The review of literature revealed that *C. piperis* Petch[1], *C. dasturi* Roy[2] and *C. capsici* (Syd) Butler and Bisby[3, 4] have been recorded on betelvine from various parts of India. Similarly, *Glomerella cingulata* (Stonem) Spauld and Schrenk[5], causing anthracnose has also been recorded on betelvine. However, there is no record of *C. gloeosporioides* on this crop. Hence, this constitutes a new species of *Colletotrichum* on betelvine.

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EFFECT OF HOST CELL INJURY ON GERMINATION AND COLONIZATION OF *CERCOSPORIDIUM PERSONATUM*

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CERCOSPORIDIUM PERSONATUM (B & C) Deighton, is a serious pathogen of groundnut causing 'Tikka' leaf spot disease. It starts its parasitic life as a biotroph maintaining the integrity of cells but turns necrotrophic later forming discrete lesions of moribund tissues. It was, therefore, of interest to see whether injury to cells or tissues predisposes the plants to infection or in any way helps to hasten the infection process.

Conidial suspension of *C. personatum* was prepared and sprayed on to the abaxial surface of groundnut leaves. Before spraying, each half of the leaves was mildly injured using a sterile spatula while the other half was left undisturbed to serve as controls. Leaves were incubated in moist chambers and the number of spots was counted on the 15th day. While 93 dark-brown spots appeared on the ten injured halves, only 65 were observed on the corresponding uninjured halves. Though cell injury seems to favour the fungus in colonization, there was no effect on incubation time.

To understand how the host cell injury favoured the fungus the effect of diffusates from the injured and uninjured halves on germination of spores was also studied. Diffusates were collected, filter-sterilized and used as media for germination of *C. personatum* conidia. After 24 hr, the percentage of germination as well as the germ-tube length was recorded. Germination was appreciably higher in the diffusates from injured (75.3%) and uninjured cells (76.6%) than the controls (65.5%) but did not differ significantly between them in this effect. Similar results were obtained for germ-tube growth also.

It appears that cell injury by virtue of providing nutrients to fungus favours colonization, but has no effect on the pre-colonization phase. That the fungus behaves as a biotroph during the initial stages also substantiates the view.

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RELATIVE EFFECTS OF NITROGEN NUTRITION ON STOMATAL AND NONSTOMATAL COMPONENTS OF PHOTOSYNTHESIS IN WHEAT

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EARLIER studies show that the effect of nitrogen on photosynthate production is primarily brought about by effects on the size and duration of leaf area[1,2]. However, the overall response of photosynthesis to nitrogen nutrition has not been well defined. In the present study the effect of nitrogen nutrition on the photosynthetic efficiency of wheat (*Triticum aestivum*) was analyzed.

Wheat plants were grown under field conditions at high nitrogen (250 kg N/ha) and low nitrogen (110 kg N/ha) fertilizer treatments. Phosphorus and potash were given as basal dose and nitrogen in split doses before and after double ridge stage formation. All the

observations were taken with intact fully expanded flag leaves at the flowering stage when photosynthesis was reported to be maximum[3]. Net photosynthesis and stomatal resistance were measured by infra red gas analyser (IRGA) (ADC)[4]. Measurements were made at saturated light with increasing CO_2 concentration and at saturated CO_2 with increasing light intensity. The net photosynthesis was examined as a function of internal CO_2 concentrations as well as light differentially. This was done by constructing the response curves of net photosynthesis (P net) in relation to variable light intensities and CO_2 internal concentrations. To distinguish the stomatal control from metabolic effects on the assimilation, the internal CO_2 concentration (CO_2(i)) was calculated on the basis of assimilation rate, ambient CO_2 concentration and stomatal conductance[5] to adjust stomatal conductance effect. The effect of stomatal conductance was adjusted in calculating the internal CO_2 concentration. Stomatal resistance (Sr) for water vapour was measured by IRGA on the basis of measurement of relative humidity at the inlet and outlet of leaf chamber and stomatal resistance for CO_2 was calculated by multiplying Sr (water vapour) with 1.6[6]. O_2 evolution under increasing light intensities was measured by leaf disc oxygen electrode unit[7]. Chlorophyll was extracted by a nonmacerating method using dimethyl sulphoxide[8]. Data were analysed statistically following the analysis of variance method[9].

