Journal of Science and Technology 20(December 2022): 11-19
ISSN 1994-0386 (Print), 2959- 3239 (Online)

STUDY ON GROWTH AND YIELD OF OYSTER MUSHROOM AS INFLUENCED BY COMPOSTED SAWDUST BASED SUBSTRATES

N. J. Nishi[1], M. H. Akand[1], A. J. Kakon[2] and M. H. Rahman[3*]

[1]Department of Horticulture, Sher-e-Bangla Agricultural University, Dhaka, Bangladesh, [2]Mushroom Development Institute, Savar, Dhaka, Bangladesh, [3]Department of Horticulture, Hajee Mohammad Danesh Science and Technology University, Dinajpur-5200, Bangladesh.
*Corresponding author: Email: hassan@hstu.ac.bd **;** Cell Phone: +8801719468999
DOI: *https://www.doi.org/10.59125/JST.20202*

ABSTRACT
An experiment was carried out in the laboratory of the Mushroom Development Institute, Savar, Dhaka from July to December 2019 to determine the effect of the sawdust composting period on the yield and yield attributes of different oyster mushroom varieties. The experiment was laid out by following Completely Randomized Design (CRD) with three replications. Three varieties *viz.* V_1 (*Pleurotus djamor*), V_2 (*Pleurotus ostreatus*) and V_3 (*Pleurotus florida)* with six different days of composted sawdust such as T_0 (0 days), T_1 (5 days), T_2 (10 days), T_3 (15 days), T_4 (20 days), T_5 (25 days) and T_6 (30 days) were used in this study. The effect of different mushroom varieties and composted period of sawdust showed significant variation in growth and yield parameters. The results revealed that the highest number of the fruiting body, the effective fruiting body and biological yield were found in V_2, whereas the lowest numbers were observed in V_3. Besides, the maximum yield, the highest number of fruiting bodies and effective fruiting body were observed in T_3. Moreover, the maximum yield (56.50 g) was produced by V_2T_3 combination, and the minimum yield (38.13g) was produced by V_3T_2. The highest biological efficiency (32.28 %) was obtained in V_2T_3, whereas the lowest biological efficiency (21.78%) was obtained in V_3T_2 sawdust. This study suggests that *Pleurotus ostreatus* and 15 days composted sawdust showed the best performance.

Key words: Biological efficiency, fruiting body, oyster mushroom, sawdust compost, yield

INTRODUCTION
The oyster mushroom (*Pleurotus* spp) is in third place among the world's edible mushroom production (Gyorfi and Hajdu 2007). Oyster mushroom is the most suitable one for year-round production in Bangladesh due to a wide range of temperatures and available growing media, lower production cost. The fresh mushroom contains a considerable amount of nutrients and has some medicinal properties. The increased production of oyster mushrooms is a feasible solution to malnutrition experienced in most developing countries like Bangladesh. The culture of oyster mushroom (*Pleurotus spp*.) is becoming popular throughout the world due to the utilization of various lignocellulose species having extensive enzyme systems capable of digesting complex organic compounds. Cereal bran rich in protein is usually added to the substrate in oyster mushroom cultivation to stimulate mycelial growth and increase the yield of mushrooms (Kinugawa *et al*. 1994). Any agricultural waste that contains cellulose and lignin is a possible substrate for growing these fungi. On saw dust, the yield and efficiency were better than other

agro-based substrates; the mushroom fruiting bodies were revealed larger in size (Moonmoon *et al*. 2010). In Bangladesh, sawdust is produced on a large scale by the saw-mill industries as a byproduct. Therefore, it is a readily available and preferred as a medium for mushroom production.

Fermented substrate materials enhanced the weight and size of the fruit cap, fruiting bodies yield and produced quality fruiting bodies of mushroom (Choi 2004, Mohamed *et al*. 2016). However, the effect of different durable of composted sawdust on growth and yield of various mushroom species has not been studied yet in Bangladesh. Additionally, if the right composting time is established for mushroom variety the efficiency of the production of mushroom can be promoted. Considering the above facts present investigation was undertaken to find out the best species and composting period for ensuring the maximum yield of oyster mushrooms.

