Longevity of Xanthomonas Campestris pv. phaseoli in Naturally Infested Dry Bean Debris (Phaseolus vulgaris)

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An experiment was conducted at the Arroyo Loro Experiment Station in San Juan de la Maguana, Dominican Republic to determine the longevity of the Xanthomonas campestris pv. phaseoli (X.C.P.), causal organism of the common blight disease of dry beans. One experiment was conducted during the period of November, 1986 to April, 1987, and a second experiment during November, 1987 to June, 1988. Three hundred and thirty and 630 grams of common blight infested bean leaflets of dry bean cultivar 'PC-50' were used in experiments I and II, respectively. Ten grams of the infested debris were placed in each of plastic mesh bags (15 x 20 cms) and the bags were then closed. The experimental design was a split-plot with three replicates. The main plots were infested leaf debris placed on the soil surface and beneath the soil surface (15 cms). The sub-plots were five sampling times. The main plots were arranged in a randomized complete block design. Samples were collected every month for five and ten months in experiments I and II, respectively. The first samples were obtained one day after the experiment commenced. The debris samples were processed in the laboratory. Five grams of debris were taken from each bag. Fifty ml of standard PO_4 buffer (+Mg SO_4) were added to the debris and allowed to stand for two hours with occasional swirling. Dilutions were made (five in total from 10^{-1} to 10^{-5}) and plated onto M X P medium (two plates/dilution), using standard procedures and buffer. Colony forming units/grams were calculated as follows; Cfu/g = $\frac{\text{Cfu x dilution of plate x 50 ml}}{\text{5 grams}}$ = #Cfu x dilution x 10.

The pathogen survived for five months in the infested debris on the ground surface in both experiments but was not detected at 6 and 7 months in experiments II. The pathogen was isolated from debris placed underground for 24 hours but was not detected 30 days later, or in subsequent months, in both experiments.

When the pathogen was isolated from the infested debris (for both treatments) its pathogenicity was tested in young susceptible plants of 'PC-50'. A high degree of virulence of the pathogen was detected in every case.

These results show that under the tropical conditions during those seasons in the Dominican Republic the X c pv. p pathogen survived for five months in naturally infested debris of dry beans on the soil surface in the field and still retained its pathogenicity. When the infested debris was buried in the ground (15 cms), the pathogen was not detected 30 days later.