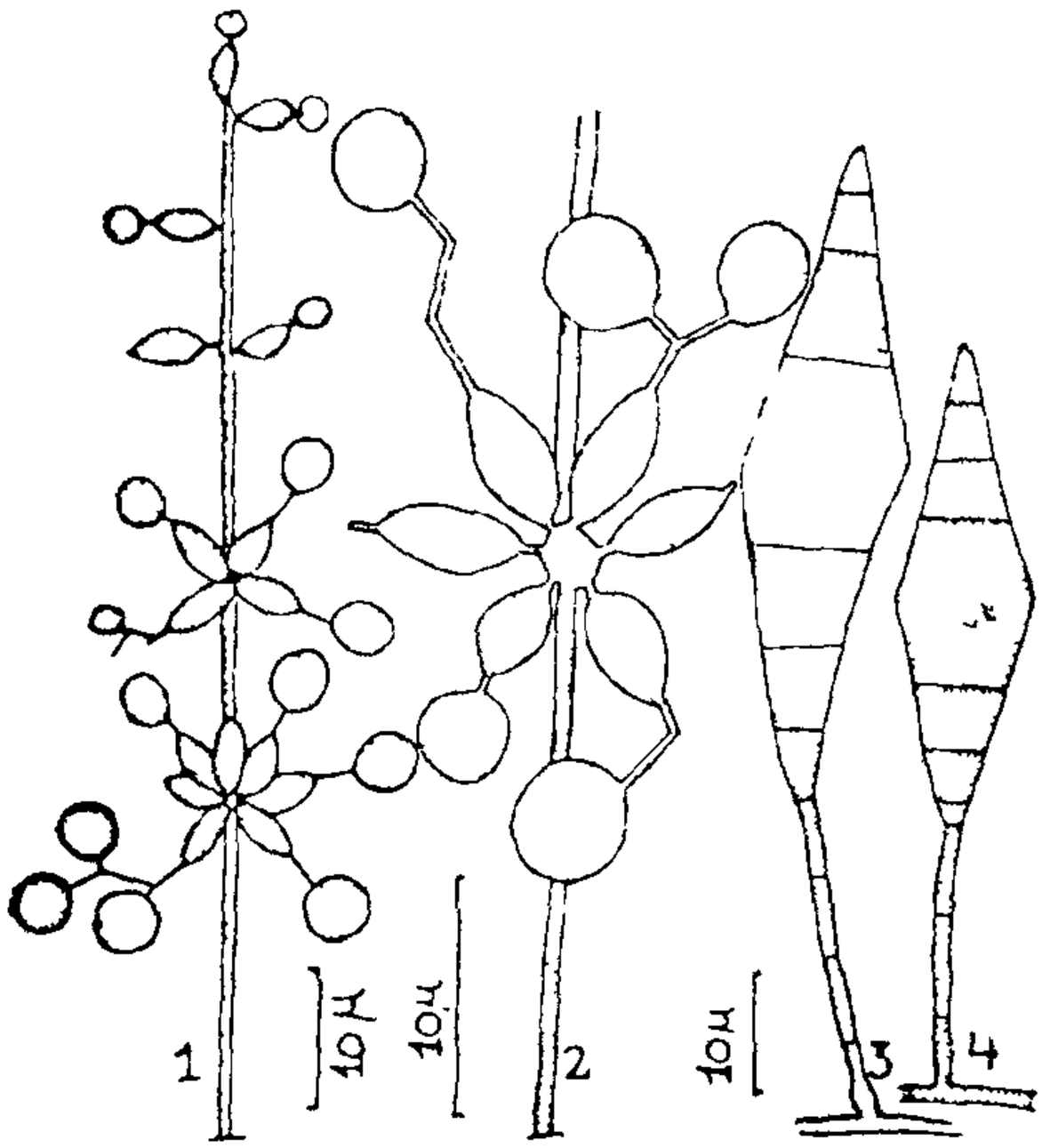
BEAUVERIA BASSIANA STRAIN *GLOBULIFERA* AND *MONACROSPORIUM ELLIPSOSPORUM*—TWO NEW RECORDS OF FUNGI FROM INDIA

In this paper two fungi are being described for the first time from India which were collected from Buddha Jayanti Park, New Delhi, on *Saccharum munja* Roxb. in February 1977.