MATERIALS AND METHODS

Experimental materials and design: The experiment was conducted in the laboratory and culture house of the Mushroom Development Institute, Savar, Dhaka from July to December 2019. The experiment was laid out in a completely randomized design (CRD) with three replications. Three varieties of oyster mushrooms (V_1 = *Pleurotus djamor,* V_2 = *Pleurotus florida* and V_3 = *Pleurotus ostreatus*) were grown on different days of composted sawdust (T_0 = 0 days, T_1 = 5 days, T_2 = 10 days, T_3 = 15 days, T_4 = 20 days, T_5 = 25 days, T_6 = 30 days).

Preparation of pure and mother culture: Pure cultures and mother cultures of three species were prepared according to Sarker *et al.* (2017).

Sawdust composting for mushroom cultivation: The sawdust was cleaned and air-dried. Water was added to those until the moisture level reach about 70%, using the thumb test and made a heap of $1m^3$ on the floor, then covered with polythene sheet. The sawdust was composted in six groups with composting times of 5, 10, 15, 20, 25 and 30 days.

Preparation of spawn: The substrate of spawn packets was prepared using composted sawdust and 5% wheat bran. Maintain a moisture level about 65% and $CaCO_3$ (0.2%, w/w) was added to the mixture. The substrate mixture was poured into 18 cm × 25 cm polypropylene bags at 500g/bag. A hole of about 2/3 deep of the bag was made for space to introduce the inoculum. The packets were sterilized in an autoclave for 2 h at 121^0C under 1.1 kg cm^{-2} pressure. The cultures were incubated at 22 ^{0}C for 12 hours per day under the light of cool white fluorescent bulbs. After completing mycelium growth, "D" shaped cut was done on shoulder of plastic bag and scraped slightly with a blade for removing the thin whitish mycelial layer.

Culture conditions for fruiting: The relative humidity (70-85%) and temperature (22-27°C) was maintained in the culture chamber for all the treatment. Fruiting bodies of mushroom were picked around a week following pinhead formation when the gills were fully formed, and the caps' edges were still curled under.

Data collection: Data were collected on mycelium growth rate (MGR) (cm day^{-1}), time required to completion of mycelium running (days), primordial initiation (days) and pinhead initiation to 1st harvest (days), number of fruiting body, number of effective fruiting body, thickness of pileus (cm), diameter of pileus (cm), length of stipe (cm), diameter of stipe (cm) and biological yield (1^{st} flush). Biological efficiency (%) was calculated using the following formula: Biological efficiency (%) = [(biological yield) / (total dried substrate used)] ×100

Statistical analysis: Data were analyzed using the MSTAT-C computer program and excel software. Mean separation was computed following Least Significant Difference (LSD) using the same computer program.

RESULTS AND DISCUSSION

Mycelium growth rate: Mycelium growth rate was significantly influenced by oyster mushroom varieties and days of composted sawdust and also their combination effect varied significantly (Table 1, 2). The highest growth rate (0.54 cm) of mycelium was observed in V_2 (*P. florida*) and lowest (0.45 cm) was recorded in V_3 (*P. ostreatus*). The maximum mycelium growth rate (0.67 cm) was found in T_3 whereas the minimum rate was found in T_0 (0.45 cm) which is statistically similar to all other treatments. Also, the highest mycelium growth rate (0.68 cm) was recorded in treatment combination of V_1T_3. The lowest mycelium growth rate was recorded in V_3T_0 (0.27 cm). Different composted substrate showed different mycelium running because of different carbohydrate based on availability and the environment of the spawn (Mondal *et al*. 2010).

