

Collection of plant genetic resources in South Italy, 1988

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Summary

Exploration and collection of plant genetic resources were continued in South Italy in 1988. Parts of the regions Campania, Basilicata and Apulia were covered in September jointly by staff members of the Istituto del Germoplasma, Bari, and the Zentralinstitut für Genetik und Kulturpflanzenforschung, Gatersleben. 164 samples, mainly of vegetables and grain legumes, have been collected. Worth mentioning are land-races of tomatoes, *Brassica* spp. and *Vigna unguiculata*. As a part of the collecting area has been explored for the second time after eight years, the effects of genetic erosion could be observed. A map summarizes the itineraries of the ten joint collecting missions in South Italy.

Introduction

Exploration and collection are carried out in South Italy since 1980 (PERRINO et al. 1981) within the frame of the agreement between the Consiglio Nazionale delle Ricerche (C. N. R.) of Italy and the Academy of Sciences of the German Democratic Republic, jointly by staff members of the Istituto del Germoplasma, Bari, and the Zentralinstitut für Genetik und Kulturpflanzenforschung, Gatersleben. Altogether ten expeditions have been mounted and all regions of South Italy have been covered (see fig. 1). To obtain a more complete picture on the plant genetic resources, some areas have been chosen for the present mission which have not yet been covered or only touched formerly – the Napoli area of Campania (fig. 2), the Matera area of Basilicata with neighbouring parts of Apulia (fig. 3), and southern Apulia (fig. 4). Some additional investigations were performed in the area south of Bari, which is rich in local vegetables.

As in the past years, the Bari institute was the organizer of the mission. The field work was done from September 16th to September 25th; the itinerary is given below:

16. 9. Bari – Avellino – Cervinara – Maddaloni – Caserta – Capua – Castel Volturno,

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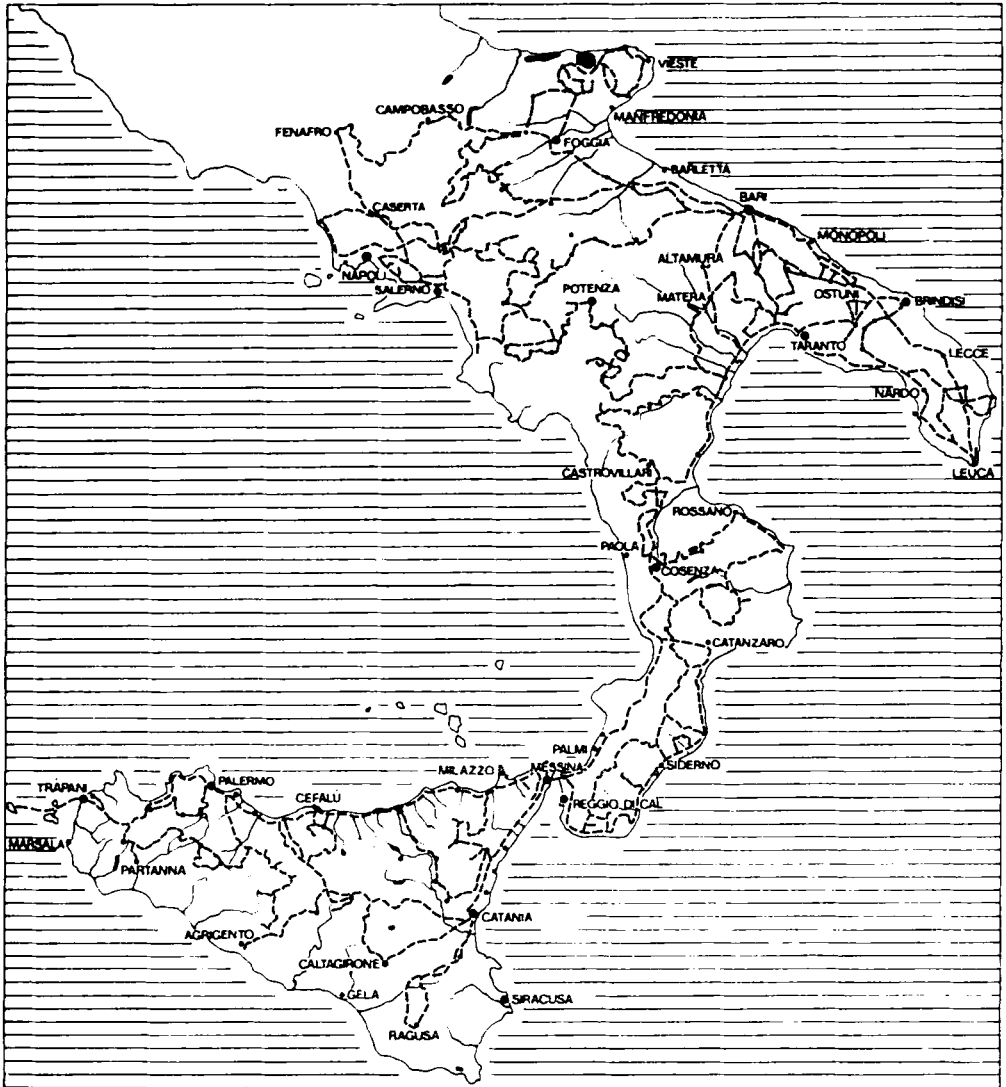