1. *Beauveria bassiana* (Bals.) Vuill. strain *globulifera* Macleod, *Bull. Soc. botan. France*, 1912, **59**, 34–40 and *Can. J. Bot.*, 1954, **32**, 818–890.

On carrot potato agar at 25–30° C produces cottony, loose floccose mycelial growth and later on turn to purple colour. The sporulation starts after 12 days of inoculation. The conidiophores are borne in compact globose heads either on main hyphal branches or on short laterals. These develop from mycelium near the septa and show considerable variation in size and shape. Sporogenous cells generally occur directly on mycelium and conidiophores. Conidia are globose to oval, hyaline 3–5 μm in diam. produced at the tip as well as on rachis (Figs. 1–2).



FIGS. 1–4. Figs 1–2 *Beauveria bassiana* strain *globulifera*. 1. Showing the pattern of conidiophore. 2. Sporogenous cells showing rachis and conidia. Figs. 3–4. *Monacrosporium ellipsosporum* showing conidiophore with conidia from the host and culture respectively.

Specimen and culture deposited as H.C.I.O. 32639 and I.T.C.C. 2814, Mycology and Plant Pathology Division, IARI, New Delhi, J. L. Varshney and P. N. Chowdhry

2. *Monacrosporium ellipsosporum* (Grove) Cooke et Dickinson, *Trans. Br. mycol. Soc.*, 1965, **48**, 621–629.

   Basionym *Dactylella ellipsospora* Grove, *J. Bot. Lond.*, 1886, **24**, 200.

Colonies on carrot potato agar white, submerged. Vegetative hyphae hyaline and septate. Conidiophores erect, hyaline, simple, septate 30–50 × 2–3 μm bearing single terminal conidia which are elliptical to subpyriform gradually narrowed towards base and apex, hyaline, many celled, usually the median one larger, 40–60 × 10–15 μm in size (Figs. 3–4)

Culture deposited as I.T.C.C. 2530, Division of Mycology and Plant Pathology, IARI, New Delhi, P. N. Chowdhry.

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SEEDLING BLIGHT OF SORGHUM

A DESTRUCTIVE blighting of seedlings was observed in our field plantings of sorghum (*Kharif* 1978). Symptoms appeared as dark copper brown spots on first and second leaves and also on leaf sheaths. These spots coalesced to form severe blighting on the seedlings. The disease gradually spread to the upper leaves. In severe infection the seedlings collapsed and pinkish spore masses could be seen on the debris lying in the soil. In our varietal trial 150 culivars were planted and many of the varieties were severely affected. High seedling mortality due to the disease led to poor stands and the plants which survived remained stunted and unthrifty. The disease was favoured by warm and wet weather.

Isolations from the surface sterilized leaf tissues of affected portion yielded pure culture of a species of *Gloeocercospora* and its pathogenicity was established by inoculating 2-week old healthy seedlings of sorghum (cultivars CSH–1 and CSH–5). Symptoms started appearing in the inoculated seedlings after 24 h as water soaked spots which first appeared on leaf sheaths and the lowermost leaves. These spots later developed into typical blight symptoms. The fungus was later identified as *Gloeocercospora sorghi* Bain & Edgerton on the basis of morphological characters. However.

Misra *et al.*[1] while studying storage fungi associated with seed rot of sorghum encountered *Gloeocercospora sorghi* in blotter tests and observed that it could cause blighting of the germinating seeds. The present study is, therefore, the first outbreak of *G. sorghi* causing seedling blight under field conditions.

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1. Mishra, A. B., Sharma, S. M and Singh, S. P., *PANS*, 1969, **15** (3), 365.