The analysis of light response curve (figure 1a) for net photosynthesis showed that the initial slope of the curve for assimilation as a function of light intensity was identical in both the high and the low nitrogen treatments suggesting that the quantum requirement for CO_2 fixation was similar in both the nitrogen treatments. The stimulation of net photosynthesis at high light intensity in saturated CO_2 concentration was probably due to the reduction in RuBP formation. CO_2 response curve showed the relationship between the net photosynthesis and CO_2 internal concentration which is independent of stomatal resistance (figure 1b). It was observed that low nitrogen application caused the depression in both slope and peak of the curve indicating that efficiency of carboxylation was affected by nitrogen nutrition. However, involvement of other factors such as Mg^{2+} and K^{+} etc is not ruled out. The slope p net/CO_2 (i) expresses the dependence of metabolism when CO_2 is limiting and is governed by the affinity of enzyme RuBP carboxylase/oxygenase for CO_2 and O_2 whereas the plateau is a region where net photosynthesis is limited by regeneration of RuBP[11].

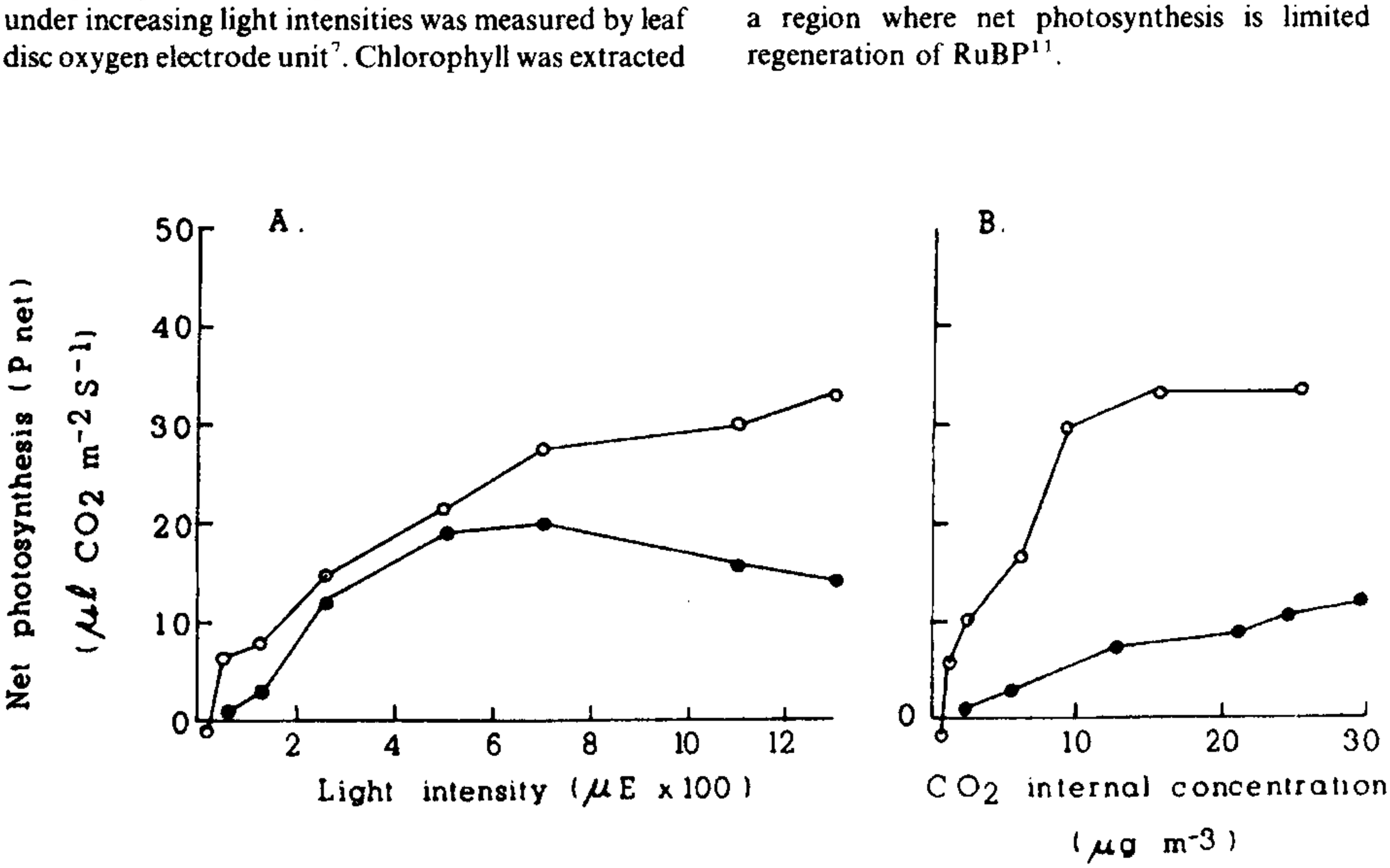

Figure 1. Effect of nitrogen nutrition on the net photosynthesis of flag leaf of wheat (*Triticum aestivum*). **A.** Light response curve (CO_2 level/1000 ppm). **B.** CO_2 response curve (light intensity 1300 $\mu E/m^2/sec.$). Open circle denotes high nitrogen and solid circle denotes low nitrogen.

Table 1 *Effect of nitrogen nutrition on the chlorophyll content, oxygen evolution and stomatal resistance at anthesis stage of wheat flag leaf*

		High Nitrogen	Low Nitrogen	CD at 5% P
Chlorophyll (mg/g)	a	2.96	1.40	1.05
	b	0.72	0.68	NS
	a/b	4.01	2.06	0.98
Oxygen evolution (μmol O_2/cm^2 sec^{-1}) at				
200 $\mu E/cm^2/sec^{-1}$		11.50	10.40	NS
800 $\mu E/cm^2/sec^{-1}$		26.07	12.50	6.35
Stomatal resistance (sec/cm^{-1})		2.53	3.00	NS

