IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.67
Volume 5, Issue 1, February 2025

Application of Certain Agricultural By-Products in the *Pleurotus florida* Culture

Dr. Abhay Solunke[1] and Dr. Rakhi Shambharkar[2]
Department of Microbiology, Shri Govindrao Munghate Arts and Science College, Kurkheda[1]
Department of Botany, Shri Govindrao Munghate Arts and Science College, Kurkheda[2]
shambharkarrakhi@gmail.com

Abstract: *Mushroom cultivation offers attractive prospects of profitability converting lignocellulosic residue from agricultural fields, forests, and industry into protein-rich biomass. In the present investigation Soybean straw, cotton straw, and paddy straw were used as basic materials for the production of Pleurotus florida. These straws were mixed with additional supplements such as wheat bran to achieve nitrogen content in the initial material. Because these straws are high in protein and carbohydrates, they supply carbon and nitrogen sources for the growth of Pleurotus florida. The highest stripe length observed was 4.03cm, achieved by paddy straws. It has also been noted that the weight of the stripe increases when it is grown in paddy straws which is 4.26 grams. The maximum dry weight of the strip was observed at 0.26 gm with soybean as a substrate. The average maximum Pileus size and weight observed were 54.25 cm and 15.92 gm respectively and pileus dry weight 0.91gm on cotton. The average total yield of P. florida was 118.26 on cotton. This study concluded that Pleurotus florida can be grown using cotton and paddy straw as a sole substrate.*

Keywords: Pleurotus florida

I. INTRODUCTION

Mushrooms are saprophytic fungi having fleshy fruiting bodies, and obtain their carbohydrates from decomposed organic matter (Van Arsdal & Copley, 1964). They vary in size, structure and shape depending on the species and have been part of the normal human diet since time immemorial (Change & Miles, 1992).There are about 69 thousand known mushroom species of which 2000 species from more than 30 genera are regarded as prime edible mushrooms, however, 80 of them are grown experimentally and around 20 are cultivated commercially (Chang, 1999).

Mushroom production is an important business area for an agricultural country like India. Mainly three types of edible mushrooms are cultivated in India on a commercial scale which are white button mushrooms (*Agaricus bisporus*), Oyster mushroom (*Pleurotus Spp.*) and tropical paddy straw mushrooms (*Volvariella Spp.*). The production of white button mushrooms is dominated nowadays however, due to its low-temperature requirement, its cultivation has been restricted to cooler hilly regions of north India. Among the macrofungi that have been grown for food, oyster mushrooms (*Pleurotus* spp.) rank second, with a share of 24.2% of world production (Aksu et al., 1996). With the availability of subtropical climate in most of India, cultivation of oyster mushrooms is becoming popular in Indian plains. It's easy and low-cost technology, high biological efficiency, and ability to grow on various agro-wastes; oyster mushrooms have become popular amongst growers. There are about 39 species described under the genus *Pleurotus* from different parts of the world and more than 25 species have been reported from India, of which about a dozen species are under cultivation (Jandaik, 1997).

The cultivation of *Pleurotus florida* has a promising future in a country like India because it requires simple and affordable cultivation techniques (Chang and Miles, 2004). Because of these intriguing qualities, it's a great choice for growing mushrooms. Its straightforward cultivation methods enable the production of a portion of highly nutritious food with a high commercial value from agricultural waste (Mandeel et al., 2005). The nutritive value of mushrooms is based on a high percentage of protein. Silva et.al. (2007) reported that *A. bisporus* contain 43 % protein on dry weight basis and at least 72 % of this protein is digestible. Lavie (1988) used cotton straw as a growth substrate for the cultivation of Oyster mushrooms and reported that the cotton straw previously unusable as fodder became a digestible