Table 1. Effect of variety and period of composted sawdust on growth parameters of oyster mushroom

Treatment	Mycelium growth rate (cm/day)	Time required to completion of mycelium running (days)	Time required for primordial initiation (days)	Time required from pinhead initiation to 1st harvest (days)
Variety				
V_1	0.53a	21.29b	7.14b	4.52bc
V_2	0.54a	21.71ab	7.33ab	4.66bc
V_3	0.45b	22.00a	7.57a	4.85a
LSD (0.05)	0.01	0.6218	0.32	0.52
Days of composted sawdust				
T_0	0.45b	21.33cd	7.88a	4.11bc
T_1	0.45b	21.56bcd	7.77ab	4.66abc
T_2	0.52b	20.78d	7.33bc	5.22a
T_3	0.67a	20.56d	6.66d	3.77c
T_4	0.46b	22.44ab	7.22c	5.11ab
T_5	0.50b	22.00bc	7.33bc	4.77abc
T_6	0.51b	23.00a	7.22c	5.11 ab
LSD (0.05)	0.02	0.94	0.50	0.41
CV (%)	6.16	4.65	7.27	9.32

In a column, means followed by a common letter are not significantly differed at 5% level by DMRT. V_1= *Pleurotus djamor*, V_2 = *Pleurotus florida*, V_3= *Pleurotus ostreatus*, T_0= 0, T_1= 5, T_2= 10, T_3= 15, T_4= 20, T_5= 25, T_6= 30

Time required to completion of mycelium running: The influence of mushroom varieties and days of composted sawdust, and their combination caused a significant difference in completion of mycelium running (Table 1, 2). The study revealed that maximum days (22.0) was required for the completion of mycelium running was in V_3 and the minimum (21.29) days required from V_1. Vetayasuporn (2007) reported that *Pleurotus ostreatus* completed spawn running in 17-20 days on coconut substrates. The highest (23.0) and lowest (20.56) days required for the completion of mycelium running were found in T_6 and T_3 respectively. The combined treatment of V_2T_4 and V_3T_6 took the maximum time (23.67 days) to complete mycelium running, whereas the combinations of V_1T_2 took the minimum period (19.00 days). This variation could, in turn, be attributed to the variations in chemical composition and Carbon to Nitrogen ratio (C: N) of the substrates (Okhuoya *et al*. 2005).

Table 2. Combined effect of variety and period of composted sawdust on growth parameters of oyster mushroom

Treatments	Mycelium growth rate (cm/day)	Time required to completion of mycelium running (days)	Time required for primordial initiation (days)	Time required from pinhead initiation/opening to 1st harvest (days)
V_1T_0	0.54bc	21.67bcde	7.66abc	4.00cd
V_1T_1	0.49bcd	21.67bcde	7.00bc	3.33d
V_1T_2	0.50bcd	19.00g	7.33 abc	5.33ab
V_1T_3	0.68a	19.67fg	6.00de	4.00cd
V_1T_4	0.42efg	22.33abcd	7.33abc	4.66bc
V_1T_5	0.52bc	22.67abc	7.66abc	5.00ab
V_1T_6	0.53bc	22.00abcd	7.00bc	5.33ab
V_2T_0	0.52bc	20.00efg	7.66abc	3.33d
V_2T_1	0.48cd	22.00abcd	8.00ab	5.67a
V_2T_2	0.52bc	22.67abc	7.33abc	5.33ab
V_2T_3	0.67a	19.67fg	5.66e	3.33d
V_2T_4	0.55b	23.67a	7.33abc	5.33ab
V_2T_5	0.52bc	20.67defg	7.67abc	4.66bc
V_2T_6	0.55b	23.33ab	7.67abc	5.00ab
V_3T_0	0.27h	22.33abcd	8.33a	5.00ab
V_3T_1	0.37g	21.00cdef	8.32a	5.33ab
V_3T_2	0.54b	20.67defg	7.33abc	5.00ab
V_3T_3	0.66a	22.33abcd	8.31a	4.00cd
V_3T_4	0.41fg	21.33cdef	7.00bc	5.00ab
V_3T_5	0.48 cde	22.67abc	6.66cd	4.66bc
V_3T_6	0.45def	23.67a	7.00bc	5.00ab
LSD (0.05)	0.051	1.645	0.87	0.71
CV (%)	6.16	4.65	7.27	9.32

