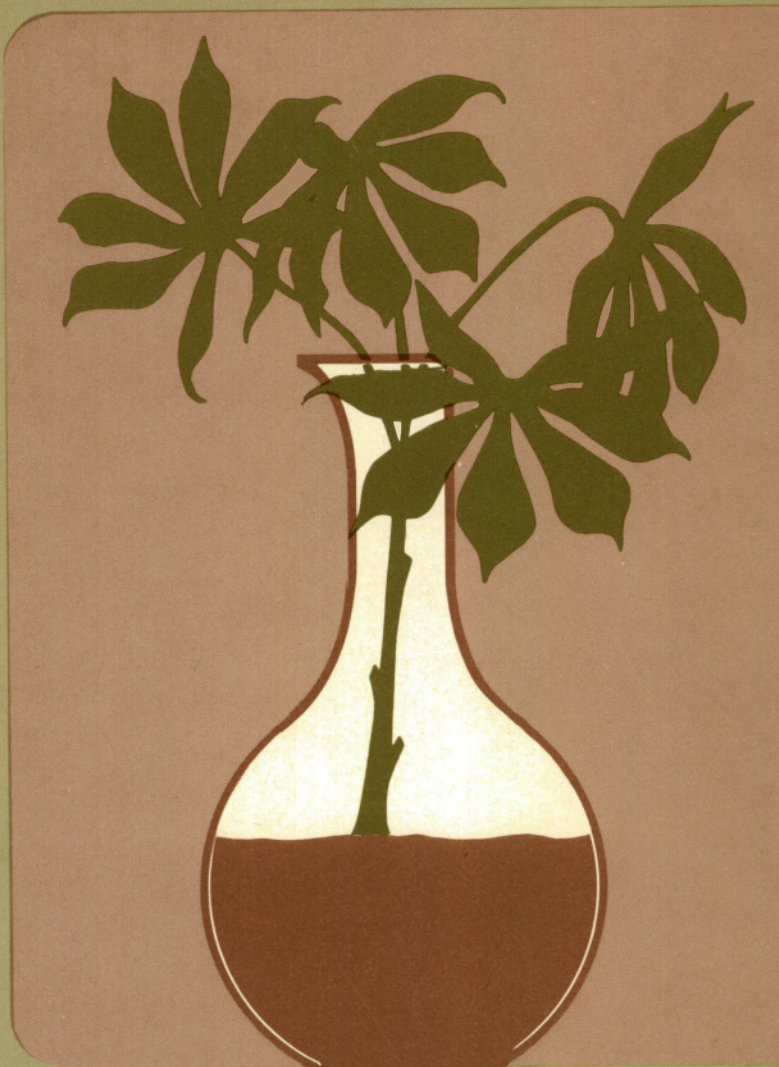


CASSAVA BACTERIAL BLIGHT

report of an
interdisciplinary workshop
held at
IITA, Ibadan, Nigeria,
1-4 November 1976.



Cosponsored by the
International Development Research Centre
and the
International Institute of Tropical Agriculture

Editors:
Gabrielle Persley
Eugene R. Terry
Reginald MacIntyre

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

Persley, G.
Terry, E.R.
MacIntyre, R.

IDRC

IDRC-096e

Cassava bacterial blight: report of an interdisciplinary workshop held at IITA, Ibadan, Nigeria, 1-4 November 1976. Ottawa, IDRC, 1977. 36p.

/IDRC publication/. Report of a workshop on the /cassava/ /bacteria/ blight (CBB) /plant disease/ in /Africa south of Sahara/ — discusses the /diagnosis/ and /geographic distribution/ of CBB, influence of shade (/solar radiation/) and /intercropping/ on its incidence, /plant breeding/ for /disease resistance/; /disease control/ efforts in /Nigeria/, /Zaire/ and /Ghana/. Includes /bibliography/s, /list of participants/ and country statements from /Benin PR/, /Congo PR/, Ghana, and /Togo/.

UDC: 633.68

ISBN: 0-88936-143-6

Microfiche Edition \$1

IDRC-096e

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Cassava Improvement in the Niger Delta of Nigeria

G. Heys¹

Community Development, Shell-BP, Warri, Nigeria

In all Shell-sponsored rural development projects, a detailed survey is made of the project areas to identify factors critical for the economic and social development of the local people. When Shell-BP Petroleum Development Company of Nigeria Limited was conducting a survey in the early 1970s in parts of Bendel State, they found that cassava accounted for 80% of the local diet. They also found that locally grown varieties yielded only 5–6 t/ha compared with 24 t/ha for the newer varieties that were available and had been developed for higher yields, improved palatability, starch and dry matter content.

However, when these newer varieties were being multiplied for farmers it was discovered they were susceptible to cassava bacterial blight (CBB) caused by *Xanthomonas manihotis*. This was a problem with a far wider significance than for our relatively localized project areas.

The Nigerian Federal Department of Agricultural Research had developed several good cassava varieties, such as 53101, 60444, 60447, and 60506. Shell-BP were interested in obtaining these varieties for demonstration and multiplication in their project villages, but, in early 1972 none of these varieties were available in Rivers State and only 4 ha of 60447 in Bendel State.