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.67
Volume 5, Issue 1, February 2025

and nutritious feed for cattle, and sheep once used for mushroom cultivation. Tajudeen et al. (2012) studied substrate pretreatment methods for Oyster mushrooms (*Pleurotus ostreatus*). *Pleurotus* cultivation in Brazil was established using sugarcane bagasse as substrate (Maziero et.al. 1992). However, this agro-waste is not abundant in all regions. Thus search for an alternative agro-industrial substrate is very important to allow the cultivation of this mushroom. Sundaram et. al. (1989), obtained a good yield of mushrooms on chopped cotton stalks. Patra and Pani (1977), utilized cotton waste and waste paper alone in combination with paddy straw (3:1 ,1:1, and 1:3 w/w) for sporophore production of *Pleurotus florida* and *P. citrinopileatus*. Patil and Jadhav (1999), reported that the cotton stalks and leaves were the best substrates for cultivation of *Pleurotus florida* as compared to wheat, paddy sorghum, and soybean straw. The present investigation was planned to evaluate the potential for the utilization of cotton and paddy straw as basic raw materials for the cultivation of *Pleurotus florida*. The mushroom cultivation technology for *Pleurotusflorida* has been fairly standardized in the Department., of Industrial Microbiology, Sant Tukaram College, Parbhani. This has generated interest in mushroom cultivation and many farmers around Parbhani have taken up it as a commercial activity.

II. MATERIAL AND METHODS

Spawn preparation: The spawn of *Pleurotus florida* - whole grain rice was utilized, after being precooked for 30 minutes. This 9.0 kg rice mixed with wheat bran (1 kg), gypsum (200 gm), limestone (200 gm), and water (1 L0, which had been autoclaved for 30 min at 121 ^{o} C. The material was transferred in flask, which were autoclaved and after cooling the flask it is mixed with mycelia of 7 days old *Pleurotus florida* and incubated at room temperature for 20 days.

Substrate preparation: Cotton, paddy and soybean straws were sun dried for 2 days after harvest. These straws were chopped into small pieces to obtain homogeneous mixture for substrate preparation. Substrate formulations were determined according to the nitrogen concentration of each raw material to select the nitrogen substrate with nitrogen content from 1.0 % to 1.6 %. The dry straw was chopped in to small pieces (3.5 cm long) and soaked in cold water for 6.0 h. After soaking straw was taken out and excess water drained off. This is then sterilized in autoclave at 121^{0} C for 15 minutes. After autoclaving excess water was drained off, cooled and filled in polyethylene bags.

Cultivation Method: Grain spawn was broadcasted (approximately 16.0 g) on straw layer. Second layer of substrate similar thickness was given over the spawn layer and pressed gently. This is followed by layer of spawn mushroom. Likewise, six layers of spawn of straw and five layers of spawn were given. The bag was then punctured at 6-8 points for aeration and the bags weretied at the top. It is kept for spawn running for 10-15 days. The spawn run completion was judged by observing the white growth of mushroom fungus all over the straw. On completion of spawn running the polythene bag was removed by cutting longitudinally with a sharp blade. The cylindrical bed was kept on wooden racks in the mushroom house for further production of mushrooms. Water was sprinkled over the bed 3 -4 times a day. The small mushroom buttons emerged from the beds on the third day after the removal of the bag. It attained the desirable size on the fourth day. These fully grown mushrooms were harvested by twisting it in two fingers.

III. RESULT AND DISCUSSION

The mushroom culture experiment was carried out to study the effect of different substrates like paddy straw, cotton straw, soybean straw, and wheat straw and also the mixture of different substrates on the productivity of *Pleurotus florida* species of mushroom. The productivity of *Pleurotus florida* mushrooms was studied by measuring the growth parameters like stipe length, stipe weight, pileus size, pileus weight, number and weight of buttons, and yield. The details of all the growth parameters are shown below

1. EFFECT ON STIPE

A stipe is a stem or stalk-like structure which supports the cap of the mushroom

1.1 Effect on stipe length

The data about the stipe length of *P. florida* presented in Table 1, revealed that the length of different substrates, at various picking differed significantly. In the first picking stipe length on paddy straw (5.45cm) was significantly superior over other substrates followed by cotton straw (4.17cm) and soybean straw (4.04cm). The lowest stipe length

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.67
Volume 5, Issue 1, February 2025

(2.73 cm) was obtained on wheat straw. In second picking, the significantly highest stipe length (3.59cm) was recorded on paddy straw followed by cotton + wheat straw (3.51cm).The lowest stipe length was noticed on cotton + paddy straw (2.50cm). In the third picking, significantly higher stipe length was obtained on soybean + wheat straw (3.37cm) followed by paddy straw (3.07cm). The lowest stipe length was noticed on wheat straw (2.21 cm) and cotton + paddy straw (2.52cm).The stipe length ofthe first picking was higher followed by second and lowest in third picking.

