

EFFECT OF INFECTION OF *ALTERNARIA SOLANI* ON SUGAR AND STARCH CONTENT OF THE LEAVES OF POTATO

EARLY blight of potato is an economically important disease in Eastern India. Symptoms are generally noted on the leaves, which are heavily spotted. Horsfall and Dimond¹ observed that diseases caused by *Alternaria* are low sugar diseases. Lilly and Barnett² reported that the resistance of plants in general increases with the increase of sugar concentration. In the light of the above, the changes in sugar and starch in potato leaves infected with *Alternaria solani* have been investigated.

Increase was maximum with lower leaves and least with the middle leaves. Statistical analysis of the data of starch content of the healthy and diseased leaves showed that the difference due to the leaf position and plant condition were quite significant.

In the case of total carbohydrate (sugar + starch) similar decrease was noted in the diseased leaves. Maximum decrease of carbohydrate was found in the middle leaves and least in the upper ones. The decrease of total carbohydrate at lower leaves was intermediate.

TABLE I

Effect of infection of A. solani on sugar and starch content of the leaves of potato

Leaf position	Sugar (mg/gm dry leaf)			Starch (mg/gm dry leaf)			Carbohydrate (mg/gm dry leaf) (Total of sugar + starch)		
	Healthy	Diseased	Percentage increase (+) or decrease (-) in infected plant	Healthy	Diseased	Percentage increase (+) or decrease (-) in infected plant	Healthy	Diseased	Percentage increase (+) or decrease (-) in infected plant
Lower (L)	211.6	124.0	(-) 41.3	165.0	188.3	(+) 14.1	376.6	312.3	(-) 17.07
Middle (M)	240.0	136.6	(-) 43.8	196.0	211.6	(+) 7.6	436.6	348.2	(-) 20.2
Upper (U)	268.3	163.3	(-) 39.1	273.3	296.6	(+) 8.5	541.6	459.9	(-) 15.08

C.D. at 5% (for sugar).

- (a) Leaf position = 8.25;
(b) Plant condition = 1.69.

C.D. at 5% (for starch).

- (a) Leaf position = 2.06;
(b) Plant condition = 6.49.

Both healthy and infected leaves were collected from the 70 days old plants (variety Kufri Chandramukhi) in the fields, from lower, middle and upper regions of the plant. They were washed with distilled water and dried at 60° C and powdered to pass through 80 mesh sieve. Sugar and starch from the powdered material were estimated by standard methods³ using a spectrophotometer at 630 mμ wavelength. Quantities of sugar and starch are expressed in terms of mg/gm of dry leaf weight.

From the data in Table I, it is seen that the sugar content decreased in all the leaves. Maximum decrease was noted with the middle leaves. Statistical analysis showed that the differences due to leaf position and plant condition were highly significant. Starch content on the other hand was found to increase in all the leaves.

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