LIPID SYNTHESIS IN MATURE AND IMMATURE GROUNDNUT KERNELS

ALTHOUGH biosynthesis in oil seeds or fruits is not a continuous process, it is observed all through the growth and maturation of the organs. The major part of the fat is synthesized during a short period generally restricted to some days or weeks in the course of the seed development[1]. Occurrence of a considerably long development period of seeds in groundnut var. TG–1 offers kernels of different maturity at any one time. It is, therefore, aimed to study the lipid synthesis in the kernels of different maturity.

Groundnut (*Arachis hypogea* L. var. TG–1) plants of uniform size and age (120 days) were selected. Pods from these plants were grouped as mature and immature depending upon the veination on shells and the colour of the kernels. The mature kernels, having pink seed coat and about 11 weeks old after pegging, were from the pods showing prominent veination on outer surface and blackish inner linings. The immature kernels, having whitish seed coat and about 5 weeks old after pegging, were from the pods showing smooth outer surface and wooly inner linings. Twenty kernels from each of the two groups were sliced (1 mm thick) and mixed well. Samples (1 g) in triplicate (for each incubation period) from the mature and the immature sliced kernels were put in separate 1·5 × 1·5 mm mesh nylon bags. The samples were incubated on a water bath shaker at 25° C in dark in sodium acetate-1-^{14}C solution (6·71 mCi/mM) for different periods. Kernel slices incubated in non-radioactive sodium acetate (10^{-4}M) were used as cold control. The samples were taken out of the incubation solution at intervals of 1, 2 and 4 h. The activity in the leftover solution at each incubation period was measured and this, in turn, gave the total entry into the plant tissue. The adsorbed radioactivity was removed by serially rinsing the slices in cold sodium acetate (10^{-4}M) and distilled water. These slices were then kept frozen until fractionation for oil by Cossins and Beevers' method[2]. The oil was dissolved in toluene to bring to a constant volume (3 ml). Of this, 0·5 ml was added to 15 ml of scintillation medium (4 g BBOT dissolved in 500 ml methanol plus 500 ml toluene). These samples were counted on a computerized Beckman LS–100 liquid scintillation counter. Lipid synthesis is expressed as total activity incorporated into the oil fraction per g tissue.

Entry of radioactivity (≡ acetate)in to the kernels was age dependent. While it was increasing upto 2 h in immature, the major entry was limited to first hour of incubation in mature kernels (Table I). The incorporation into lipid fraction of both the types of seeds increased with the increasing incubation period. However, out of the total activity that entered, the incorporation into immature kernels was 3·74–13·4 folds of that in mature ones (Table I). In view of the fact that generally oil content of mature kernel is considerably higher than that of immature ones[3], the relative incorporation per unit oil weight in the latter must be considered still higher than the apparent. Thus, it is evident that the entry as well as incorporation were higher in immature kernels as compared to mature ones.

Our findings are similar to those of Pattee *et al.*[3], Mahapatra and Pattee[4] and Wilson and Rinne[5] who observed that the younger the kernel, higher was lipid synthesis. It was also reported by Sims *et al.*[6] that the capacity of slices of flax and safflower seeds to synthesize linoleic and linolenic acids *in vitro* from acetate was considerably higher during 20th to 40th day after flowering for flax and 14th to 18th day for safflower compared to other periods. The *in vivo* incorporation of $^{14}CO_2$ into the lipids of oat grains was much higher between the 11th and 18th day after flowering than at any other period[7]. Mewa *et al.*[8] observed that the characteristic fatty acids (12–13-dihydroxyoleic and 12–13-epoxy-oleic) appeared in the seeds of *Vernonia anthelmintica* only during the period of great fat deposition. Between the 12th and 36th day after pollination, 90% of the final content of ricinoleic acid was deposited in castor bean seeds[9]. Erucic acid accumulates rapidly in rapeseed only after about the 20th day after flowering[10, 11]. It was obvious that the lipid synthesis activity is not the same throughout the seed development and may, therefore, be differently susceptible to modification through appropriate treatment, say to foliage which provides necessary ingredients for lipid metabolism in the kernel.