Table 1. Effect of different substrates on stipe length (cm) of *P. florida*:

S. No.,	Substrates	Stipe length (cm)			Mean
		1st picking	2nd picking	3rd picking	
1	Soybean	4.04	2.94	2.65	3.21
2	Wheat	2.73	2.61	2.21	2.52
3	Paddy	5.43	3.59	3.07	4.03
4	Cotton	4.17	2.56	2.42	3.05
5	Soybean + Wheat	3.53	3.41	3.37	3.44
6	Soybean + paddy	3.42	2.67	2.66	2.92
7	Cotton + Paddy	2.77	2.50	2.30	2.52
8	Cotton + wheat	3.39	3.51	2.44	3.11
	S.E.±	**0.11**	**0.12**	**0.11**	
	C.D. at 5%	**0.34**	**0.38**	**0.34**	

1.2.Effects on Stipe Weight:

The effect of different substrates on the fresh weight of *Pleurotus florida* species was recorded when fresh and after dehydration. The relevant data are presented below. The data on the fresh weight of *P. florida* on various substrates are collected and presented in Table 2. The data indicated that the stipe fresh weight of *P. florida* on various straws varied significantly. In 1sr picking, the highest stipe weight was recorded on paddy straw (8.93g) and was significantly superior over substrates. The stipe weight was significantly lowest on cotton + paddy straw (1.03g). In the second and third pickings, the highest stipe fresh weight was noticed on soybean straw (2.24 and 1.96g, respectively). The stipe fresh weight was lowest on cotton+ paddy (2.92g) at the second picking and on cotton+ paddy straw (0.60g) at the third picking. The maximum mean stipe fresh weight (4.26g) was recorded on paddy straw followed by soybean straw (2.29g). The lowest mean stipe fresh weight was recorded on cotton+ paddy straw (0.92g). In general, maximum stipe fresh weight was obtained at first picking followed by second and third picking.

Table 2: Effect of different substrates on fresh stipe weight (g) of *P. florida*:

S. No.,	Substrates	Stipe fresh weight (g)			Mean
		1st picking	2nd picking	3rd picking	
1	Soybean	2.67	2.24	1.96	2.29
2	Wheat	2.00	1.76	1.32	1.69
3	Paddy	8.93	1.93	1.91	**4.26**
4	Cotton	2.71	1.21	0.81	1.58
5	Soybean + Wheat	1.82	1.67	1.05	1.51
6	Soybean + paddy	2.28	1.41	0.81	1.50
7	Cotton + Paddy	1.03	0.92	0.82	0.92
8	Cotton + wheat	1.14	1.11	0.60	0.95
	S.E.±	**0.20**	**0.12**	**0.09**	
	C.D. at 5%	**0.61**	**0.37**	**0.28**	

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.67
Volume 5, Issue 1, February 2025

1.3. Effect On Dry Stipe Weight

The data pertaining to stipe dry weight of *P. florida* on different substrates at various pickings are represented in Table 3.In first picking stipe dry weight was maximum (0.34g) on soybean straw followed by cotton (0.32g0 and soybean + paddy (0.32g). the stipe dry weight was lowest (0.10g) n cotton + paddy straw. In second picking, stipe dry weight was more (0.26g) on soybean + paddy straw by soybean straw (0.23g). The stipe dry weight was lowest on cotton + paddy straw (0.09g). The maximum mean stipe dry weight (0.26g) was recorded on soybean straw followed by soybean + paddy straw (0.24g). The lowest mean dry stipe weight was noticed on cotton + paddy (0.09g). The dry stipe weight at first picking was higher followed by second and lowest in third picking.

