COLLECTING IN ZIMBABWE

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From April to July 1982 the IBPGR, in collaboration with the Department of Research and Specialist Services, Harare, collected traditional cereals, food legumes and vegetables in Zimbabwe.

The collecting team comprised Miss J. Toll (IBPGR collector) and Mr. Vincent Gwarazimba (national counterpart). Dr. S. Appa Rao [(Genetic Resources Unit, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT)] and Mr. T.J. Ruredzo (IBPGR trainee), participated for one and two months respectively. Throughout the mission staff of the Zimbabwe national extension service accompanied the team.

Zimbabwe lies between latitudes 15° and 23° south and comprises undulating tableland, ca. 1,200 m, which transects the country from southwest to northeast. The axis of this uplift forms the country's main watershed from which rivers flow northward to the Zambesi valley and southward to the basin of the Limpopo and Sabi rivers. A chain of mountains rising to 2,592 m lies along the eastern border with Mozambique.

Rainfall in the eastern highlands is in excess of 1,200 m per annum in contrast to the Zambesi valley and Sabi-Limpopo basin which receive less than 600 mm. Over a third of the country has an annual rainfall of more than 700 mm but it is confined almost entirely to the five summer months of November to March and the rains are often unreliable.

At the time of the mission the country had been hit by drought and in some areas there was a total crop failure.

The mission continued beyond the harvest period of April and May into July. Samples were collected from farmers' fields and, in the latter part of the mission, from their granaries and stores.

The team explored the peasant farming regions (the Communal Areas), in all parts of the country except the west, southwest and extreme northeast areas. The majority of the Communal Areas is located off the tableland in lowland regions of low annual rainfall and poor agricultural potential.

A total of 2,068 samples of 58 species was collected and these are summarized in Table 1. The Communal Areas in which collections were made are shown in Fig. 1.

Zimbabwe has a highly developed commercial farming sector and long established agricultural research and extension departments. It is not surprising, therefore, that erosion of the genetic diversity in the country's crop landraces is severe, due to the use of modern agricultural practices. The extension service has been very successful in promoting up-to-date farming methods, introducing improved varieties and encouraging cash cropping to the peasant farming sector.

The major cash crops of the Communal Areas are maize, cotton and tobacco. Sorghum, soyabeans, groundnuts, sunflowers, Phaseolus beans, tomatoes and cabbages also carry a market value. The adoption of cash crops has taken place at the expense of traditional crops and landraces. All farmers now grow the locally bred hybrid maize varieties. The genetic resources of Zimbabwe's indigenous maize have largely

