TABLE I

Thermophilic fungi isolated from soils

Fungi	Techniques	
	Dilution plate	Soil plate
Phycomycetes :		
Mucor pusillus Lindt.	−	+
Ascomycetes :		
Thermoascus aurantiacus Miehe	+	+
Chaetomium thermophile var. *thermophile* La Touche	−	+
C. thermophile var. *dissitum* La Touche	+	+
Deuteromycetes :		
Aspergillus fumigatus Fres.	+	+
Humicola grisea var. *thermoidea* Traaen	+	+
H. insolens Cooney and Emerson	−	+
H. lanuginosa (Griffin and Maublank) Bunce	+	−
Torula thermophila Cooney and Emerson	−	+
Malbranchea pulchella var, *sulphurea* Miehe	+	+
Total	6	9

while working with composts, dung and other sources for isolating thermophilic fungi emphasized that work on different soil samples would greatly enhance the validity of this indirect method of isolating fungi that are dependent upon a specific environmental factor, *i.e.*, temperature. Present work has indeed shown that this selective method is useful in isolating fungi quite varied from the normal flora isolated by incubation at room temperature[11], suggesting that this method could, by itself, be used as a technique to isolate fungi of specific group from soils that aid in the decomposition of cellulose and other organic matter in soil along with other common cellulolytic fungi.

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1. Apinis, A. E. and Pugh, G. J. F., *Mycopath. Mycol. Appl.*, 1967, 33, 1.
2. Bhuvaneswari, K., *Ph.D. Thesis*, University of Madras, 1958.
3. Cooney, D. G. and Emerson, R., *Thermophilic Fungi*, Academic Press, N.Y., 1969.
4. Cowling, E. B. and Kelman, A., *Phytopathology*, 1964, 54, 373.
5. Crisan, E. V., *Contrib. Boyce Thompson Inst. Pl. Res.*, 1964, 22, 291.
6. Fergus, C. L., *Mycologia*, 1964, 56, 267.
7. Greaves, J. E. and Jones, L. W., *Soil Sci.*, 1944, 5, 377.
8. Maheshwari, R., *Curr. Sci.*, 1968, 37, 277.
9. Miehe, H., *Die Selbsterhitzung Des Heus. Eine Biologische Studie.*, Publ. Gutav Fischer, Jena., 1907, p. 127.
10. Ramabhadran, V., *Proc. 1st All India Symp. Agric. Microbiol.*, Univ. Agric. Sci., Bangalore, 1968, p. 44.
11. Sundaram, B. M., *Ph.D. Thesis*, University of Madras, 1969.
12. Warcup, J. H., *Trans. Br. Mycol. Soc.*, 1951, 34, 515.

NITROGEN FIXATION BY A SALT AND ALKALI TOLERANT STRAIN OF *AZOTOBACTER CHROOCOCCUM*

IN earlier studies on asymbiotic nitrogen fixation in calcareous soil of Pusa (North–Bihar), a positive significant correlation between *Azotobacter* population and the amount of nitrogen fixed in different types of soils was observed (Rai *et al.*, 1975)[4]. Soil properties including soluble salts were also found to influence microbial population in these soils (Rai *et al.*, 1972–73)[3]. Moreover, the *Azotobacter* population in calcareous saline-alkali soils of North–Bihar, covering several districts has been found to be relatively depressed (Anon., 1975)[1].

For augmenting soil nitrogen in saline and alkali soils, a strain of *Azotobacter chroococcum* growing at pH 9–0 with 0·2% salt (NaCl) was isolated from calcareous saline-alkali soil of Pusa Farm, by enrichment technique. Its nitrogen fixing capacity was determined in Ashby's mannite solution at different pH with and without added salt (Table I). The culture was tested for enrichment of N in soils of varying characteristics (Table II) and the gain of N fixed was determined.