Fig. 1 Collecting routes in South Italy (1980–1988)

17. 9. Castel Volturno – Pozzuoli – Napoli – Nola – Forino – Mercato S. Severino – Calvànico – Mercato S. Severino – S. Angelo – Nocera,
18. 9. Nocera – Scafati – Pompei – Boscotrecase – Pompei – Torre del Greco – Ercolano – Vesuvio – Torre del Greco – S. Anastasia – Pomigliano d'Arco,
19. 9. Pomigliano d'Arco – S. Anastasia – Poggiomarino – S. Valentino Tòrio – Nocera – Vietro – Avellino – Bari,
21. 9. Bari – Altamura – Matera,
22. 9. Matera – Ginosa – Montescaglioso – Metaponto – Taranto – Talsano – Pulsano,

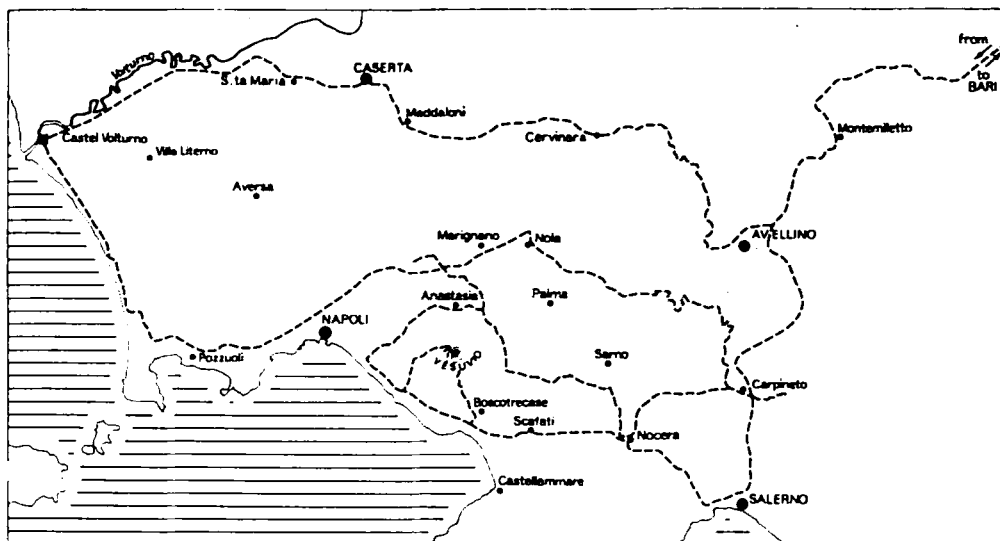


Fig. 2 Collecting route in Campania, 1988

23. 9. Pulsano – Lizzano – S. Marzano di S. Giuseppe – Sava – Manduria – Avetrana – Copertino – Nardò – Galàtone – Tùglie – Caserano – Taureasano – Lèuca,
24. 9. Lèuca – Màglie – Cànnole – Martano – Soletto – Copertino – Manduria – S. Marzano di S. Giuseppe – Francavilla Fontana – S. Vito dei Normanni – Cèglie Messàpico – Francavilla Fontana – Ostuni,
25. 9. Ostuni – Cisternino – Martina Franca – Fasano – Monòpoli – Bari.