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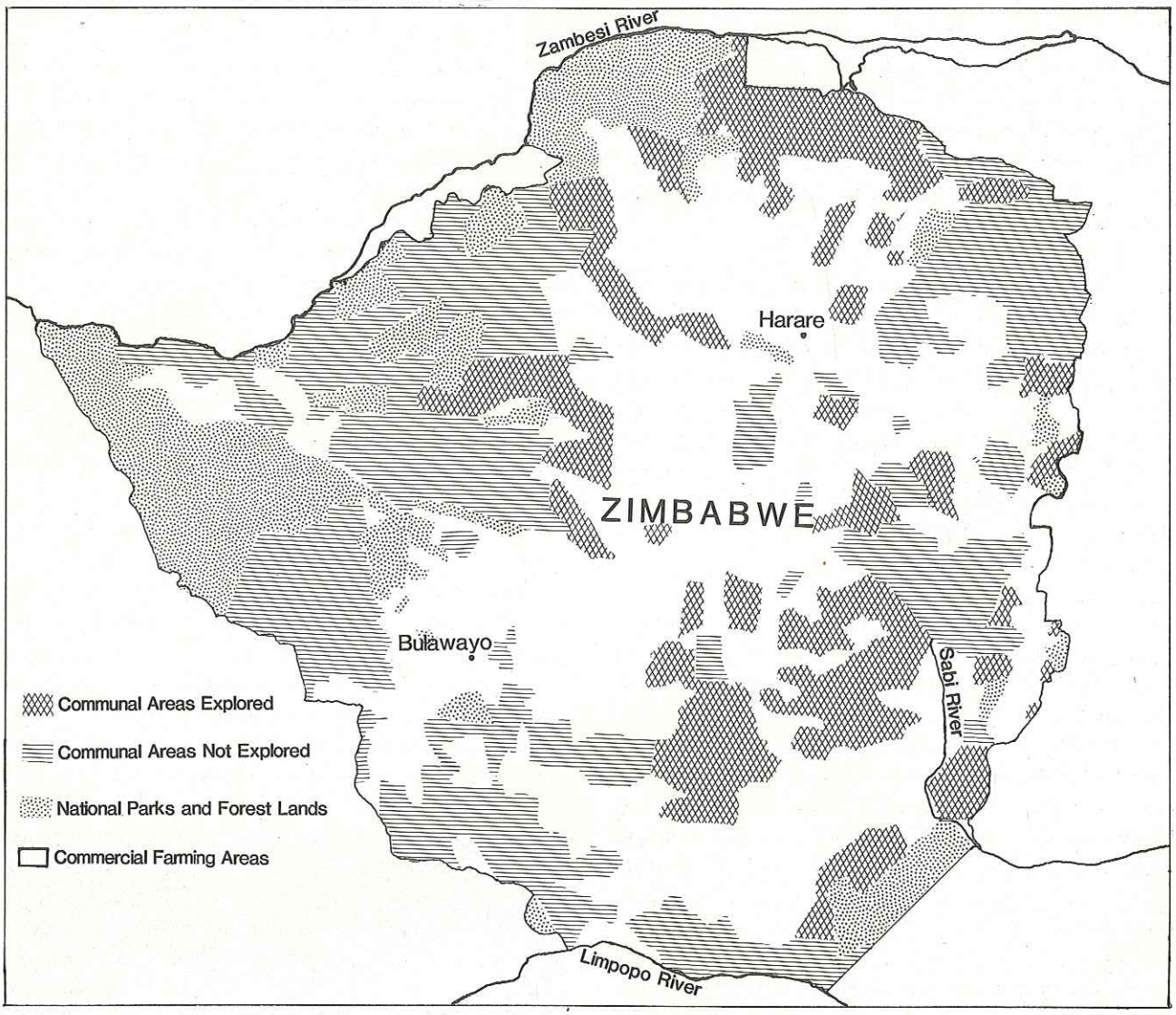

Fig. 1. Land classification map of Zimbabwe showing communal areas explored

been lost. A few sweet corn and flint landraces were collected from farmers who showed a preference for their taste and storage ability.

Zimbabwe still holds a valuable source of diversity in sorghum and millets. Variability was greatest in the subsistence farming areas of the dry sandy lowlands. The collection of sorghum and millets is of the highest priority. For many years improved sorghum varieties have been available to the peasant farmer and recently a bulrush millet (Pennisetum americanum) improvement programme has started. However, the adoption of maize in favour of sorghum and millet is the most important cause of genetic erosion in the indigenous material.

The majority of the groundnut crop is now of improved varieties. Local landraces persist in the subsistence farming regions and early introductions such as Natal Common were found to be variable.

With emphasis on the needs of the commercial farming sector, there has been little attention paid in the past to the improvement of traditional legumes and vegetables such as cowpea, Bambara groundnut, watermelon, melon, cucumber and gourd. These crops are not only important in the peasant diet but are also highly variable in Zimbabwe.

Virtually all homes in the Communal Areas grow a small plot of cowpeas for home consumption. The pods, seeds and leaves are used both green and dried. The species had a wide adaptive range and populations were heterogeneous in seed, pod and plant characters.

The Cucurbitaceae family provides the Zimbabwean peasant with a varied source of leaf and fruit vegetable. Melons, watermelons, cucumbers, gourds and pumpkins are interplanted with cowpeas in the cereal fields. All the African genera exhibited a wide range of variation. Suitably shaped gourds are used as vessels and the immature fruits of a diverse range of fruit forms are eaten.

The centre of origin of the watermelon is the Kalahari and this is reflected in the wide range of variation to be found in Zimbabwe. There was continual variation in fruit characters between sweet forms eaten fresh and unsweet forms cooked or fed to animals. A small fruit with bitter white flesh was occasionally found as a companion weed. This may well be var. colocynthoides, the wild form of the cultivated watermelon.