Table 3. Effect of different substrates on dry stipe weight (g) of *P. florida*:

S. No.	Substrates	Stipe fresh weight (g)			Mean
		1st picking	2nd picking	3rd picking	
1	Soybean	0.34	0.23	0.22	0.26
2	Wheat	0.30	0.16	0.14	0.20
3	Paddy	0.30	0.15	0.09	0.18
4	Cotton	0.32	0.13	0.09	0.18
5	Soybean + Wheat	0.21	0.19	0.14	0.18
6	Soybean + paddy	0.32	0.26	0.14	0.24
7	Cotton + Paddy	0.10	0.09	0.09	0.09
8	Cotton + wheat	0.14	0.12	0.09	0.12
	S.E.±	**0.021**	**0.025**	**0.016**	
	C.D. at 5%	**0.065**	**0.078**	**0.048**	

2. EFFECT OF DIRRERENT SUBSTRATES ON PILEUS

Pileus is spores bearing cap like structure of the Mushroom

2.1. EFFECT OF DIRRERENT SUBSTRATES ON PILEUS SIZE (CM^2):

Different straws significantly influenced the pileus size of various *Pleurotus* species. The data pertaining to pileus size of *P. florida* is presented in table 4, reveals that the pileus size of *P. florida* on different substrates differed significantly. In first picking, pileus size was maximum (93.85 cm^2) on paddy straw and was significantly superior over other substrates. The lowest pileus size (30.24cm^2) was obtained on soybean + wheat straw. In second picking, pileus size was good on paddy straw (37.67cm^2), cotton (37.65cm^2) and cotton + wheat straw (37.15cm^2). The pileus size was lowest (25.85cm^2) on cotton + paddy straw. In third picking, the pileus size was maximum (36.26cm^2) on cotton + wheat straw followed by paddy straw (31.22 cm^2). The lowest pileus size was noticed (20.57cm^2) on cotton + paddy straw. The differences are statistically significant. The maximum mean pileus size (54.25cm^2) was recorded on paddy straw. The lowest mean pileus size of *P. florida* was noticed (27.18 cm^2) on cotton + paddy straw.

Table 4: Effect of different substrates on pileus size (cm^2) of *P. florida*:

S. No.,	Substrates	Pileus size (cm^2)			Mean
		1st picking	2nd picking	3rd picking	
1	Soybean	39.35	31.29	28.40	33.01
2	Wheat	37.98	35.47	22.78	32.08
3	Paddy	93.85	37.67	31.22	54.25
4	Cotton	65.67	37.65	28.14	43.79
5	Soybean + Wheat	30.24	29.91	25.27	28.47
6	Soybean + paddy	40.42	35.15	30.71	35.43
7	Cotton + Paddy	35.12	25.85	29.57	27.18
8	Cotton + wheat	39.41	27.15	36.26	37.61

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.67
Volume 5, Issue 1, February 2025

	S.E.±	**1.49**	**1.89**	**1.12**	
	C.D. at 5%	**4.52**	**5.75**	**3.39**	

N.S. =Non-significant.

2.2 Effect of substrate on pileus weight (g):

The effect of different substrates on pileus fresh weight of different Pleurotus species was recorded when fresh. The data on pileus fresh weight of *P. florida* on various substrates are presented in table 5. The data clearly indicated that the pileus fresh weight of *P. florida* on various substrates differed significantly. The pileus fresh weight of *P. florida* was significantly highest (29.52, 10.38 and 7.86g) on paddy straw at first, second and third pickings. It was followed by cotton (12.65g), wheat (10.02g) and soybean straw (6.17g) at first, Second and third picking, respectively. The lowest pileus fresh weight was (4.67, 4.43 and 3.57g) recorded on soybean + wheat straw at first, Second and third picking. The highest mean pileus fresh weight (15.92g) was obtained on paddy straw followed by wheat straw (8.54g). The lowest mean pileus fresh weight was noticed on soybean + wheat (4.22g). In general, maximum pileus fresh weight was recorded at first picking followed by second and third picking.