In a column, means followed by a common letter are not significantly differed at 5% level by DMRT. V_1= *Pleurotus djamor*, $V_{2\,=}$ *Pleurotus florida*, $V_{3=}$ *Pleurotus ostreatus*, T_0= 0, T_1= 5, T_2= 10, T_3= 15, T_4= 20, T_5= 25, T_6= 30

Time required for primordial initiation: Time required for primordial initiation showed a noticeable difference due to oyster mushroom varieties and days of composted sawdust, and their combination (Table 1, 2). The highest time (7.57 days) was needed for primordial initiation in V_3, which was statistically similar to V_2 (7.33 days) and the lowest time (7.14 days) was reported in V_1. Table- 1 also indicated that T_0 (7.88 days) had the maximum value, which was statistically similar to T_1 (7.77 days) whereas, minimum time requirement was found in T_3 (6.66 days). Combined treatment of V_3T_0 required the highest time (8.33 days) for primordial initiation, which was statistically similar to most of the studied treatment combinations, on the other hand the lowest time requirement (5.66 days) was observed in V_2T_3.

Time required from pinhead initiation to 1st harvest: Different mushroom varieties and days of composted sawdust, and their combination effect had a significant impact on the days required from pinhead initiation to the first harvest (Table 1, 2). Maximum days (4.85 days) was observed in V_3 and the minimum period (4.52 days) was noticed in V_1. The maximum period was required from pinhead initiation to first harvest in T_2 (5.22 days) and lowest value was observed in T_3 (3.77 days). In Table 2, the maximum days from pinhead initiation to first harvest (5.67 days) were required in V_2T_1 and the V_2T_3 showed the shortest time (3.33 days). For the growth and penetration of the mycelium into basal substrates which ultimately influences fruiting bodies of mushrooms, the structure and porosity levels (oxygen availability) of substrate are important factors to be considered by Philippoussis *et al*. (2002).

Number of fruiting body and effective fruiting body: The number of the total fruiting body and effective fruiting body significantly varied among the oyster mushroom varieties and days of composted sawdust, and in the combination of those (Table 3, 4). The highest number of total fruiting body (13.97) was found in V_2 which was statistically similar to V_1 (13.46) and the lowest number was found in V_3 (4.36). Sarker *et al*. (2007) reported that *Pleurotus ostreatus* produced maximum number of fruiting bodies. The maximum number (11.57) of total fruiting bodies was found in $T_{3,}$ whereas the minimum number (9.17) was found in T_2. Sarker *et al*. (2007) found similar results and stated that total carbon (C), nitrogen (N) and Carbon/Nitrogen ratio (C/N) are important factors that determined the mycelium colonization and development of fruiting bodies in oyster mushroom. The highest number of the total fruiting body was recorded in treatment combination of V_1T_3 (15.26). The lowest number of was recorded in V_3T_4 (3.26). In addition, the maximum number of effective fruiting body (11.43) was found in V_2 which was statistically similar to V_1 (10.92). The lowest number of the effective fruiting body (2.54) was found in V_3. The topmost number of the effective fruiting body was found in T_3 (9.21). The lowest number of the effective fruiting body (6.72) was found in T_2. This variation in number of the effective fruiting body in different aged compost could be due to the variations in chemical composition and carbon-nitrogen ratio (C: N) of the compost used (Bhatti *et al*. 2007). With the combined effect of mushroom varieties and days of composted sawdust, the number of the effective fruiting body significantly differed (Table 4). The maximum number of effective fruiting bodies (12.46) was found in V_2T_3, while the minimum number of effective fruiting bodies (1.73) was found in V_3T_5.