Variation in the melon, Cucumis melo, was also high. This appeared to be the result of selection for large, sweet-fleshed fruits from an ubiquitous type with a small oval fruit and bitter white flesh.

C. metuliferus is the common cucumber of the Communal Areas. Forms were collected which lacked the stout spines which are characteristic of this species. A Cucumis spp. with a small, round, softly spined, yellow fruit was a common weed of the cucumber and melon plots. The fruit was not used but the leaves were picked for relish. The Flora Zambesiaca described this species as C. anguria.

Several other crops, minor cultivated species and utilized wild species were collected. The entire collection has been deposited in Zimbabwe with the Crop Breeding Institute of the Department of Research and Specialist Services under the care of Mr. Vincent Gwarazimba. A duplicate of the collection has been distributed among the IBPGR-designated base centres.

Further collection of Zimbabwe's crop genetic resources is of high priority. Genetic erosion will, without doubt, accelerate following the emphasis now placed by the government on increasing agricultural production in the Communal Areas. A secure and representative collection of indigenous germplasm will help the country's plant breeders to achieve this goal.

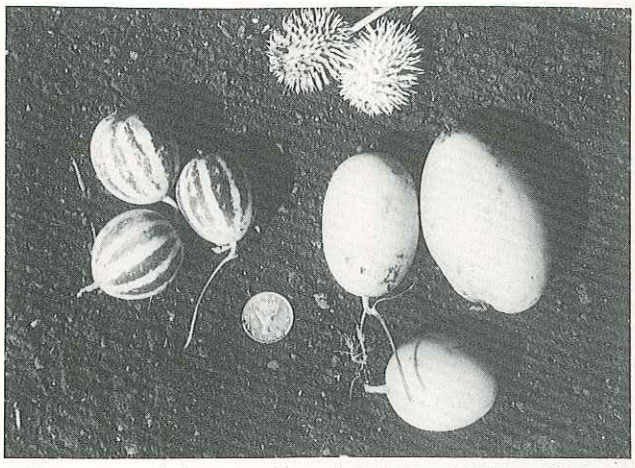

Fig. 2. Cucumis anguria and sweet and bitter forms of C. melo

RESUME

En 1982, à l'occasion d'une collecte organisée par le CIRP, en collaboration avec le Département de la recherche et des services spécialisés, on a recueilli des échantillons de céréales, de légumineuses vivrières et de légumes traditionnellement cultivés au Zimbabwe.

RESUMEN

En 1982, una expedición CIRF de recolección, en colaboración con el Departemento de Investigación y Servicios de Especialistas, obtuvo en Zimbabwe muestras de cereales tradicionales y de legumbres y hortalizas de consumo humano.

Table 1. Summary of collections

Crops	Number of accessions
CEREALS	
maize (*Zea mays*)	36
sorghum (*Sorghum bicolor*)	300
Sorghum spp.	2
bulrush millet (*Pennisetum americanum*)	125
Pennisetum spp.	4
finger millet (*Eleusine coracana*)	286
Eleusine africana	6
rice (*Oryza sativa*)	80
other cereals	5
LEGUMES	
groundnut (*Arachis hypogaea*)	183
cowpea (*Vigna unguiculata*)	208
Bambara groundnut (*Voandzeia subterranea*)	150
soyabean (*Glycine max*)	6
Phaseolus spp.	8
other legumes	7
VEGETABLES	
watermelon (*Citrullus lanatus*)	134
melon (*Cucumis melo*)	42
cucumber (*Cucumis metuliferus*)	29
Cucumis anguria	10
other Cucurbitaceae	4
pumpkin (*Cucurbita* spp.)	122
gourd (*Lagenaria siceraria*)	106
Abelmoschus esculentus	69
Amaranthus and *Celosia*	19
Solanum spp.	22
Brassica juncea	32
other Cruciferae	22
OTHER SPECIES	
Sesamum indicum	35
Sesamum spp.	2
Corchorus, *Hibiscus*, *Ricinus*	14