

were observed at Luve, Sidvokodvo, and Malkerns. A microscopic examination of diseased samples at the Malkerns Research Station did not reveal the presence of any sporulating structures. Further investigations are required to confirm the etiology.

Although both early and late leaf spots, and web blotch diseases can be very effectively controlled by using fungicides like chlorothalonil, this practice may not be economically feasible for small farmers in Swaziland. The development of high-yielding disease-resistant genotypes appears to be the best means of containing these diseases. In the past, several high-yielding rust- and/or late leaf spot-resistant breeding lines developed at ICRI-SAT Center, India, were evaluated in Swaziland. Some of them, e.g., ICG (FDRS) 4 have performed well (Rao and Masina 1987). On-farm testing of these promising genotypes should be initiated. Early sowing and crop rotation should be beneficial in reducing the severity of leaf spots and web blotch.

High-yielding rosette-resistant breeding lines developed at the Southern African Development Community (SADC)/ICRISAT Groundnut Project, Malawi, should be evaluated and made available to farmers in Swaziland. Farmers should be advised to sow groundnut with the first spring rains (from October to early November) at optimum densities in order to minimize rosette disease incidence. Selection of good quality seed, seed treatment with a suitable chemical (e.g., thiram or captan), and sowing at optimum depth should be beneficial in achieving optimum plant densities.

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First Report of Pepper Spot and Leaf Scorch on Groundnut in Nepal

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Pepper spot and leaf scorch disease of groundnut caused by the fungus *Leptosphaerulina crassiasca* (Sechet) Jackson & Bell, has been reported from several groundnut-growing regions of the world (Jackson and Bell 1969, Subrahmanyam et al. 1992). The disease was observed for the first time both in farmers' fields and research stations in Nepal during the 1992 rainy season. Both pepper spot and leaf scorch symptoms of the disease were observed.

The pepper spot phase was characterized by minute necrotic spots on the lower leaves, close to the soil surface. These spots were numerous, usually of pinhead size, in shades ranging from dark brown to black, and irregular to circular in shape. They were usually found on the upper surface of the leaflets but a few lesions were also seen on the lower surface. Leaf scorch was the most common symptom, and it was found developing usually from the tip of the leaflets. The wedge-shaped lesions had a bright yellow zone along the periphery of their advancing margins. The necrotic tissues were dark brown and tended to fragment along the leaflet margins.

Of the seven major groundnut-producing districts surveyed, the disease was found in Sarlahi, Chitwan, Rautahat, and Nawalparasi. The disease was not severe in farmers' fields except on a local groundnut cultivar at the research stations in Nawalpur, Sarlahi district, and in Rampur, Chitwan district. At these research stations, lo-

cal groundnut cultivars had up to 10% of the leaf area damaged. The disease was not found in the groundnut-growing areas of Sunsari, Parsa, and Bara districts. Currently the disease is of only minor importance in Nepal, but its presence will have to be taken into consideration when introducing new cultivars.

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Opportunities for Increasing Groundnut Production in Pakistan

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In Pakistan Groundnut is grown over 80000 ha with approximately 84% of the crop area falling in the Punjab province, 11% in the Northwest Frontier Province, and 5% in the Sindh province. The average pod yield is 1.1 t ha⁻¹ but yields in the 'barani' (rainfed) areas, where the soils are sandy, are lower. Groundnut is grown mainly for direct consumption and confectionery use. There is potential for edible groundnut oil production in Pakistan given favorable market conditions.

Till recently, only two groundnut cultivars were available to farmers in Pakistan for rainy-season sowing. The spreading variety no. 334 is the oldest and most commonly grown cultivar in Pakistan. It matures in 180–200 days, has a relatively stable but low level of productivity, and does not respond to improved management practices. In 1973, a virginia bunch cultivar, Banki, was introduced in the country. It matures in 160–180 days. Though somewhat more responsive to improved management prac-

tices, it was not adopted by the farmers for large-scale cultivation.

Since 1984, Pakistan's Barani Agricultural Research and Development Project (BARD) has been evaluating introduced germplasm and breeding material, obtained mainly from ICRISAT, to identify the variety most suitable for cultivation in the country. In this effort, BARD has been assisted by the International Development Research Centre. These efforts have led to the identification and release of the following groundnut cultivars in Pakistan.

BARD 699

BARD 699, released in 1991, is a composite of ICGS 37 and ICGS 44 bulked in equal proportion. Both ICGS 37 and ICGS 44 originate from a natural hybrid population of Kadiri 3 and were developed at ICRISAT Center, India. They belong to the spanish group and have a semi-bunch growth habit. Both have two-seeded, medium-sized, smooth pods which are slightly beaked and constricted. Their tan-colored seeds have 52% oil and 27% protein, and weigh 41 g (100-seeds)⁻¹.

As both ICGS 37 and ICGS 44 performed better than Banki and no. 334 in replicated yield trials during 1987–1989 and looked phenotypically alike, they were bulked to form BARD 699 to achieve stability in production.

BARD 699 performs well in the medium-to-high rainfall zones of 'barani' areas and in the irrigated production system. It has consistently produced a 7 to 90% higher pod yield than Banki or no. 334. In on-farm trials, BARD 699 produced an average pod yield of 1.7 t ha⁻¹ compared to 1.3 t ha⁻¹ of no. 334. Its shelling percentage (70) is greater than that of the local cultivars. Its seeds can be used for both oil extraction and confectionery purposes. It matures in 150–160 days, which is about 3 to 4 weeks earlier than Banki.

BARD 479

BARD 479 was selected from a germplasm line, ICG 4989 (PI 270259, Natal Red), obtained from ICRISAT Center, India, in 1984. It is a semispreading groundnut variety maturing in 170–180 days under 'barani' conditions. Its mainly two-seeded rough pods have a moderate beak and moderate to deep constriction. Seeds of BARD 479 are large [60.5 g (100-seeds)⁻¹] and are reddish brown. They contain 51% oil.

BARD 479 performs well under a wide range of 'barani' conditions. Increases in pod yield in BARD 479 have