Table 1 (contd.)

Rachille

Flowering	0·40	0·29	0·22	0·13	0·13	0·08
7 DAF	0·32	0·28	0·26	0·11	0·08	0·07
14 DAF	0·30	0·22	0·20	0·09	0·07	0·07
21 DAF	0·21	0·20	0·17	0·08	0·04	0·05
Harvest	0·11	0·06	0·08	0·07	0·04	0·04
Mean	0·27	0·21	0·19	0·10	0·07	0·06
C.D. 5						
Varieties (V)		0·014		0·013		0·007
Stages (S)		0·021		0·020		0·011
V × S		0·030		0·029		0·015

Rachis

Flowering	0·46	0·30	0·24	0·15	0·16	0·12
7 DAF	0·41	0·29	0·31	0·13	0·12	0·10
14 DAF	0·38	0·28	0·22	0·11	0·11	0·10
21 DAF	0·36	0·21	0·20	0·10	0·08	0·08
Harvest	0·30	0·17	0·19	0·10	0·06	0·07
Mean	0·38	0·25	0·23	0·12	0·10	0·09
C.D. 5%						
Varieties (V)		0·026		0·012		0·006
Stages (S)		0·046		0·019		0·009
V × S		0·057		0·027		0·013

(b) *Partition index (PI)*

Harvest	68·5	58·8	67·0	61·8	59·1	51·7
C. D. 5% Varieties (V)		2·37		0·28		0·45

V_1 = *Pallavi*, V_2 = *Ratna*, V_3 = *Vijaya*, V_4 = *Jaya*, V_5 = *Jagannath* V_6 = *CR* 1009, DAF = Days after flowering, V = Variety, S = Stage.

ISOLATION OF A NEW STRAIN OF *STREPTOMYCES ALBUS* FROM AGRA SOILS

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ABOUT 300 actinomycete cultures were isolated in pure form from soil samples collected from different localities of Agra region, adopting dilution plate technique[1] on Thronton's agar medium[2]. During their screening for obtaining antibiotic producing strains an actinomycete (isolate No. k-32) was found to be strongly antagonistic to *Colletotrichum falcatum* (Went) causing red-rot in sugarcane and to *C. gloeosporioides* (Penz) causing anthrocnose in mango, and, leaf spots and anthracnose on citrus, papaya, sugarcane etc. and also to other micro-organisms including gram positive and gram negative bacteria and fungi of different taxonomic groups including some of the important plant pathogens. The screening was done by placing the plugs, cut from a 10-day old cultures of actinomycetes, in the petri plates previously seeded with test organisms.

The actinomycete is non-chromogenic type, forming compact growth on agar media. The whole cell hydrolysates contain LL diamenopimelic acid. Sporophores are open spirals, spores in chains, are spherical to oval with smooth surface configuration as seen under electron microscope. The isolate k-32 was placed in section Spira and White Series[3].

The antibiotic substance produced by isolate k-32 is thermolabile. It can be stored without any loss in activity up to 48 days at low temperature (5° C) and neutral reaction. It is best soluble in *n*-butanol, methanol and distilled water. The antibiotic activity is not suggestive of polyene antibiotics. the IR spectrum of antibiotic substance indicates the presence of −OH,

– NH and C = 0 groups[4].

In its morphology and spore surface configuration, as seen under electron microscope, which is a constant taxonomic criterion[5–7], the actinomycete best resembles *Streptomyces albus* (Waksman and Henrici)[8–10]. But it has been designated as a new strain of *S. albus* (Agra strain), because it differs from all the existing twenty three strains[11–13] of *S. albus* in its luxurient growth and dark grey-coloured aerial mycelium on inorganic salt starch agar medium, reduction of nitrates, amylosis and also in its utilization of raffinose, rhamnose and non-utilization of xylose, fructose and lactose. The antibiotic substance produced by isolate k-32 is also found to be different from that produced by already known strains of *S. albus*.

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EFFECT OF CALCIUM AND MAGNESIUM ON THE SUSCEPTIBILITY OF RICE PLANTS TO BACTERIAL LEAF BLIGHT

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CALCIUM and magnesium antagonize each other in their absorption by plants. Liming of acid soils to enhance their productivity not only increases the soil pH but also supplies calcium. Heavy dressings of lime leads to magnesium deficiency, particularly in highly leached humus acid soils or on sandy soils since magnesium uptake is depressed as a result of calcium competition[1]. Similarly, heavy absorption of magnesium may result in calcium deficiency. Since the susceptibility of plants to disease is greatly influenced by mineral nutrition, the availability of these plant nutrients would affect their resistance, especially in these problem soils. Very little attention has been paid to understand the role of calcium and magnesium with regard to diseases caused by bacterial pathogens. We report here the influence of calcium and magnesium on the susceptibility of rice cultivars to *Xanthomonas campestris* Pv. *oryzae* (XCO).

Three rice cultivars, Taichung Native 1 (TN 1) sensitive, IR 8 intermediate and Malagkit Sung-Song (MSS) tolerant to bacterial leaf blight were grown in 2-l plastic pots (four seedlings per pot) containing modified Hoagland's nutrient solution[2] adjusted to supply 40 ppm of nitrogen, 10 ppm of phosphorus, 40 ppm of potassium and blanced amounts of trace elements necessary for plant growth. Calcium at 10, 20, 40, 60, 80 and 100 ppm and magnesium at 5, 20, 40, 60, 80 and 100 ppm were tested. The plants were kept under natural environmental conditions. The nutrient solution was supplied to the seedlings in four split doses, each dose comprising of one quarter strength of the solution at the age of 5, 10, 15 and 20 days. The level of the liquid in the pots was kept constant by adding distilled water at regular intervals. The pH of the culture solution was maintained at 5·0 during the growth of the plants. Each treatment was replicated three times. The second leaf from the top of 30-day-old plants was inoculated by needle puncture method[3] with cells of XCO (ca. 10^8 cells/ml) obtained from 48-hr-old cultures maintained on potato-sucrose agar slants. The downward progress in the lesion development from the point of inoculation was recorded 15 days after inoculation.

An increase in the supply of calcium significantly reduced the susceptibility of plants to XCO (figure 1) while abundant supply of magnesium markedly enchanced their susceptibility. Calcium plays an essential role in biological membranes and its deficiency obviously impairs membrane