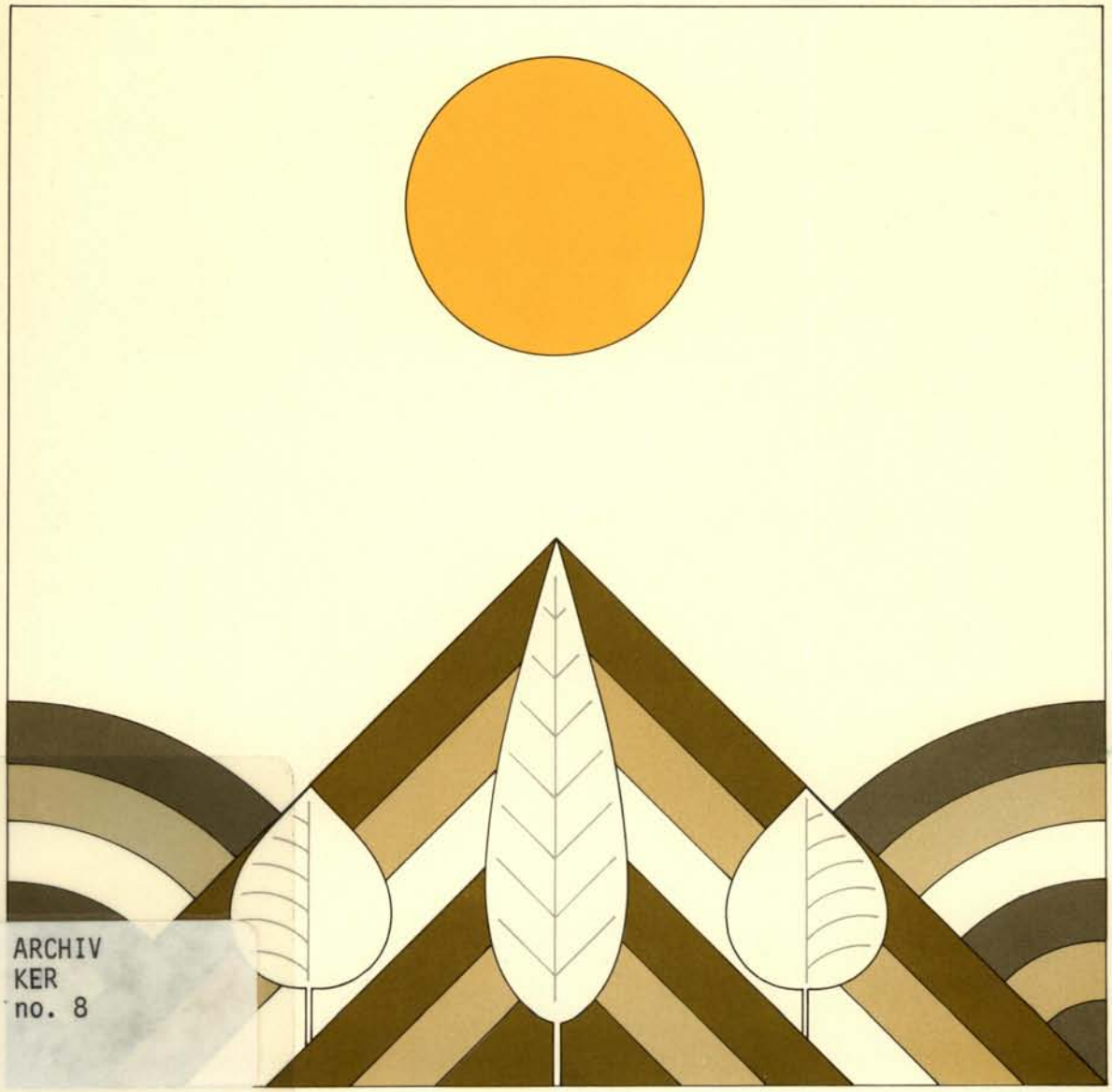
INTERCROPPING
in semi-arid areas

Report of a symposium held at the
Faculty of Agriculture, Forestry
and Veterinary Science,
University of Dar es Salaam,
Morogoro, Tanzania,
10-12 May 1976

Editors:
J.H. Monyo, A.D.R. Ker,
and Marilyn Campbell

IDRC-076e



Postal Address: Box 8500, Ottawa, Canada K1G 3H9
Head Office: 60 Queen Street, Ottawa

Monyo, J. H.
Ker, A. D. R.
Campbell, M.
IDRC
Intercropping in semi-arid areas: report of a symposium held at the Faculty of Agriculture, Forestry and Veterinary Science, University of Dar es Salaam, Morogoro, Tanzania, 10–12 May 1976. Ottawa, IDRC, 1976. 72p.

/IDRC pub CRDI/. Report of a symposium on /intercropping/ in semi/arid zone/s in the /tropical zone/, with an examination of /agricultural research/ activities — examines the effects of intercropping on /crop/ /plant production/; includes /research result/s, /list of participants/, /bibliography/c notes.

UDC: 631.584(213) ISBN: 0-88936-107-X

Microfiche Edition $1

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Farmer's field near Ibadan, Nigeria, showing intercrop of cowpea under maiz

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Cereal–Legume Breeding for Intercropping

R. C. Finlay[1]

Faculty of Agriculture, Forestry and Veterinary Science, University of Dar es Salaam, Morogoro, Tanzania

At Morogoro in the cereal–legume variety testing and improvement program, the genetic material has been tested in three ways.

A range of our best cowpea and soybean varieties was tested in monoculture and in mixture with three standard cereals: a dwarf sorghum, a tall bulrush millet, and the local full season maize variety. We examined the genotype–mixture interaction along with other important factors such as insecticide spraying in cowpeas and the use of inoculum in soybeans.

A wide range of maize material was then tested with our standard soybean variety. In 1976, in addition to maize, we are testing 50 sorghum varieties and the Morogoro bulrush millet composite (in an S_1 — 10 × 10 lattice yield trial). Cowpea, green gram, and sesame breeding lines are also being tested this season in yield trials under monoculture and intercrop conditions. Growth and development parameters and yield components are being examined for differences.

The third method used is diallel analysis, in which superior cultivars of different species are tested in mixtures for compatibility. Differences have been observed within and among species. If less competitive species, such as low-growing legume varieties in a mixture, are put under severe competition stress by taller cereals, their tendency is toward a low mean yield. Varietal differences for such legumes are more easily measured under milder forms of competition where error means tend to be larger. The importance has been noted of plant stand, height, leaf number and size, and the proportion of the high-yielding component in our mixtures. We are developing appropriate selection criteria from these studies for use in the breeding program. This program is an integrated part of production in the cropping system, which, in turn, must be tailored to local farming systems.

[1]Present address: Plant Science Department, University of Manitoba, Winnipeg, Man.