hancement of the component of the elastically scattered electrons and therefore high voltage electron microscopes appear more promising in this respect for the contact micrography of thicker and crystalline specimens.

It is believed that the newer materials tried with this new technique would further reveal its usefulness to a wider section of workers engaged in material characterization.

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EFFECT OF POTASSIUM ON LEAF DIFFUSIVE RESISTANCE AND TRANSPIRATION

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POTASSIUM plays an important role in stomatal regulation[1] and maintenance of osmotic potential[2]. A decrease in the transpiration in potassium-deficient plants[3–7] and high transpiration in plants supplied well with potassium[8,9] have been reported. Here we examine the effect of potassium on diffusive resistance and transpiration in cauliflower (*Brassica oleracea* L. var. Botrytis L. cv Pusa Deepali) grown in refined sand[10].

Plants were grown with normal (4 mM) and low (0.2 mM) potassium. At 11 weeks, when low potassium plants had developed visible symptoms of potassium deficiency, the potassium supply was reduced to 0.2 mM in one set of normal potassium plants. In another set of low potassium plants, potassium supply was raised to 4.0 mM. The resulting effect was studied on the tissue concentration of potassium, leaf diffusive resistance

Table 1 *Effect of potassium deficiency on tissue potassium, transpiration and diffusive resistance of cauliflower leaves*

Treatment	Growth stage (weeks) 8	9	12	13
	Potassium (% dry matter)			
Normal K	3.66			0.83
Low K	1.09			0.57
Normal K reduced to low K				0.50
Low K raised to normal K				2.83
	Transpiration rate* ($cm^{-2}s^{-1}$)			
Normal K	5.54 ± 0.78	6.61 ± 1.08	6.22 ± 1.67	8.04 ± 0.56
Low K	5.31 ± 0.39	6.33 ± 0.62	2.86 ± 1.03	4.12 ± 1.69
Normal K reduced to low K			6.52 ± 1.83	7.80 ± 1.55
Low K raised to normal K			6.99 ± 1.47	8.34 ± 0.31
	Diffusive resistance* (scm^{-1})			
Normal K	2.29 ± 0.28	1.68 ± 0.18	1.72 ± 0.53	1.28 ± 0.08
Low K	2.39 ± 0.35	1.75 ± 0.14	4.24 ± 1.64	3.08 ± 1.69
Normal K reduced to low K			1.72 ± 0.56	1.39 ± 0.06
Low K raised to normal K			1.57 ± 0.44	1.27 ± 0.07

*Values for 8 and 9 weeks are the mean of 8 determinations ± S.E.M. and values for 12 and 13 weeks are the mean of 4 determinations ± S.E.M.

and transpiration (table 1). Potassium was determined flame-photometrically in oven-dried leaf material after digestion with nitric and perchloric acids[11]. Transpiration and leaf diffusive resistance were measured on a steady state porometer (Licor 1600).

In plants supplied with low potassium, the tissue concentration of potassium was markedly less than in normal plants and between 10 and 11 weeks, these plants developed chlorosis along the margins of the old leaves. As the deficiency prolonged, these leaves became thick and puckered. Their lamina appeared uneven and curled outwards. The chlorotic margins of the old leaves developed numerous small necrotic spots that merged into one another. After turning severely necrotic, dry and brittle, the old leaves were shed premature.

Potassium deficiency had only marginal effect on transpiration and leaf diffusive resistance for 9 weeks (table 1), up to which low potassium plants were free from visible symptoms of potassium deficiency; but thereafter, these leaves showed increase in the leaf diffusive resistance with concomitant decrease in the transpiration rate. Plants that received 4 mM K throughout and to which potassium supply was reduced to 0.2 mM after 11 weeks did not show much difference in transpiration and leaf diffusive resistance but increasing the potassium supply from 0.2 mM to 4 mM caused marked increase in tissue concentration of potassium and amelioration in low potassium effect on leaf diffusive resistance and transpiration. In fact, within a week of the recovery treatment to low potassium plants, their transpiration rate became higher than in plants maintained at normal potassium supply.

The present study not only shows that in low potassium plants, the decrease in transpiration is associated with a build up of high diffusive resistance but also that recovery from potassium deficiency results in reversal of both these changes. The decrease in transpiration under potassium deficiency can be attributed to potassium effect on stomatal movement[1] and leaf morphology, causing increase in diffusive resistance as observed here and earlier[12,13]. The possible increase in root resistance to flow of water under potassium deficiency[14] would also contribute to decrease in water loss from such plants.

We attribute the diversity in the potassium effect on transpiration reported here and by earlier workers[8,9] to difference in the age and the severity of potassium deficiency effect in plants, both of which influence the potassium effect on transpiration. Variation in the potassium effect on transpiration with age and level of potassium supply has also been reported by Biebl[15].

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ROLE OF CONIDIA IN RECURRENCE OF ERGOT OF BAJRA

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The ergot pathogen manifests itself in the ovary of bajra to produce honey dew (Sphacelial stage). The sphacelial stage is followed by the development of sclerotia, which are the major source of primary inoculum in the following year.

Detailed investigations were carried out to study the role of conidia adhering to the sclerotium in the recurrence of the disease. Sclerotia placed in petri dishes containing sterilized soil gave white mycelial