Results

Situation in the collecting areas

The Napoli area has been covered for the first time during our missions. Horticultural crops are predominant. Land-races of vegetables are still grown in the house gardens of the farmers. Modern cultivars are cultivated on the larger fields. Genetic erosion is in progress for a number of crops. A rich material of land-races from *Brassica* spp., *Lycopersicon esculentum*, *Phaseolus vulgaris* and *Vigna unguiculata* could be collected.

The situation in Basilicata has been already described (PERRINO et al. 1981, 1982, PERRINO and HAMMER 1983). Large cereal fields predominate. Most of the cereal land-races have disappeared.

Southern Apulia has been already visited at the beginning of our missions (PERRINO et al. 1981). A great number of vegetable land-races can still be found. Land-races of grain legumes and especially cereals are heavily affected by genetic erosion as can be demonstrated by the comparison of the results of the two



Fig. 3 Collecting route in Basilicata and neighbouring parts of Apulia, 1988

missions in this area. Though only eight years have passed since the first mission, a tremendous decrease of local material could be observed. In principal, we found the same situation as in Sicily and Calabria where collections could be carried out after some more than thirty years (MALY *et al.* 1987), and the marked loss in land-races of field crops contrasted to the minor reduction in the variation of garden crops. The same is true for the Bari area, where many vegetable land-races are still grown to meet the demands of the big city (fig. 5). For the characterization of the old, traditional situation, see e.g. MASI (1962), PALUMBO (1981), and DONNO (1983).

