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BACTERIAL LEAF SPOT OF GUAR

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In January 1963, severe leaf spotting was seen in a planting of guar (*Cyamopsis tetragonoloba* (L.) Taub. cv. Texsel) near Brisbane. Lesions were initially watersoaked but dried quickly to pale brown irregular spots with a narrow dark tan margin, surrounded by a diffuse pale green halo. Smaller punctiform spots uniformly dark were also present. Puckering was associated with the lesions on younger leaves.

A bacterium consistently isolated from young lesions proved pathogenic to guar when inoculated into healthy leaves. Symptoms produced by these isolates on lemon fruit and green pods of French bean were similar to those produced by an isolate of *Pseudomonas syringae* van Hall, 1902 from French bean.

Six introductions of guar from India, Ceylon and West Pakistan together with the variety Texsel were inoculated with the same strain of *P. syringae* isolated from the French bean, using a beef extract broth culture. Plants were sprayed with the suspension and then placed in a humidity chamber. After four days, leaves on all inoculated plants were showing watersoaked spots and subsequent development was similar to that seen in the field (Figure 1). All lines of guar appeared to be equally susceptible.

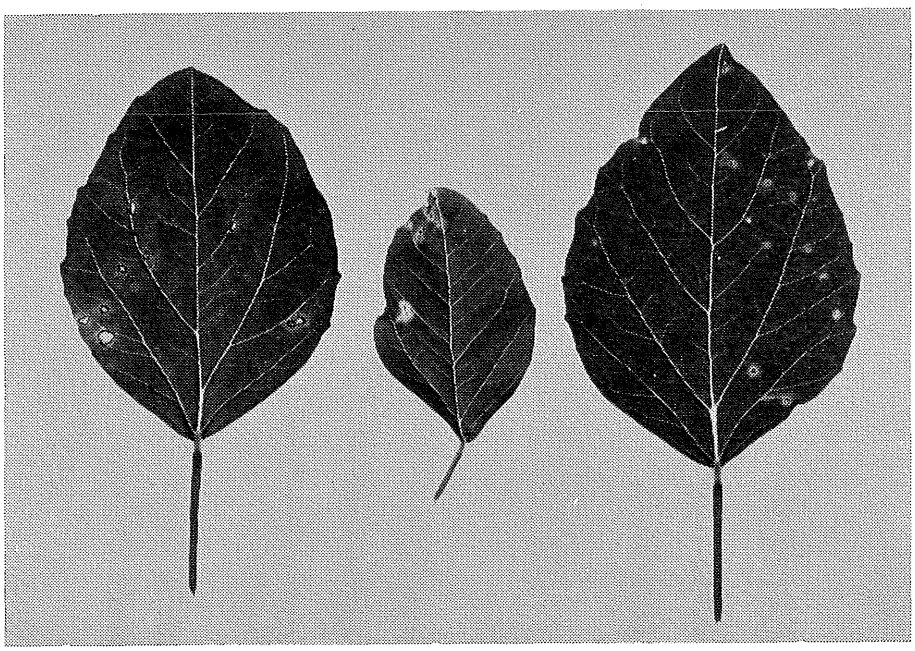

Fig. 1.—Leaf spot of guar resulting from artificial inoculation with *Pseudomonas syringae* van Hall.

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Characteristics of Isolate

The isolate from the guar and an isolate of *P. syringae* from bacterial brown spot of bean were compared and found to be identical. The characteristics of both cultures were as follows:—

Morphology.—The organisms were Gram-negative, motile rods occurring singly or in pairs and having a single polar flagellum.

Cultural characteristics.—The colonies after 48 hr on potato dextose agar were white to cream, circular, convex, opaque, with margin slightly irregular, shining and up to 3 mm in diameter. After growth on beef extract agar for 48 hr, the colonies were white, circular, raised, opaque, with margin entire, shining and up to 2 mm in diameter. Growth in beef extract broth after 48 hr was moderately turbid, frequently possessing a green to yellow-green fluorescent pigment, no pellicle, with heavier growth at broth surface and tube interface. On cooked potato slant, growth was restricted to the slope surface, with entire margin, smooth, cream colour with no change in the potato tissue.

Action on carbon compounds.—Acid but no gas was produced from glucose, galactose, fructose, sucrose, arabinose, mannose, raffinose, xylose, ribose, sorbitol, erythritol, glycerol and mannitol. Acid was not produced from lactose, salicin, cellobiose, aesculin, rhamnose, maltose, starch, 5% ethanol and dulcitol.

Miscellaneous biochemical reactions.—Glucose was utilized aerobically; in three days litmus milk was alkaline, and this was followed by peptonization of the milk; starch was not hydrolysed; gelatin was liquefied; hydrogen sulphide was not produced; 1% tributyrin was not hydrolysed; nitrate was not reduced; indole was not produced; both the methyl red test and the Voges-Proskauer reaction were negative; pectate medium was not hydrolysed; slight growth occurred in beef extract broth containing 4% sodium chloride.

Discussion

Rangaswami and Sanne Gowda (1963) described a new species, *Pseudomonas cyamopsicola,* occurring on guar in India. The organism differs culturally and biochemically from the organism isolated from guar in Queensland. The pathogenicity of the guar isolate on the lemon fruit and bean pods and the subsequent development of lesions characteristic of *P. syringae* on these hosts, together with the results of the tests carried out in comparison with the bean isolate indicate that this organism is *P. syringae.* The characteristics of the guar isolate were in agreement with the description of *Pseudomonas syringae* van Hall, 1902 in the 7th Edition of "Bergey's Manual of Determinative Bacteriology". This appears to be the first record of this organism on guar.

REFERENCE

RANGASWAMI, G., and SANNE GOWDA, S. (1963).—On some bacterial diseases of ornamentals and vegetables in Madras State. *Indian Phytopath.* 16:74-85.

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