Table 5: **Effect of different substrates on pileus fresh weight (g) of *P. florida***:

S. No.	**Substrates**	**Pileus fresh weight (g)**			**Mean**
		1st picking	**2nd picking**	**3rd picking**	
1	Soybean	9.09	7.72	6.17	7.66
2	Wheat	10.68	10.02	4.93	8.54
3	Paddy	29.52	10.38	7.86	15.92
4	Cotton	12.65	6.18	4.47	7.85
5	Soybean + Wheat	4.67	4.43	3.57	4.22
6	Soybean + paddy	8.36	5.35	3.92	5.87
7	Cotton + Paddy	5.45	4.92	3.95	4.65
8	Cotton + wheat	7.33	6.65	5.81	6.60
	S.E.±	**0.27**	**0.38**	**0.22**	
	C.D. at 5%	**0.84**	**1.17**	**0.67**	

N.S. =Non-significant.

2.3 Effect on pileus dry weight of *P. florida*:

The data pertaining to pileus dry weight of *P. florida* on different substrates at various pickings are presented in table 6. In first picking, pileus dry weight was maximum (1.97g) on paddy straw followed by cotton straw (1.33g). The pileus dry weight was lowest on soybean + wheat straw (0.45g). In second picking, pileus dry eight was highest (0.99g) on wheat straw followed by paddy straw (0.88g). The pileus dry weight was lowest on soybean + wheat straw.In third picking, pileus dry weight was more on paddy straw (0.67g). The pileus dry weight was lowest on cotton + paddy straw (0.31g). The differences were statistically significant. The highest mean pileus dry weight (1.17g) was recorded on paddy straw followed by cotton straw (0.91g). The pileus dry weight was lowest on soybean + wheat straw (0.41g). The pileus dry weight at first picking was highest followed by second and lowest third picking.

Table 6 **Effect of different substrates on pileus dry weight (g) of *P. florida***:

S. No.	**Substrates**	**Pileus dry weight (g)**			**Mean**
		1st picking	**2nd picking**	**3rd picking**	
1	Soybean	0.76	0.69	0.56	0.67
2	Wheat	1.03	0.99	0.43	0.82
3	Paddy	1.97	0.88	0.67	1.17
4	Cotton	1.33	0.78	0.63	0.91
5	Soybean + Wheat	0.45	0.41	0.38	0.41

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.67
Volume 5, Issue 1, February 2025

6	Soybean + paddy	0.81	0.61	0.47	0.63
7	Cotton + Paddy	0.54	0.50	0.31	0.45
8	Cotton + wheat	0.75	0.66	0.58	0.66
	S.E.+	**0.03**	**0.06**	**0.03**	
	C.D. at 5%	**0.11**	**0.18**	**0.09**	

N.S. =Non-significant.

3. EFFECT OF DIFFERENT SUBSTRATES ON NUMBR OF BUTTONS PER BED:

Different agro wastes used to grow *Pleurotus* species had significant influence on button number harvested per bed. The number of button per bed of *P. florida* on different substrates differed significantly is represented in table 7. In first picking, significantly highest numbers of buttons (76.66/bed) were obtained on soybean followed by cotton+ wheat straw (74.66/bed). The number of buttons was lowest (48.33/bed) on cotton straw. In second and third picking, number of buttons were more (62.33 and 54.6/bed) on wheat and cotton+ wheat straw. The lowest number of buttons was noticed on paddy (39.00/bed) and wheat straw (25.66/bed). The maximum mean number of buttons per bed (63.33/bed) was recorded on cotton + wheat straw followed by soybean straw (58.55/bed). The lowest mean number of button was obtained on paddy straw (40.55/bed). The highest number of buttons was noticed at first picking followed by second and third picking.

Table 7: **Effect of different substrates on button number of *P. florida***:

S. No.	Substrates	Number of buttons/bed			Mean
		1st picking	2nd picking	3rd picking	
1	Soybean	76.66	54.66	44.33	58.55
2	Wheat	69.66	62.33	25.66	52.55
3	Paddy	49.66	39.0	33.00	40.55
4	Cotton	48.33	47.00	46.33	47.22
5	Soybean + Wheat	68.33	39.66	31.33	46.44
6	Soybean + paddy	52.33	53.00	36.00	47.14
7	Cotton + Paddy	63.66	44.33	31.00	46.33
8	Cotton + wheat	14.66	60.66	54.66	63.33
	S.E.+	**3.75**	**2.83**	**2.82**	
	C.D. at 5%	**11.35**	**8.58**	**8.54**	