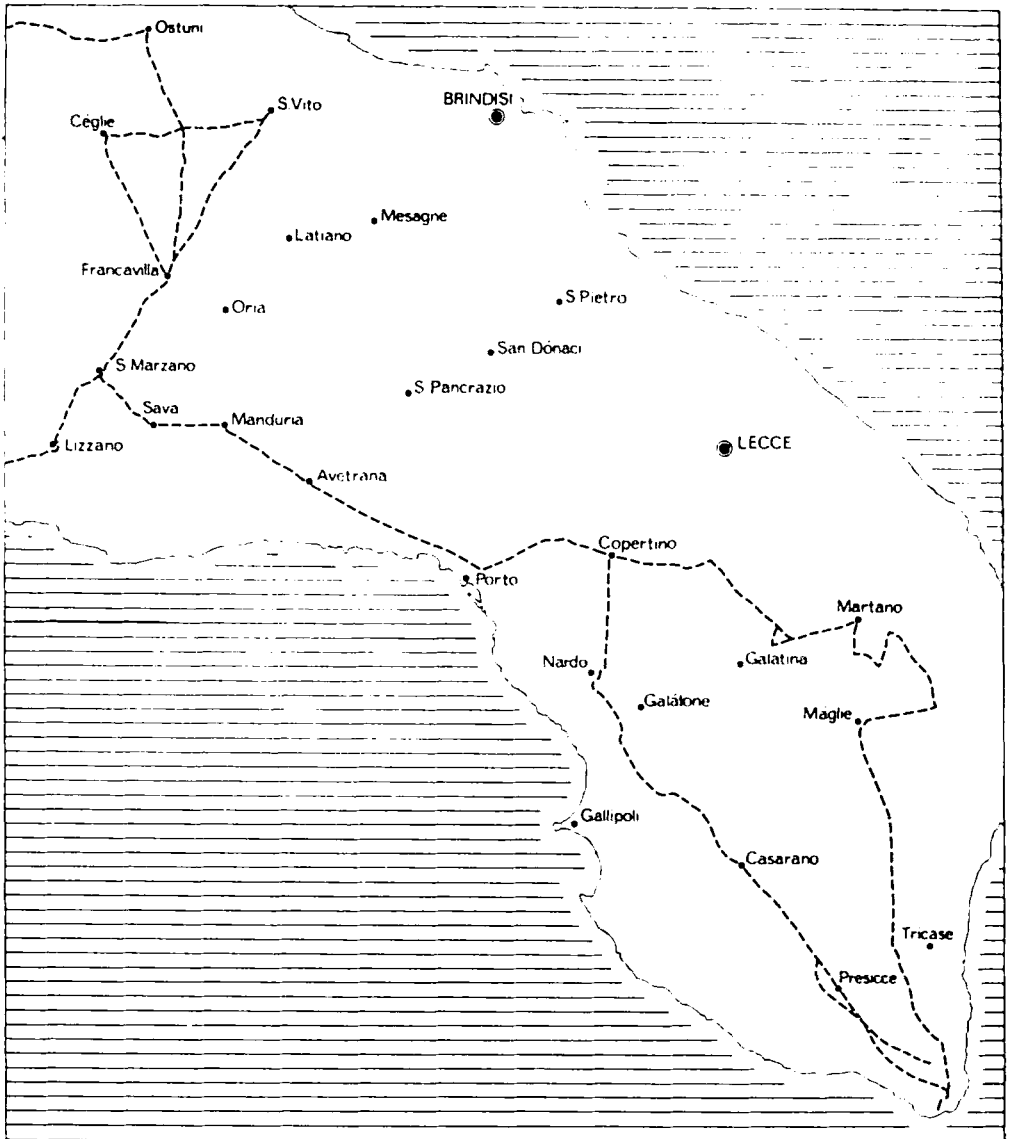


Fig. 4 Collecting route in southern Apulia, 1988

Collecting list

The list given below only contains the basic figures, i.e., in the course of the preparation and reproduction of the seed samples, the material will be separated, because it may consist of different types or contains even seeds of other crops in admixture. The possible increase of the number of accessions is demonstrated by HAMMER et al. (1985).



Fig. 5 The area south of Bari is characterized by vegetables and fruit trees. *Beta vulgaris* var. *cicla* grown in a plantation of *Olea europaea* (pruned in the typical manner of Apulia)

Crop	Number of accessions	Sum
<i>Triticum</i> spp.	8	
<i>Hordeum vulgare</i>	6	
<i>Zea mays</i>	4	
<i>Avena sativa</i>	3	
Cereals		21
<i>Vigna unguiculata</i>	17	
<i>Phaseolus vulgaris</i>	15	
<i>Cicer arietinum</i>	5	

Crop	Number of accessions	Sum
<i>Vicia faba</i>	5	
<i>Pisum sativum</i>	4	
<i>Phaseolus coccineus</i>	2	
Other grain legumes	7	
Legumes		55
<i>Capsicum annuum</i>	12	
<i>Brassica oleracea</i>	11	
<i>Cichorium</i> spp.	11	
<i>Brassica rapa</i>	10	
<i>Lycopersicon esculentum</i>	10	
<i>Cucumis</i> spp.	6	
<i>Cucurbita</i> spp.	4	
<i>Beta vulgaris</i>	4	
<i>Allium cepa</i>	3	
<i>Raphanus sativus</i>	3	
<i>Apium graveolens</i>	1	
<i>Spinacia oleracea</i>	1	
Other vegetables	6	
Other crops	6	
Vegetables incl. some other crops		88
Total sum		164

Crop-specific results

Cereals. As the cereals are most severely affected by genetic erosion, only a few collections could be made. Old land-races of *Triticum durum* are still grown in the S. Marzano area (south Apulia) – ‘Russarda’, ‘Riminia’, ‘Riminla’ can be sown up to March. In the same area also some old varieties of *Triticum aestivum* are in existence, as ‘Maiorca’, ‘Tologa’, ‘Caponera’ and ‘Capobianco’. The old *Triticum durum* varieties ‘Durango’, ‘Procace’ and ‘Carella’ are still grown in the Matera area (Basilicata). In maize, old flint types are still able to compete with modern dent corns, but the dominance of the latter leads via introgressions to the erosion of the old local types (see also HAMMER et al. 1987).

