D.M. present
"	-813	PM	"	"	Mangalgi	600	F	Sajji	Small, conical heads

Samples = 698-702 and 811-813 are from Karnataka State

(3)	(6)	(8)	(10)	
GN = Groundnut	Y	DLARS = Dryland	Y	EB = Erect bunch
PM = Pearl millet	Y	Agricultural	Y	SB = Spreading bunch
SC = Sorghum	Y	Research	Y	R = Runner
PP = Pigeonpea	Y	Station	Y	D2 = Decumbent 2
CP = Chickpea	Y	.	Y	D3 = Decumbent 3
FM = Finger millet	Y		Y	LS = Leaf spot
FT = Foxtail millet	Y		Y	BN = Bud necrosis
BM = Barnyard millet	Y		Y	DM = Downy mildew
KM = Kodo millet	Y		Y	KH = Red hairy caterpillar