A perusal of the data indicated that the culture was effective during a wide pH range (6·2 to 8·8). It was capable of tolerating salinity ranging from 35 to 195 mg/100 g soil. Similarly it flourished

TABLE I

Gain in N-fixed g.C in liquid medium at different pH range by Azotobacter chroococcum

Sl. No.	pH range	5·5	6·0	6·5	7·0	7·5	8·0	8·5	9·0	9·5
1.	Gain in N-fixed (*a*) With 0·2% salt ..	5·86	8·30	11·76	12·36	12·40	12·04	12·46	11·76	No growth
2.	Gain in N-fixed (*b*) Without salt ..	5·80	8·35	11·90	12·60	12·30	12·30	12·50	11·50	No growth

TABLE II

Soil characteristics and nitrogen fixation by Azotobacter chroococcum

Sl. No.	Soil texture	Org. C%	pH	T.S.S. mg/100 g soil	$CaCO_3$ %	Amount of N-fixed/g soil* (uninoculated) in mg			N-fixed/g* soil (inoculated) in mg
						Treated	Control	N-gain	
1.	Sandy loam ..	0·745	6·2	70	2·68	5·24	1·42	3·80	6·5
2.	Sandy loam	0·512	7·6	35	0·56	4·80	1·40	3·40	6·2
3.	Sandy loam ..	0·416	8·2	184	32·5	4·56	1·42	3·14	6·7
4.	Sandy loam ..	0·212	8·5	95	44·6	4·38	1·40	2·98	4·7
5.	Silty clay loam ..	0·590	8·8	195	38·0	4·43	1·40	3·43	6·3

* 100 ml Ashby's mannite solution containing one gram soil was incubated.

at varying amounts of $CaCO_3$ (nil to 44·6% of the soil). In liquid medium with 0·2% NaCl, the gain in N-fixed was quite high in the pH range 6·5 to 9·0. It gradually decreased below pH 6·5 and the isolate could not grow either at pH 5–0 or at pH 9·5. Mischustin and Shil'nicova (1971)[2] have also mentioned that *Azotobacter* fails to grow above pH 9·0 and below pH 5·4.

The culture may be tried successfully for enriching soil N in calcareous and non-calcareous soils as well as in the saline-alkali soils.

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1. Anonymous, "The effect of soil microbial population and their bearing on the fertility status," Unpublished data, Sugarcane Res. Institute, Bihar, Pusa, 1975.
2. Mischustin, E. N. and V. K., Shil'nicova, *Biological Fixation of Atmospheric Nitrogen*, The Macmillan Press Ltd., London/ Madras, 1971, p. 198.
3. Rai, S. N., Rai, M. and Singh, S. N., *Proc. Bihar Acad. Agril. Sci.*, 1972–73, 20-21, 41.
4. —, — and —, *Curr. Sci.*, 1975, 44 (6), 208.

PERSISTENCE OF TEMIK (ALDICARB) IN SOIL AND ITS RESIDUES IN BHENDI FRUITS (*ABELMOSCHUS ESCULENTUS*)

TEMIK [2-methyl-2-(methylthio) propionaldehyde O-methyl carbamoyloxime] is an effective insecticide against many sap feeding pests of crops. It is mainly applied to soils as 10% granules. The persistence and degradation in soil and the resultant bioactivity may depend on the type of soil, soil moisture, crops grown and other associated factors. Therefore the present investigation was aimed to assess the persistence of aldicarb in clay loam soil planted with bhendi crop and its residues in bhendi fruits.

A field experiment was laid out with soil treatments of 0·5 and 1·0 kg ai/ha of aldicarb applied at the time of sowing of bhendi seeds (Pusa Savani). The field was of clay loam type with a pH of 7·9 and organic matter content of 0·25%. Composite soil samples were collected from each treatment on 1, 15, 30. 45, 60 and 75 days after application. Bhendi fruit samples were collected on 50 and 55 days after sowing. Both soil and fruit samples were