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Research Article

Studies on utilization of waste biomass (wbm) of vegetables against spore germination, growth and sporulation *of Alternaria tenuis* Auct.

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Abstract

Nutritionally many vegetables are excellent source of carotene, folate, niacin, iron, vitamin C & calcium. In Marathwada region of the Maharashtra state many vegetable plants are very common easily cultivated. They produce a huge waste biomass (WBM). The waste biomass of the vegetable plants may be utilized as the source of fungicides and bactericides .On utilization of waste biomass (WBM) of plants in relation to spore germination; growth and sporulation have been studied. By taken borosil conical flask containing 25ml of liquid GN medium supplemented separately with 1gm of powder of WBM of tested common vegetable plants were autoclaved at 15 lbs pressure for 15 minutes. The flasks were inoculated with 1ml of spore suspension of *Alternaria tenius* Auct and were incubated at room temperature. The spore germination of *Alternaria tenius* Act. studied after 24 hours while growth and sporulation were studied after seven days of incubation period. The tested WBM of *Lycopersicon esculentum* L. was found to be more inhibitory for the spore germination (32%), growth (19 mg) and sporulation (++) of *Alternaria tenuis* Auct.

INTRODUCTION

The Vegetables can be categorized as root, stem, leafy, and flower vegetables. They have persuasive role in the human diet. They contain significant amount of vitamin-C and beta carotene which control high blood pressure, heart strokes and also clear the blood. The vegetables are the good source of amino acids and proteins. All the vegetables contain digestible cellulose fiber (M.Akmal khan and, Tabssum Hamid, 1986).

It is evident from the literature that the vegetables and their seeds carry large number of mycoflora both in field and during storage. Most of the fungi cause decay and rots (Kunte and Yawalkar, 1991).The vegetables associated with the fungi found to be useless. The vegetable seeds associated with the fungi found to be enabling to germinate Jalander and Gachande, 2011; Mane *et al.*, 2011; Dhole and Bodke, 2012; Shikha and Harsh, 2014; Kandhare, 2014.

The vegetable plants can produce an enormous amount of waste biomass (WBM). The waste leaves, stem and roots of some common and easily available plants like Carrot (*Daucus carota* L.), Radish (*Raphanus sativus* L.), Onion (*Allium cepa* L.), Methi (*Trigonella foenum-graecum* L.), Palak (*Spinacia oleracea* L.), Cabbage (*Brassica oleracea* var. *capitata* L.), Cauliflower (*Brassica oleracea* var. *botrytis* L.), Tomato (*Lycopersicon esculentum* L.) and Bhendi (*Abelmoschus esculentus* L.) were referred as waste biomass material (WBM) of vegetable plants.

This WBM can be utilized against spore germination, growth and sporulation of vegetable mycoflora. Considering these aspects the present research paper has been selected.

MATERIALS AND METHODS:

Collection of sample:

The WBM of common vegetable plants were collected from the fields as well as local vegetable markets. In order to study effect of waste biomass (WBM) of some common vegetable plants on spore germination, growth and sporulation of *Alternaria tenius* Act. taken borosil conical Flasks containing 25 ml of liquid GN medium supplemented separately with 1gm powder of WBM of common vegetable plants like Carrot (*Daucus carota* L.), Radish (*Raphanus sativus* L.), Onion (*Allium cepa* L.), Methi (*Trigonella foenum-graecum* L.), Palak (*Spinacia oleracea* L.), Cabbage (*Brassica oleracea* var. *capitata* L.), Cauliflower (*Brassica oleracea* var. *botrytis* L.), Tomato (*Lycopersicon esculentum* L.) and Bhendi (*Abelmoschus esculentus* L.) were autoclaved at 15 lbs pressure for 15 minutes on automatically cooling ,the flask were inoculated with 1ml of spore suspension of *Alternaria tenius* Act . prepared from seven days old cultures grown on PDA slants. The flasks were incubated at room temperature. The spore germination of *Alternaria tenius* Act was studied after 24 hours of incubation period. The growths in terms of the fungus were studied after seven days of incubation period .The liquid GN medium without the supplementation of power of WBM served as control.

RESULTS AND DISCUSSION

Table 1: Effect of waste biomass (WBM) of vegetables on spore germination, growth and sporulation of *Alternaria tenuis* Auct. by food poisoning method

Sr. No.	Name of the Vegetable	WBM of Vege- tables	*Alternaria tenuis* Auct.		
			Spore Germina-tion (%)	Dry Mycellial Weight (mg)	Sporu-lation
1.	*Daucus carota* L.	Leaf	65	32	++
2.	*Raphanus sativus* L.	Leaf	75	50	+++
3.	*Allium cepa* L.	Leaf	72	35	++
4.	*Trigonella foenum-graecum* L.	Stem	40	25	++
5.	*Spinacia oleracea* L.	Stem	60	29	+++
6.	*Brassica oleracea* var. *capitata* L.	Leaf	50	25	+++
7.	*Brassica oleracea* var. *botrytis* L.	Leaf	35	20	++
8.	*Lycopersicon esculentum* L.	Root	32	19	++
9.	*Abelmoschus esculentus* L.	Root	70	40	+++
		Control	80	50	+++

+= Low, ++=Medium, +++= High

From the result presented in Table-1, it is observed that the WBM of all the test vegetable plants were found to be inhibitory for spore germination, growth and sporulation of Alternaria tenius Auct. It is also evident from the results that the test WBM of *Lycopersicon esculentum* L. was found to be more inhibitory for the spore germination (32%), growth (19 mg) and sporulation (++) of *Alternaria tenuis* Auct. where as the WBM of *Raphanus sativus L.* was found to be very less inhibitory as compared to the WBM of other test Vegetable plants.

Similar Studies were carried out by (Nedumaran S and Vidhyasekaran P, 1981; Alice, 1984; Dwivedi *et al.*, 1984; Ravichandar, 1987; Prasad and Singh, 1993; Narasimhan and Senthilanatham, 1994; Chauhan and Soni, 1994; Rathor, 1994; Khan *et al.*, 1996; Bodke, 2000; Molgaard *et al.*, 2001; & Dhekle, 2007; Jalander and Gachande, 2011; Mane *et al.*, 2011; Dhole and Bodke, 2012; Shikha and Harsh, 2014; Kandhare, 2014.

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