Pulses. A high variation was found in *Vigna unguiculata* (fig. 6). This crop is very common in the farmers’ gardens of the Napoli area (fig. 7) and in south Apulia and shows sometimes a higher variation than *Phaseolus vulgaris* which has been always characterized as the most variable grain legume during the past missions (see, e.g., PERRINO et al. 1981). In Poggiomarino (Salerno), *Vigna unguiculata* has the folk name of “fagiolo comune” indicating the long lasting traditions of this crop. Races of subsp. *unguiculata* predominate, but also the

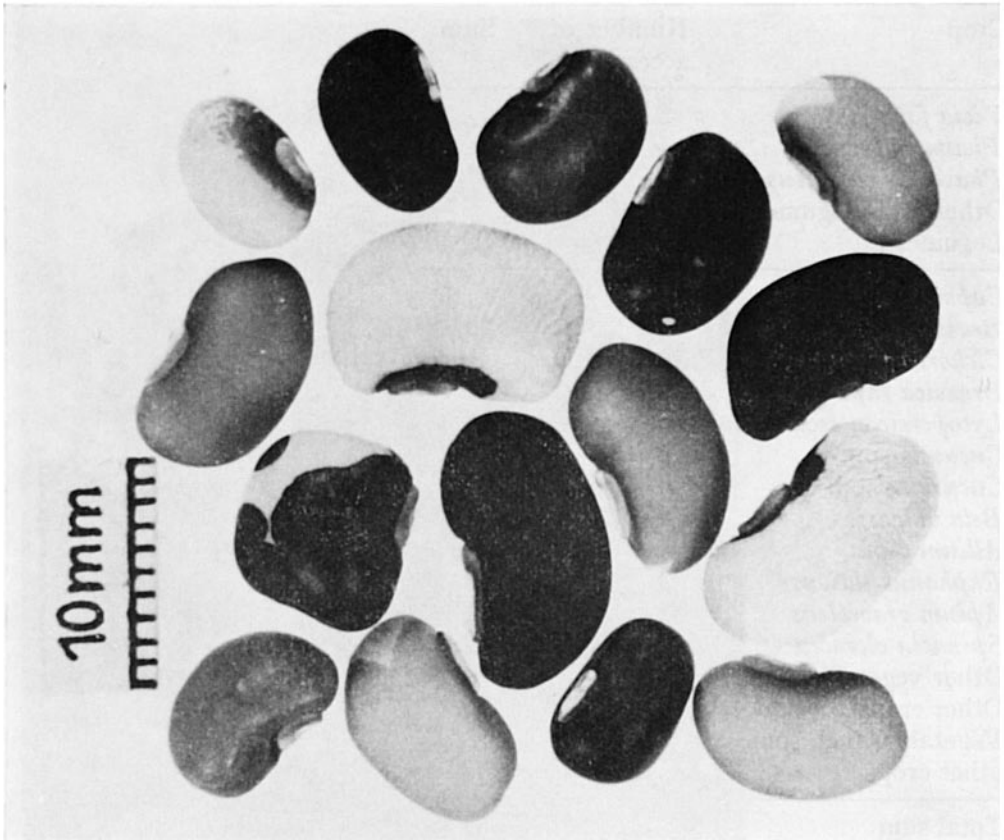


Fig. 6 Seed variation in *Vigna unguiculata*

subsp. *sesquipedalis* can be found. The variation of the south Italian material is described by PADULOSI et al. (1987).

For the pulses grown as field crops the same situation applies as for the cereals. Many typical races, as e.g. black seeded forms of *Cicer arietinum* (PERRINO et al. 1981) could not be collected after eight years. *Lathyrus sativus*, which has been recently characterized as an indicator species for traditional agriculture in the Abruzzi Mts. (PERRINO et al. 1988) and of which six accessions were collected in southern Apulia (fig. 8) in 1980 (PERRINO et al. 1981) could not be found anymore.

Newly introduced pulses for Apulia are *Vigna angularis* (fagiolo di lune, soia) and *Vigna radiata* (soia verde).

Vegetables. Land-races are still common in the house gardens of the farmers, especially tomatoes with rather small fruits for winter storage and for making preserves (fig. 9).