N.S. =Non-significant

3.1 Effect of Different Substrates On Weight Per Button:

The mushroom buttons harvested from each bed were sampled for recording their weight (Pileus + stipe). Different straws were significantly influenced this parameter. The data obtained is presented as under. The data pertaining to weight/button of *P. florida* on different substrates was differed significantly and is presented in table 8. In first picking, significantly highest button weight was recorded on cotton straw (13.20g/button) followed by paddy (9.99g/button) and soybean + paddy straw (9.13g/button). Significantly lowest weight per button was noticed on cotton + wheat straw4.38g/button) In second picking, significantly highest weight per button was obtained on cotton (7.77g/button), paddy straw (7.32g/button) and soybean + wheat straw (7.18g/button). The lowest button weight was obtained on wheat straw (4.22g/button).In third picking, he highest button weight was obtained on soybean+ wheat (6.66g/ button). However, the button weight was at par with each other. The significantly lowest button weight was obtained on cotton + wheat straw (4.82g/button). In general, the highest mean button weight was recorded on cotton straw (9.50g/button) followed by paddy straw (7.98g/button). The lowest mean button weight was noticed on cotton + wheat straw (5.10g/button).

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.67
Volume 5, Issue 1, February 2025

Table 8: Effect of different substrates on button weight (g) of *P. florida*:

S. No.	Substrates	Weight of buttons(g)			Mean
		1st picking	2nd picking	3rd picking	
1	Soybean	6.05	6.85	6.00	6.30
2	Wheat	5.82	4.22	6.22	5.42
3	Paddy	9.99	7.32	6.63	47.98
4	Cotton	13.20	7.77	6.18	9.05
5	Soybean + Wheat	5.69	7.18	6.66	6.51
6	Soybean + paddy	9.13	4.51	5.60	6.41
7	Cotton + Paddy	6.07	6.17	6.61	6.28
8	Cotton + wheat	4.38	6.11	4.82	5.10
4.83	**S.E.±**	**0.70**	**0.15**	**0.20**	
	C.D. at 5%	**2.14**	**0.47**	**0.60**	

N.S. =Non-significant

4. EFFECT OF SUBSTRATE AMOUNT ON YIELD (g):

The fresh mushrooms obtained from each bed (consisting of 1kg of dry straws) during all the pickings were weighed separately and recorded as grams of mushrooms per kg of dry straw. The yield of *P. florida* on different substrates at various pickings is presented in table 9. In the first picking, the highest yield of mushrooms was obtained on cotton straw (532.66g/kg) followed by paddy straw (497.00g/kg). The yield of mushrooms on soybean + paddy straw was at par. The significantly lowest yield of mushrooms was produced on cotton + wheat straw (323.33g/kg). In second picking, the yields obtained on cotton + wheat straw (370.66g/kg), soybean (366.66g/kg) and cotton straw (364.33g/kg) were statistically similar. In the third picking, the significantly highest yield (363.33g/kg) was obtained on cotton + wheat straw, followed by cotton straw (285.66g/kg). From the total yield of *P. florida*, it is indicated that the yield of *P. florida* was highest on soybean straw (1083.32g/kg) and cotton straw (1182.65g/kg). It was followed by cotton + wheat straw (1057.32g/kg). The lowest yield was obtained on cotton + paddy (825.66g/kg) and wheat straw (821.99g/kg). In general, there was a reduction in yield of fresh mushrooms with the pickings recording maximum in first and minimum in 3rd picking in all the *Pleurotus* species.

Table 9: Effect of different substrates on button yield of *P. florida*:

S. No.	Substrates	Yield (g)/kg straw dry straw			Total	B.E. (%)
		1st picking	2nd picking	3rd picking		
1	Soybean	452.67	366.66	264.00	1083.32	109.33
2	Wheat	399.33	263.00	159.66	821.99	82.20
3	Paddy	497.00	285.66	210.33	952.99	82.20
4	Cotton	532.66	364.33	285.66	1182.65	118.26
5	Soybean + Wheat	386.33	274.33	207.00	867.66	86.76
6	Soybean + paddy	477.33	250.33	201.33	928.99	92.90
7	Cotton + Paddy	374.00	264.66	287.00	825.66	82.56
8	Cotton + wheat	323.33	370.66	363.33	1057.32	105.73
4.83	**S.E.±**	**15.17**	**11.76**	**10.58**		
	C.D. at 5%	**45.97**	**35.36**	**32.06**		

