

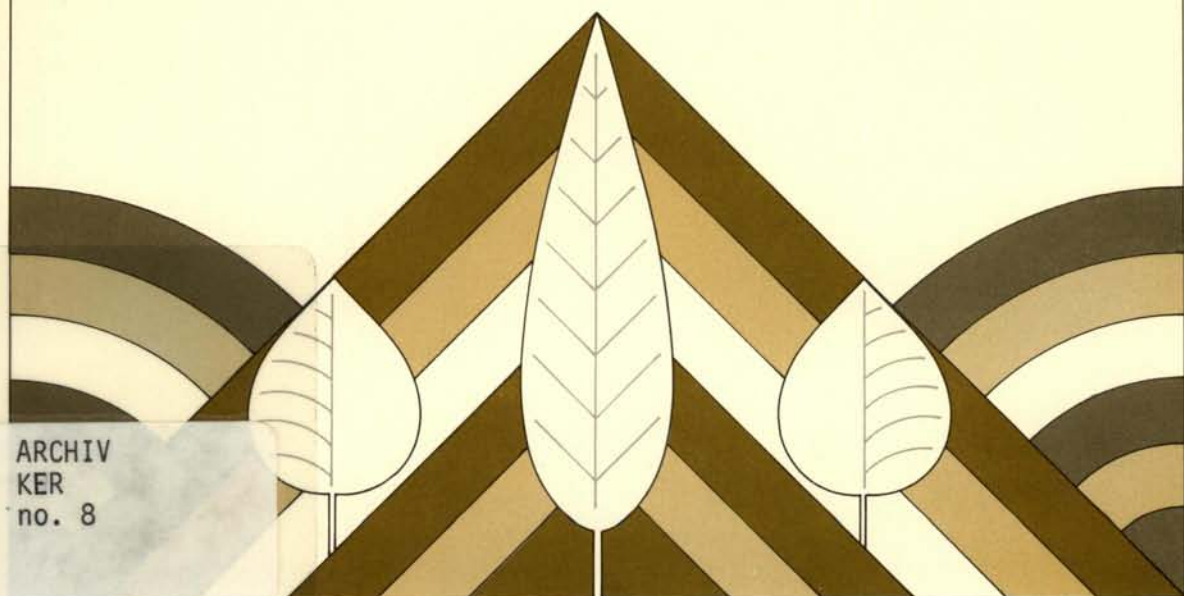
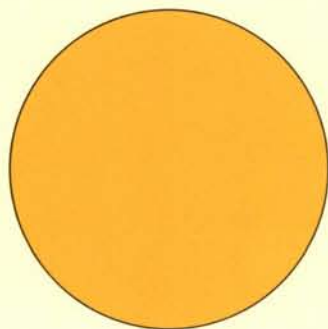
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INTERCROPPING in semi-arid areas

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

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

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Attempted Control of Virus Incidence in Cowpeas by the Use of Barrier Crops

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Field experiments conducted at Ikenne, Ibadan, and Eruwa, Western State (Nigeria) in the late seasons of 1973 and 1974 compared cowpea virus situations in cowpea monocultures with cowpeas either protected or intercropped with maize, rice, or soybeans. Sprayed plots had fewer (though not significant at the 5% level) infected plants than unsprayed plots. Intercropped cowpeas had fewer infected plants than any other treatment. Ife Brown (Irawo) cowpea

yields were greatly improved by spraying with an insecticide in monoculture over unsprayed checks or the intercropped or protected plots. Many of the intercropped and protected plots produced little or no yield. There were more mouldy and unmarketable pods and grains from the unsprayed and protected plots than from sprayed plots (70%, 100%, and 2% respectively). Sprayed plots were more uniform in flowering, pod set, and pod ripening.

Induced Resistance to Bean Rust and Its Possible Epidemiological Significance in Mixed Cropping

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Resistance induced by infection with a nonvirulent race of a pathogen, or with an alien rust fungus, and which is effective against subsequent infection with a virulent race has been recognized for over 20 years (50, 51). Yarwood (51) found that bean rust (*Uromyces appendiculatus* (Pers.) Ung.) uredospores induced resistance in sunflower leaves to infection with *Puccinia helianthi* Schw. and vice versa. Johnston and Huffman (52) reported induced resistance to *P. recondita* Rob. ex Desm. in wheat following inoculation with *P. coronata* Corda var. *avenae* Fraser & Ledingham. Resistance was expressed as a reduction in the number of pustules. Similarly, Littlefield (53) induced resistance to *Melampsora lini* (Ehrenb.) Lev. in flax by inoculation with *P. graminis* Pers. and *P. recondita*.

Although the underlying mechanism of this cross-protection phenomenon has

received much attention (50, 52, 53, 54, 55), its possible epidemiological significance has only recently been realized. Johnson and Allen (56) suggested that induced resistance might play a role in the resistance of multiline varieties, and Allen (57) noted that a similar effect could occur in crop mixtures.

Results from seedling tests on induced resistance to bean rust showed that such resistance may be induced by additional inoculation with wheat yellow rust (*Puccinia striiformis*) or maize rust (a mixture of *P. sorghi* and *P. polysora*). Such induced resistance can delay and reduce sporulation resulting from infection with virulent races. The resistance may be conferred irrespective of whether the inducing inoculum is applied 24–48 hours before, simultaneously with, or 48 hours after the virulent challenge inoculum.

It is suggested that such effects of induced resistance could retard the development of rust diseases in the field, particularly in legume–cereal intercrops.

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