A special form of *Brassica oleracea* with white flowers is grown in the surroundings of Napoli strongly resembling a race collected in the early fifties (var. *alboglabra*, see MALY et al. 1987). This form called "minestra" is a leaf cabbage. Worth mentioning is also a primitive race of var. *gongylodes*, "cole rizzi", with dissected



Fig. 7 Intercropping of *Vigna unguiculata* and *Lycopersicon esculentum* (Curbaresi) in a garden of the Napoli area

leaves from Valenzano south of Bari (fig. 10). The stem is insignificantly fleshy-swollen and sometimes shows a certain ramification similar to the cultivar group "kana pchali" from Georgia (BERIDZE et al. 1983).

Report was already made on a vegetable melon, "cucumarazzo" (PERRINO et al. 1988), which could be finally collected during the recent mission (fig. 11). This race completes the picture of south Italian vegetable melons (HAMMER et al. 1986).

Other crops. *Cannabis sativa* belongs to the traditional crops in south Italy (FABBRI 1949). Now it can be found only in seed mixtures for birds, because the cultivation is forbidden to prevent drug misuse. *Cannabis sativa* was also used as binding material in areas of vegetable production. For this purpose today *Phormium tenax* is grown around Napoli (fig. 12). For the same purpose *Juncus acutus* is cultivated. The species is also used for erosion control (fig. 13).

Conclusive remarks

South Italy was intensively explored in the course of ten missions. Genetic erosion is most evident for field crops. Land-races of garden crops can still be found. In this group the evolution is continuing, e.g. by introgression and specific selection pressures, so that additional material can still be collected for certain breeding purposes.



Fig. 8 Variable seed material of *Lathyrus sativus* collected in Apulia, 1980 (right) in comparison with a highly domesticated race of this crop from Pizzoferrato, Abruzzi (see also PERRINO et al. 1988)



Fig. 9 "Curbaresi", a traditional type of tomatoes with good storing ability and suitability for preserves from the Napoli area



Fig. 10 A primitive race of *Brassica oleracea* var. *gongylodes* from the Bari area. The high variation in leaf dissection and other characters should be noted

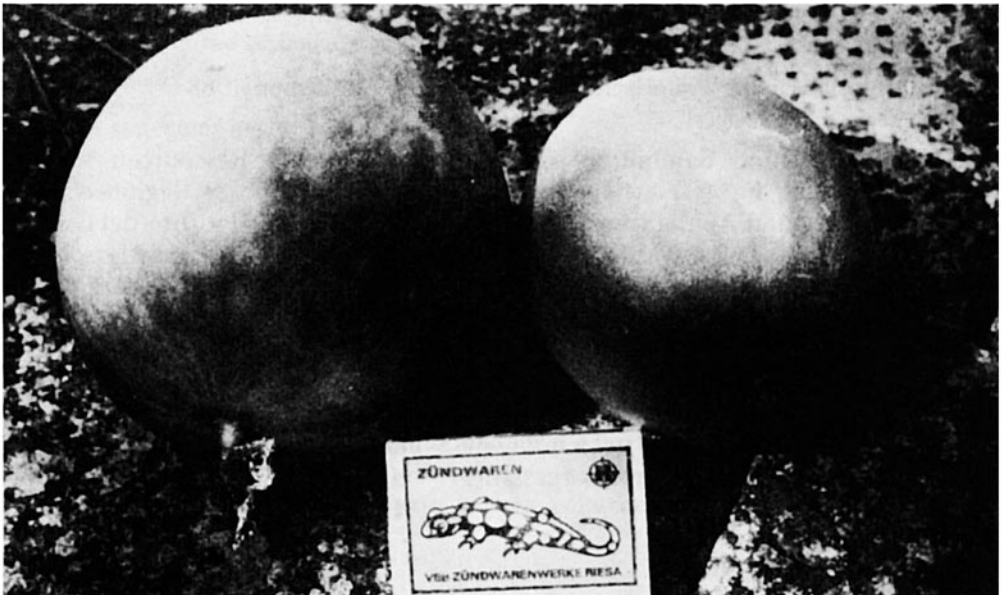


Fig. 11 "Cucumarazzo", a vegetable melon, can be found in the markets of Bari



Fig. 12 *Phormium tenax* is grown for binding material in the vegetable production area around Napoli