N.S. =Non-significant

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
Impact Factor: 7.67
Volume 5, Issue 1, February 2025

IV. CONCLUSION

This study concluded that *Pleurotus florida* production increase with the help of agricultural waste. By turning lignocellulosic waste from forests and farms into protein-rich biomass, mushroom farming presents alluring opportunities for financial gain. *Pleurotus florida's* stipe weight and length are noticeably increased when substrates like cotton and paddy straw are combined. Additionally, it raises the amount of fat, protein, and moisture in discarded straw. The current studies' findings unequivocally show that the optimal substrates for *Pleurotus florida* cultivation are cotton and paddy straw

REFERENCES

[1] Ali, A., Azim, A., Mir, F.A., Bhatt M.A., and Ali. A. 1987.Treatment of cereal straw with white –rot fungi. Pakistan J. Agric. Res. 8(4). Pp.428-433.
[2] Chang, S.T. and Miles, P.G. 2004. Mushroom cultivation, Nutritional value, Medicinal effect and environmental impact. 2nd Ed. CRC Press, London.pp 27-37.
[3] Chang, S.T. and Miles, P.G. 1991. Recent trends in worlds production of cultivated edible mushroom. Mushroom Journal .vol. 504. Pp.15-17.
[4] Felix G. de Siqueira, Emerson T. Martos, Romildo da Silva , Eustaquio s.Dias. 2011. Cultivation of *P. sajor-caju* on banana stalk and Bahia grass based substrates. Horticultura Brasileira. Vol. 29. Pp.199-204.
[5] Lavie.D.1988. Production of Oyster mushroom on cotton straw. Mush. J. vol. 82. Pp. 453-463.
[6] Maziero R., Bononi, V.L., Capelari M. 1992. Cultivo e productividade de *Pleurotus ostreatus* var Florida em Mogi das Cruzes, Brasil. Hoehmea. vol. 19. Pp.1-7.
[7] Mahajan, S.G. 1989. Studies on edible mushrooms *P. sajor-caju.* Singer under marathwada conditions. Ph.D. Thesis .MAU Parbhani.
[8] Mandeel Q.A., Al-Laith A.A., Mohamed S.A.. 2005. Cultivation of oyster fungus (*Pleurotus sp*) on various lignocellulosic wastes . World Journal of Microbiology and Biotechnology. Vol.21 :pp. 601-607.
[9] Patil, M.B. and Jadhav, V.T. 1999. Studies on production of oyster mushroom on different agro-wastes under marathwada conditions. Journal of Maharashtra Agriculture University. Vol. 24 (2). Pp. 162-163.
[10] Rangaswamy G., Kandaswamy, T.K. and Ramaswamy, K.1975. *Pleurotus sajor-caju* (Fr.) Singer a protein rich nitrogen fixing of mushroom fungus. Curr. Sci., 40 : pp. 403- 404.
[11] Silva E.G., Dias E.S.,Siqueira F.G., Schwan R.F. 2007. Analise quimic de corpos de fruitificacao de *Pleurotus sajor-caju* cultivado em diferentes concentracoes de nitrogenio . Clencia e Tecnologia de Alimentos vol. 27 .pp. 72-75.
[12] Sundaram, V. , Balsubramnanyam, R.H. and Bhatt, I.G. 1989. Utilization of cotton for mushroom production. Journal of Indian Soc. Cotton Improvement. Vol. 14. Pp94-99.
[13] Tajudeen O Oseni, Sikhumbuzo O Dlamini, Diana M Earnshaw and Michael T Masarirambi. 2012. Effect of substrate pretreatment methods on Oyster mushroom (*Pleurotus ostreatus)* production . International Journal of Agriculture and Biology . Vol. 14. Pp.251-255.
[14] Zakia,B., Srinivas, S. and Singh, N.S. 1971. Essential amino acid composition of protein of mushroom *V. volvacea* . Journal of Food Science and Technology. Vol.8, pp180-185.