Palm[2] reported that oospores are not produced under Java conditions and that the only mode of transmission of the disease was through conidia.

Weston[3] found out that in *S. philippinensis* the mycelium in badly affected ears could be traced in the cob along the funiculus of attachment in to the undeveloped parts of the abortive kernels and sometimes even in to the seed coat and the endosperm, but not in to the embryo itself.

Gattani[4] reported the presence of hyphae of *S. philippinensis* in the growing points of severely infected plants but did not report on the production of diseased seedlings from kernels obtained from such plants.

The present investigations were undertaken to determine the nature of primary infection of the disease. For this purpose, cobs of 'Metro' variety of corn were obtained from a seriously infected field in Purwokerto, Central Java. The kernels from these cobs were planted in the screen house at Bogor, West Java, and after 5 days of planting, diseased seedlings appeared. The percentage of infection after 5 days of planting was 10, but rose to 36·5 on the ninth day of planting. All the diseased plants produced conidia in the screen house test.

Further tests were made in a well-lit room with closed doors at 26°–29° C and 55 per cent relative humidity. Kernels of 'Metro' variety from plants which had been naturally infected in the seedling stage in the experimental field at Bogor were planted in sterile soil. Infected seedlings showing chlorosis appeared after 5 days. Such chlorotic plants did not produce any conidia while in the room but produced normal conidia in the morning, having been transferred to the outdoor screen house over-night. The percentage of infected seedlings obtained in this test, repeated 3 times, was 20.

In another experiment, plants which showed infection after 5 days were cut at the base to remove all the infected leaves. The new leaves which were later produced again showed the typical disease symptoms, indicating that such plants had systemic infection.

Four- to 9-day-old diseased plants were removed from the pots with intact roots. Such plants were dissected for their growing points. When stained with cotton blue, fungal hyphae could be detected in such growing points.

It would therefore seem that the primary infection of *S. maydis* is caused by fungal mycelium lodged in the embryo of the kernels of severely infected plants.

I thank Dr. M. L. Gattani, Ir. Soenardi and Mr. Ida Njoman Oka for their advice.

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Influence of Carbon Dioxide on the Uptake of Water by Asparagus

EXCISED shoots of asparagus (*Asparagus officinalis* L.) with cut ends immersed in tap water undergo a marked gain in fresh weight during storage in atmospheres containing more than normal amounts of carbon dioxide[1]. Shoots, 16 cm in length, were stored in chambers at 1·7° C in darkness for one week. Modified atmospheres were obtained and maintained within 1·5 per cent of the desired levels by intermittent flushing with gases from pressure cylinders. When elimination of carbon dioxide was desired the carbon dioxide of respiration was absorbed in dry slaked lime.

The weight gain which was attributed to water uptake coincided with an increase in length. Typical results are shown in Table 1. Levels of oxygen lower than that of air had little effect. A level of carbon dioxide as low as 3 per cent showed some effect and the optimum level for these responses was in the 12–15 per cent range. Uptake of water was not diminished by decapitation of the shoots; no attempt was made to determine changes in length of these shoots.

Table 1. GAIN IN FRESH WEIGHT AND ELONGATION OF EXCISED ASPARAGUS SHOOTS IN RESPONSE TO CARBON-DIOXIDE-ENRICHED ATMOSPHERES

Atmospheric composition (%) O_2	CO_2	Gain in fresh weight (%)	Elongation (%)
Air (control)		8·1	6·2
20·5	0	8·8	6·6
15	0	9·1	6·8
15	15	25·4	17·0
15	30	13·8	12·1

The increases in length, and in uptake of water, were accompanied by increases in *p*H of the expressed juice as previously reported by Fife and Frampton[2], by softening of the tissue as measured by the 'tenderometer'[3], and by apparent decreases in soluble solids. However, the percentages of soluble solids corrected for dilution, assuming the weight gain was due entirely to water uptake, were higher in asparagus exposed to higher levels of carbon dioxide. The information, as well as indications of a higher diffusion pressure deficit within the asparagus treated with carbon dioxide, as measured by a gradient of external osmotic solutions, suggests water uptake based on osmosis.

Carbon dioxide here seems to fulfil the role of a growth factor. Mer and Causton[4] have indicated that carbon dioxide has the ability to promote cell division in the dark. It would appear that carbon dioxide may not only promote cell division but also cell enlargement through water uptake mediated by plasticity of the tissue and changes in osmotic properties. However, it must be realized that the uptake of water by excised plant parts may not be strictly analogous to water uptake by plants with intact roots.

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Water Economy of the Dorcas Gazelle

ALTHOUGH the physiology of the camel, kangaroo-rat, jerboa and various domestic animals of desert regions has been examined in some detail[1,2], nothing is known of the heat and water relations of that most typical desert mammal, the gazelle. It has occasionally been suggested that gazelles may be able to live indefinitely on dry food without water, like desert rodents, but no experiments have been made to determine if this is true or whether, like camels, they need to drink. For this reason an investigation of the water economy of the Dorcas gazelle, *Gazella dorcas dorcas* (L.) is now being pursued here.

Preliminary results indicate clearly that gazelles must drink, even in winter, for they lose weight steadily on dry food when deprived of water. After five days desiccation a maximum of 1·5 l. fresh water can be ingested at one time: and smaller quantities of saline water are taken. With increasing dehydration, body temperature tends to lose homoeostasis and there is some degree of hyperthermia, the urine becomes concentrated, faecal pellets smaller and drier and food intake is reduced.

In the Sudan, gazelles appear to inhabit desert and semi-arid regions where some water, fresh or saline, or dew and succulent food are available, even if considerable distances have to be travelled in order to obtain them.

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