Zusammenfassung

Sammlung pflanzlicher genetischer Ressourcen in Süditalien 1988

Die Exploration und Sammlung pflanzlicher genetischer Ressourcen wurden 1988 in Süditalien fortgesetzt. Im September wurden Teile der Regionen Campania, Basilicata und Apulia gemeinsam von Mitarbeitern des Istituto del Germoplasma, Bari, und des Zentralinstituts für Genetik und Kulturpflanzenforschung, Gatersleben, erfaßt. 164 Proben, besonders von Gemüse und Körnerleguminosen, wurden gesammelt. Erwähnenswert sind Landsorten von Tomaten, Kohlarten und *Figna unguiculata*. Da ein Teil des Sammelgebietes im Abstand von acht Jahren ein zweites Mal in die Exploration einbezogen wurde, konnte das Wirken der Generosion verfolgt werden.

Die Reiserouten der zehn gemeinsamen Sammelreisen in Süditalien werden zusammenfassend in einer Karte dargestellt.

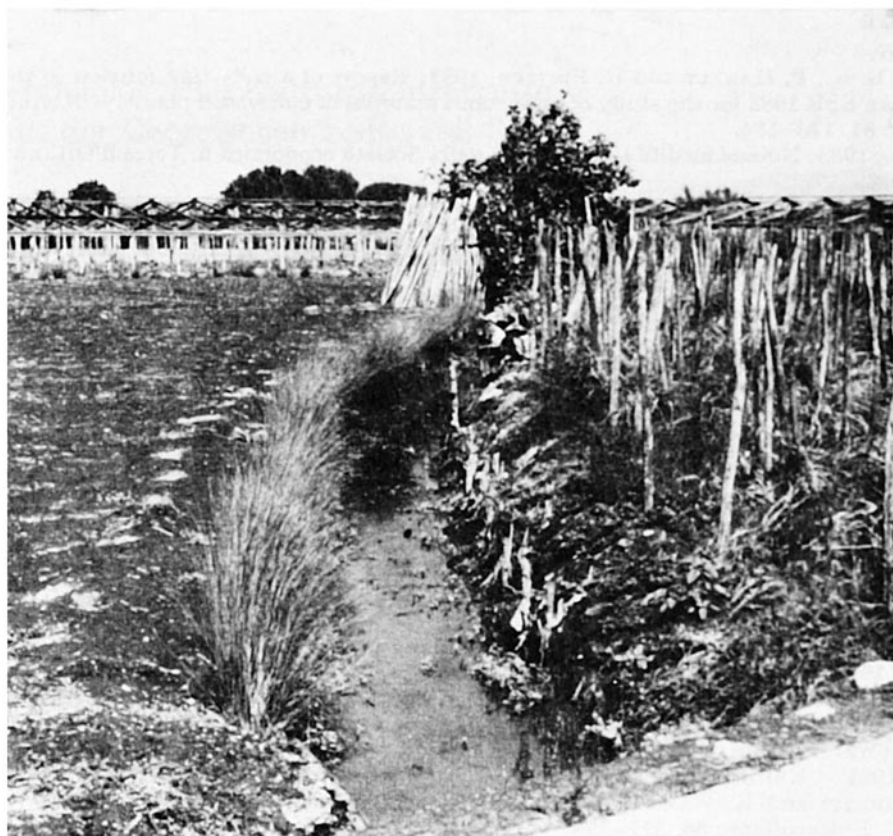


Fig. 13 *Juncus acutus* is cultivated as binding material and for erosion control along an irrigation ditch in the Napoli area

Краткое содержание

Сбор растительных генетических ресурсов в Южной Италии в 1988 году

В 1988 г. были продолжены исследования и сбор растительных генетических ресурсов в Южной Италии. Материал собирался в сентябре месяце в некоторых частях регионов Кампания, Базиликата и Апулия совместно сотрудниками Института зародышевой плазмы (Бари) и Центрального института генетики и исследования культурных растений (Гатерслебен). Было собрано 164 образца, в основном овощных и зернобобовых культур. Примечательны местные сорта помидоров, капустных культур и *Vigna unguiculata*. Повторное исследование части района сбора после первично проведенного 8 лет назад позволило наблюдать действие эрозии генов. Маршруты десяти совместных экспедиций в Южную Италию представлены на карте.

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