Thickness and diameter of pileus (cm): Thickness and diameter of pileus was significantly influenced by the combined effect of oyster mushroom varieties and days of composted sawdust, whereas it was not significantly influenced by the main effect of days of composted sawdust (Table 3, 4). The highest thickness (0.70 cm) was found in V_2 which was statistically similar to V_1 (0.64 cm) and the lowest thickness (0.62 cm) of pileus was found in V_3. The highest pileus thickness was found in T_5 (0.73 cm) and lowest was found in T_2 (0.62 cm) and T_6 (0.62 cm). In V_2T_3, the pileus was found to be the thickest (0.81 cm). In the combination V_3T_3, (0.40 cm) the pileus was found to be the thinnest. Here *Pleurotus ostreatus* and 15 days old, composted sawdust gave best result. Pileus thickness might be higher due to the presence of adequate nutrient in the substrates. As it is a yield attributing character so the higher thickness of pileus may increase the yield. Table 3 showed that the pileus with the largest dimension (10.79 cm) was found in V_3. Variety V_2 has the lowest pileus diameter (6.47 cm). Different genetic makeup of different varieties gave varied result. The pileus with the largest diameter was found in T_2 (10.98 cm). Twenty days of composted sawdust had the smallest pileus diameter (6.07 cm). The treatment combination of V_3T_2 had the largest pileus diameter (13.53 cm), which was statistically similar to V_3T_6 (13.27 cm). The pileus with the smallest (5.11 cm) diameter was found in V_1T_6. Use of compost can increase soil organic matter and water holding capacity and provide slow releasing nutrients to crops, which can lead to long-term yield increases (Dhanker 2019).

Length and diameter of stipe (cm): The length and diameter of the stipe was greatly diverged by the influence of different varieties and days to composted sawdust shown in Table 3, 4.

Table 3. Effect of variety and period of composted sawdust on yield attributing characters of oyster mushroom

Treatment	Fruiting body (No.)	Effective fruiting body (No.)	Thickness of Pileus (cm)	Diameter of Pileus (cm)	Length of Stipe (cm)	Diameter of stipe (cm)	Biological yield (1st flush) (g)
Variety							
V_1	13.46a	10.92a	0.66ab	6.65b	2.06c	1.18b	49.01b
V_2	13.97a	11.43a	0.70a	6.47b	2.27b	1.11b	50.12a
V_3	4.36b	2.54b	0.62b	10.79a	4.60a	1.57a	48.57b
LSD (0.05)	0.62	0.55	0.05	0.66	0.05	0.15	0.89
Days of composted sawdust							
T_0	10.88ab	8.60a	0.68	8.37bc	3.18ab	1.59a	51.78b
T_1	11.05ab	8.34b	0.67	8.90b	3.11bc	1.28b	45.66d
T_2	9.17c	6.72c	0.62	10.98a	3.20a	0.99c	42.43e
T_3	11.57a	9.21a	0.64	7.49c	3.24a	1.60a	55.00a
T_4	10.17b	8.84a	0.63	6.07d	2.17e	1.22bc	49.39c
T_5	10.67ab	8.46ab	0.73	6.09d	3.08c	1.17bc	51.30b
T_6	10.56ab	7.94b	0.62	7.88bc	2.86d	1.17bc	49.14c
LSD (0.05)	0.94	0.80	-	1.02	0.08	0.23	1.36
CV (%)	9.48	10.28	10.83	10.97	2.38	15.74	2.93

In a column, means followed by a common letter are not significantly differed at 5% level by DMRT. V_1= *Pleurotus djamor*, V_2 = *Pleurotus florida*, V_3= *Pleurotus ostreatus*, T_0= 0, T_1= 5, T_2= 10, T_3= 15, T_4= 20, T_5= 25, T_6= 30

