1983 ANNUAL REPORT

Project No. 83-V5 - Brush Utilization
Mushroom Compost

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Objectives: (1) To develop a ground almond brush composting technique for mushroom growing. (2) To develop a new composition formula of almond brush compost for higher button mushroom yield.

Interpretive Summary:

Work continues to develop for the better composting techniques and to refine composition formula of almond brush compost for higher mushroom yield.

Two tests were conducted so far this year; and the third; new batches are in the middle of the experiment. The first experiment conducted in the spring with modified composting method showed that 50/50 (Almond Brush/Straw) compost gave approximately 26% higher yields than the traditional straw compost. However, the second experiment carried out during the summer showed 50/50 compost gave approximately 8.2% less yields than control. This experiment was, however, terminated after four flushes of harvest due to terrible infestation by the insects, i.e., mushroom flies and etc.

Prewetting almond brushes with approximately 2% nitrogen water spraying helped to breakdown the brushes faster for 4-6 days. Early mixing with straw also helped to cure them sooner than when both of them were composted separately and mixed together at the end of composting period.

Having improved composting procedure, 50/50 compost does not delay composting period significantly; compare with conventional 100% straw (control) curing period.

During this year, representatives for Monterey Mushroom Farm, Spawn Mate, Inc., and others came to see our experiment and showed their interest in this unique research. Spawn Mate, Inc. indicated their interest to use almond bursches as growing media for their try-outs.

Effects of conditioning the structure of compost pile by almond brushes and also its effect in the growing trial were encouraging and showed positive signs.

However, further yield studies in larger scale must be conducted to show more solid statisical back-ups for this experiment in order to convince California mushroom growers.

EXPERIMENTAL PROCEDURE:

Two tests were conducted so for this year; and the third; new batches are in the middle of the experiment. The compost formula and procedure were changed slightly by adding 3% chicken manure at the prewetting stage and increased its content to total of 5.42% for final compost. The cotton hull was completely eliminated from the compost.

A new experiment was carried out on almomd brushes by prewetting them with the different level of nitrogen water (1, 2, 3, 5, and 7 percent) for the comparison test of curing process.

Having turned and watered for the final preparation of pasteurization, 14 trays of 50/50 compost and 14 trays of control were filled and weighed for each of the experiments. Each tray contained approximately 100 lbs. compost, and they were slightly different in bulk density.

The same 144 hours pasteurization method was used for the experiment.

Spawning, casing, watering, temperature control, and ventilation methods were also the same as previous year except special attention was given for the temperature control to avoid possible heat-burst due to the addition of supplement during the spawning process.

Supplement was provided by Stoller Research Company and Spawn Mate , Inc.

RESULTS:

The results of analysis data on the yield of agaricus bispuras mushroom from 50/50 and control composts are compared in tables 1 and 2.

Adding chicken manure at the prewetting stage reduced the total composting period for five days by breaking down almond brushes sooner.

20% less turning was used for the 50/50 compost and also it was much easier to control anaerobic problem at the center bottom of the compost.

During the spawn running period, mycelleu growth was the same an the two composts.

Prewetting almond brushes with 1 or 2% nitrogen water helped to breakdown the brushes faster for 4 - 6 days.

DISCUSSION:

Three tests were conducted so far this year; new batches are in the middle of the experiment. The first experiment conducted in the spring with modified composting method showed that 50/50 (Almond Brush/Straw) compost gave approximately 26% higher yields than the traditional straw compost. However, the second experiment carried out during the summer showed that 50/50 compost gave approximately 8.2% less yields than control. This experiment was, however, terminated after four flushes of harvest due to terrible infestation by the insects, i.e., mushroom files, mites, and etc.

Additional experiments on prewetting almond brushes with nitrogen added water will be carried out to study further on composting process and its effects on elimination of ammonia during pasteurization process.

And also overall yield comparison studies will be made between two pre-wetting methods.

Larger scale yield tests with our new foumula (50/50 - Almond Brush/ Straw plus selected supplements) will qlao be carried out at the University.

Invitations will be sent out to mushroom growers to show our experiment and we will also provide technical assistance to growers who may participate in almond brush utilization project.

YIELD OF AGRICUS BISPURUS FROM THREE DIFFERENT COMPOST MATERIALS DURING THE SIX WEEKS PICKING PERIOD

Week	50/50 Compost Almond Brush Wheat Straw Lb/Ft^2	100% Compost (Control) Wheat/straw Lb/Ft^2
1	1.542	1.286
2	1.620	1.010
3	0.381	0.473
4	0.260	0.231
5	0.121	0.065
6	0.029	0.007
Totals	3.953	3.072

Table 1:

Mushroom yield comparison results between almond brush compost (50%) control (1983 experiment - February - May)

YIELD OF AGARICUS BISPURUS FROM TWO DIFFERENT COMPOST MATERIALS DURING THE TWO WEEKS PICKING PERIOD

WEEK	50/50 COMPOST ALMOND BRUSH/WHEAT STRAW LB/FT^2	100% COMPOST (CONTROL) WHEAT/STRAW LB/FT^2
1	1.203	1.381
2	1.082	1.201
3	.384	.268
4	.131	.200
TOTALS	2.800	3.050

TABLE 2:

MUSHROOM YIELD COMPARISON RESULTS BETWEEN ALMOND BRUSH (50/50) AND CONTROL (1983 - SUMMER EXPERIMENT (MAY - AUGUST)

CALIFORNIA STATE UNIVERSITY • FRESNO

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JAN 4 1984
ALMOND BOARD

Mr. Robert K. Curtis
Research Coordinator
Almond Board of California
P. O. Box 15920
Sacramento, California 95813

Dear Bob:

Attached is the annual report on "Almond Brush Utilization/Mushroom Compost".

Best wishes for the coming year.

Sincerely,

Joo I. Kim. Ph.D.
Mushroom Project Director
Professor of Mechanized Agriculture

JIK:jc

Enclosures