Bendel State Ministry of Agriculture (MANR) had planted 12.5 ha of 60447 at their Agbarho Agriculture Station and made available sufficient planting material to Shell-BP to plant 0.5 ha in the Rivers and Bendel states. At the same time the Federal Department made available small quantities of 53101, 60444, 60447, and 60501, plus some single plants of other varieties.

CBB Incidence and Severity

During July 1972 the Agricultural Superintendent at Agbarho Farm noticed that a few cassava plants were wilting from the top leaves and beginning to dieback from the growing shoots. He approached scientists in his own Ministry to establish the nature of the disease and how it might be controlled. Over the next 2 mo the number of

affected plants increased but did not exceed 50 in the area of 12.5 ha.

At the end of September the affected cassavas began to regenerate from just below the dieback area and it was concluded that the problem might have been physiological. The varieties being multiplied by Shell-BP were carefully observed but no disease was found.

In July 1973 the disease manifested itself on an alarming scale and by September about 75% of the 45 ha planted at Agbarho were affected. In the Shell-BP program, the cassava obtained from Agbarho was unaffected but all the varieties obtained from FAR in the previous year, except 60506, were diseased.

IITA Involvement

IITA was interested in two aspects. Dr E.R. Terry noted disease-free 60506 growing between infected plots of 53101 and 60444. Dr S.K. Hahn was interested in disease resistance in improved varieties, and imported cassava seeds from all the main cassava-producing areas in the world.

Hahn had already selected 10 000 seedlings; some were being crossed by open pollination and some high-yielding plants were being hand-crossed with highly resistant tree cassavas or known low-yielding, resistant crosses from them. He was also interested in Shell-BP's work on selection under disease pressure of locally grown cassava clones from the Bendel and adjoining states. These had been selected because of known yield and palatability, but by late 1973 many were infected with the disease.

It was agreed that Hahn's selections should be included in the Shell-BP program and 4 ha were set aside in the Delta area of Bendel State, an area where rainfall was twice that at Ibadan. Shell-BP also asked the Bendel Ministry of Agriculture to allocate 4 ha at Agbarho as the incidence of the disease at that station would provide stringent conditions for IITA selections.

In April 1974, 1000 clones selected from 10 000 IITA clones and 300 clones selected as the best cassavas grown at IITA in the 1973–74 season were planted at Agbarho. Simultaneously, 3 ha in the Shell-BP area were planted with half-cross cassava (one known parent) and a few hand-

¹ Present address: IITA, P.M.B. 5320, Ibadan, Nigeria.

crosses. All had been selected on an individual plant basis for yield and root formation.

Control Measures

The Ministry of Agriculture was reluctant to participate in the April 1974 planting on the grounds that even diseased 60447 outyielded local cassavas. Shell-BP, realizing the seriousness of the disease, which had become apparent when harvesting began in early 1974, offered as an inducement to pay half the labour bill at Agbarho and lend them a tractor to prepare the land. The cassava clone 60447, which had previously been yielding 24 t/ha on the relatively unfertile sand/silt soils of Agbarho, dropped to 2.5 t/ha in 1973-74.

However, using different planting dates, Shell-BP had shown that early September planting, even of diseased material, gave some 8-9 mo of uninterrupted growth before the disease manifested itself. Planting at the normal time (February/March) gave only 4-6 mo growth before attack. The plants did not recover and root development was insufficient to give any yield.

Field Day

In late October 1974, Shell-BP organized a field day at Agbarho, on behalf of the Bendel Ministry of Agriculture and IITA, that attracted senior field and research officers from the five Southern States of Nigeria, as well as federal staff and members of farmers organizations. The field day created widespread interest and although some clones had succumbed to the disease, many exhibited high resistance and it was agreed to send Rivers State's Department of Agriculture 100 of the best clones from the 1300 as a nucleus of disease-resistant material.

Selections of Varieties

At the end of March 1975 the 1300 clones planted in April 1974 were harvested. Hahn made 137 selections from these of which 16 were outstandingly good yielders. These were tested for starch and gari production and palatability. Several groups of people participated in the testing and all but one of the 16 varieties were judged as "high quality." Yields on the basis of eight stands for each clone ranged from 25 to 32 t/ha. Over 500 selections were made from the Shell-BP-grown clones on the basis of single plant evaluation.

Continuing Program

Shell-BP is continuing its efforts to develop an improved cassava program, and among other activities in 1975 it: (1) provided the East Central State, now Imo and Anambra states, with 2 ha of 60506; (2) helped the Bendel Agricultural Department clear 21 ha from bush at Agbarho and plant 14 ha during the 1975 season; (3) held more field days at Agbarho; one was on behalf of IITA, for the Cassava Breeders of Africa, attending the Workshop for the International Exchange and Testing of Cassava Germ Plasm in Africa in November 1975; (4) in 1976, Shell-BP helped the Ministry of Agriculture in Bendel State to continue the development work at Agbarho where there are now 17 ha of improved disease-resistant cassava growing; (5) supplied the Rivers State MANR with planting material. We have helped some local farmers to grow some of the IITA-selected cassava and we hope to encourage more to do so in the future; (6) helped initiate and establish a cassava rapid multiplication program to hasten the dissemination of the improved, high-yielding, disease-resistant cassava most suitable for the climate and poor soils in the Niger Delta.