The longest stipe was found in V_3 (4.60 cm), while the shortest was in V_1 (2.06 cm). Fifteen days of composted sawdust (3.24 cm) had the longest range, which was statistically comparable to T_2 (3.20 cm). The stipe length was found to be the shortest (2.17 cm) in T_4. The stipe length varied from 5.43 cm to 1.69 cm. The longest stipe was found in V_3T_3 (5.43 cm), while the shortest stipe (1.69 cm) was found in V_1T_2. Ajonina and Tatah (2012) stated that physical quality of oyster mushroom depends on the length of stipe. Mondal *et al*. (2010) noted that the higher the stipe length, the poorer the quality of the mushrooms. Table 3 showed that the highest stipe diameter was recorded at V_3 (1.57 cm) and the lowest was obtained from V_2 (1.11 cm) which was statistically similar to V_1 (1.18 cm). Lucky (2018) reported that the stipe diameter ranged from 0.72 to 1.14 cm in different oyster mushroom species. Fifteen days of composted sawdust (1.60 cm) had the largest stipe diameter, which was statistically similar to T_0 (1.59 cm) whereas ten days had the smallest (0.99 cm) stipe. Oyetayo and Ariyo (2013) stated that mushroom cultivation was influenced by the nature of the substrates employed. The stipe with the largest diameter was found in V_3T_3 (2.35 cm) and the smallest stipe (0.61 cm) was found in V_2T_2 (Table 4). Similar results were found by Mondal *et al*. (2010) and said that the mixed substrates produced mushrooms with the highest stipe width and cap perimeter among the three substrates studied.

Biological Yield (1st flush): In terms of biological yield (1st flush), various mushroom varieties, days to composted sawdust and combination of those showed considerable variations (Table 3, 4). The maximum biological yield of mushroom (50.12 g) was obtained from V_2, and the minimum yield (48.57 g) was obtained from V_3. Fifteen days of composted sawdust (55.00 g) had the highest biological yield and ten days produced the least yield (42.43 g). The mycelia of this oyster mushroom have different colonizing potentials for the substrates in which they are grown, which ultimately corresponded to the yield obtained.

Table 4. Combined effect of variety and period of composted sawdust on yield attribute characters of oyster mushroom

Treatment	Fruiting body (No.)	Effective fruiting body (No.)	Thickness of Pileus (cm)	Diameter of Pileus (cm)	Length of Stipe (cm)	Diameter of stipe (cm)	Biological yield (1st flush) (g)	Biological efficiency (%)
V_1T_0	14.13a	11.56a	0.68abc	5.56e	2.17ij	1.24cd	50.03def	28.58def
V_1T_1	14.16a	11.33a	0.69abc	8.33d	2.23hi	1.41bc	53.53bc	30.58bc
V_1T_2	8.66b	6.40b	0.54cd	11.42bc	1.69k	0.83def	42.46h	24.26h
V_1T_3	15.26a	12.23a	0.72ab	5.42e	2.12ij	1.25cd	55.06ab	31.74ab
V_1T_4	13.96a	12.067a	0.59bc	5.26e	2.07ij	1.23cd	48.93efg	27.96efg
V_1T_5	14.43a	12.06a	0.72ab	5.44e	2.11ij	1.20cde	51.13cde	29.21cde
V_1T_6	13.63a	10.83a	0.57bc	5.11e	2.05j	1.13cde	49.20efg	28.11efg
V_2T_0	13.83a	11.40a	0.66abc	8.05d	2.35gh	1.71b	52.93c	30.24c
V_2T_1	13.90a	10.86a	0.70abc	7.53d	2.41g	0.73ef	42.13h	24.07h
V_2T_2	13.96a	10.93	0.69abc	8.00d	2.63f	0.61f	46.70g	26.68g
V_2T_3	14.83a	12.46a	0.81a	5.520e	2.17ij	1.21cd	56.50a	32.28a
V_2T_4	13.30a	11.83a	0.64abc	5.55e	2.12ij	1.22cd	49.08efg	28.04efg
V_2T_5	14.40a	11.60a	0.72ab	5.37e	2.13ij	1.14cde	50.83cdef	29.04cdef
V_2T_6	13.60a	10.96a	0.66abc	5.27e	2.13ij	1.16cde	48.36fg	27.63fg
V_3T_0	4.70c	2.83c	0.69abc	11.50bc	5.02c	1.82b	53.06c	30.32c
V_3T_1	5.10c	2.83c	0.62bc	10.83c	4.70d	1.69b	41.16h	23.52h
V_3T_2	4.90c	2.83c	0.64bc	13.53a	5.29b	1.55bc	38.13i	21.78i
V_3T_3	4.63c	2.93c	0.40d	11.55bc	5.43a	2.35a	52.26cd	29.86cd
V_3T_4	3.26c	2.63c	0.65abc	7.42d	2.33gh	1.22cd	50.16def	28.66def
V_3T_5	3.46c	1.73c	0.74ab	7.47d	5.01c	1.17cde	51.93cd	29.67cd
V_3T_6	4.46c	2.03c	0.63bc	13.27ab	4.42e	1.23cd	49.86def	28.49def
LSD	1.64	1.39	0.14	1.76	0.14	0.40	2.35	2.35
CV (%)	9.48	10.28	10.83	10.97	2.38	15.74	2.93	2.93