It was observed that the reduction of total chlorophyll content under low nitrogen treatment (table 1) was found due to reduction in the content of chlorophyll *a*, however, the variation in chlorophyll *b* content was not significant. Significant decrease in chlorophyll *a* and *a/b* ratio suggested that the harvesting of light would be inferior under low nitrogen treatment. The O_2 evolution data showed that the effect of nitrogen nutrition was not very marked at low light intensity (200 $\mu E/cm^2/sec^{-1}$); however, low nitrogen application resulted in the reduced O_2 evolution from leaf discs at higher light intensity (800 $\mu E/cm^2/sec^{-1}$). Reduced O_2 evolution of low nitrogen treated leaves might be due to low chloroplast capacity of photoreduction. This can be supported by the fact that the low nitrogen resulted in low level of chlorophyll *a* which is responsible for photoreduction of artificial electron acceptors.

The effect of nitrogen nutrition on stomatal resistance was not significant.

This study showed that nitrogen treatment altered the non-stomatal components of photosynthesis in wheat. The major effect was mediated through the changes in the efficiency of carboxylation and the light harvesting capacity of leaves; however, the stomatal component was not affected.

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MEIOSIS IN *EUPHORBIA MAURITANICA* L

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GENUS *Euphorbia* has recently attained prominence as a source of hydrocarbons. This is a fairly big group of plants, comprising nearly 2000 species, both indigenous and exotic. Available literature reveals that the cytology of about 350 species has been studied so far. However, *E. mauritanica* still remains untouched cytologically. *Euphorbia* consists of an array of chromosome numbers ranging from 2 *x* to 20 *x*, based on a series of basic chromosome numbers. These polybasic chromo[ome numbers are [1-19] $x = 6, 7, 8, 9, 10, 11, 13, 15$ and 19. Recently, one more basic chromosome number ($x = 17$) has been discovered to exist within the genus[20]. In the present work, meiotic behaviour of *E.mauritanica* has been studied and the results are interpreted in the light of relevant literature.

Results of microsporogenesis of *E. mauritanica* L revealed the presence of 19 II at diakensis and meta I (figure 1). On an average there are 15 rings and 4 were rod bivalents. The chiasma frequuncy per cell ranges