In a column, means followed by a common letter are not significantly differed at 5% level by DMRT. V_1= *Pleurotus djamor*, V_2 = *Pleurotus florida*, V_3= *Pleurotus ostreatus*, T_0= 0, T_1= 5, T_2= 10, T_3= 15, T_4= 20, T_5= 25, T_6= 30 days

Mycelia of *Pleurotus* species are well known to colonize various lignocellulosic materials due to their extensive enzyme systems capable of utilizing complex organic compounds, which occurs in organic matter residues (Tisdale *et al*. 2006). The maximum yield (56.50 g) was produced by V_2T_3 which was statistically close to V_1T_3 (55.06 g) and the minimum yield (38.13g) was produced by V_3T_2.

Biological efficiency: Biological efficiency varied significantly due to effect of different varieties of oyster mushroom and days to composted sawdust (Figure 1) and their combination (Table 4). The maximum biological efficiency (28.64%) was obtained from V_2, and the minimum biological yield (27.75%) was obtained from V_3. Treatment T_3 produced highest biological efficiency (31.42%). The lowest biological efficiency (24.24 %) was obtained from T_2 which differed from rest of the treatments. The highest biological efficiency (32.28 %) was found in V_2T_3 which was statistically similar to V_1T_3 (31.74%). The lowest efficiency was found in V_3T_2 (21.78%).

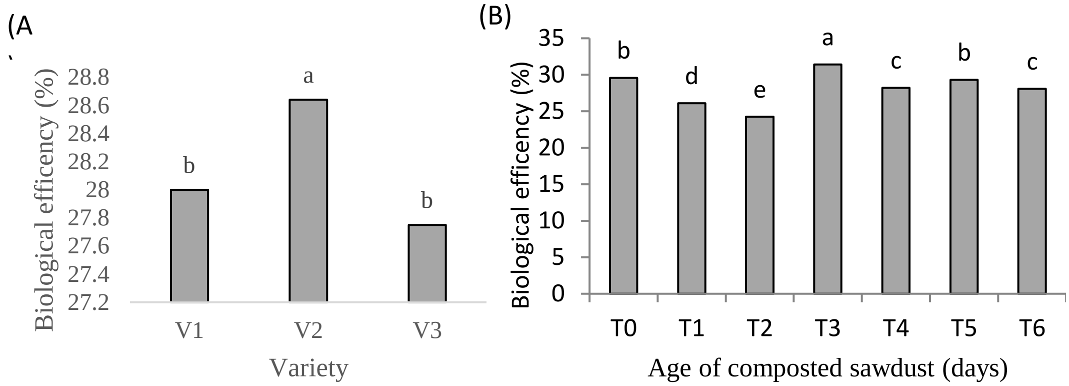

Figure 1: Effect of variety (A) and period of composted sawdust (B) on biological efficiency of oyster mushroom. Bars with common letters are not significantly differed at 5% level of significance by DMRT. V_1= *Pleurotus djamor*, V_2 = *Pleurotus florida*, V_3= *Pleurotus ostreatus*, T_0= 0, T_1= 5, T_2= 10, T_3= 15, T_4= 20, T_5= 25, T_6= 30

CONCLUSION

Based on the result, it might be concluded that *Pleurotus ostreatus* showed the best performance among the studied varieties. The 15 days composted sawdust gave the higher result among the planned treatments of the research in most cases.

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