Project Number: 84-V6
Project Leader: Dr. Joo Kim

84 -V6 Kim

ANNUAL REPORT ON "ALMOND BRUSH UTILIZATION/MUSHROOM COMPOST"

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 mushroom yield.

INTERPRETIVE SUMMARY

Further trials have confirmed the composting period for a 50:50 almond brush/straw mixture is essentially the same (about three weeks) as that for the traditional straw compost when the brush portion is prewetted prior to mixing (2% urea solution) and composting with the straw portion.

Two tests were concluded so far this year, and the third--new batches are in the middle of the spawning process. The first experiment concluded in the early spring with 50:50 (almond brush/straw) compost gave significantly higher yields than the traditional straw compost. However, the second experiment carried out during the summer showed essentially no difference between the 50:50 compost and control.

The observations during the last three years confirm that advantages of using almond brush (50:50) as mushroom compost are: (1) conditioning effect during the composting and spawning; (2) decreased grease caking problem; (3) provides easier escape of free ammonia from the compost during the pasteurization, and (4) significantly higher yield from 50:50 compost at a 5% level from three experiments out of six. Also, some of the disadvantages are: (1) slower water absorbency during the prewetting and composting processes, and (2) reduced water retention capacity during the growing period, hence, more frequent watering is required.

EXPERIMENTAL PROCEDURE

1. Prewetting Procedure:

   2% urea solution water was used at the prewetting stage to expedite the breakdown of brushes. Chicken manure (.5% of dry weight) was also added at the beginning to help bacteriological process. Watering was maintained just to keep them soaked during first three weeks.

2. Composting Procedure:

   Prewetted brush was then mixed with regular straw with modified formula and proceeded with conventional composting procedures.

3. Modified Formula:

   One inch screened ground almond brushes were composted in the following composition:

   100% Almond Brush Mushroom Compost Weight Ratio (%)

Almond Brush	74.66
Gypsum	4.57
Lime	.38
Grape Pomace	14.21
Cotton Seed Meal	.76
Cotton Hulls	1.76
Chicken Manure	3.66

   50% Almond Brush + 50% Regular Compost Weight Ratio (%)

Almond Brush + Straw	74.66

   Other additives are the same as above.

4. Spawning:

   Off white strain (Stoller's Research Co. product) was used in the experiment. Sixteen trays were filled for each regular and almond brush compost comparison test.

5. Results:

   Comparison results between almond brush compost and controls (regular compost) are shown in the following Tables 1 and 2.

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

Week	50/50 Compost Almond Brush/Wheat Straw Lb/Ft^2	100% Wheat Straw Lb/Ft^2
1	1.470	1.457
2	1.521	1.462
3	0.647	0.525
4	0.351 3.99	0.311
5	0.171	0.111
6	0.063	0.032
Totals	4.223	3.898

Table I. Mushroom Yield Comparison Results Between Almond Brush (50/50) and Control (November 1983 - February 1984)

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

Week	50/50 Compost Almond Brush/Wheat Straw Lb/Ft^2	Control 100% Wheat Straw Lb/Ft^2
1	1.321	1.210
2	1.150	1.140
3	0.017	0.036
4	-	-
5	-	-
6	-	-
Totals	2.488	2.386

Table 2. Mushroom Yield Comparison Results Between Almond Brush (50/50) and Control (May - August 1984)

6. Discussion:

Two tests were concluded so far this year, and the third--new batches are in the middle of the spawning process. The first experiment concluded in the early spring with 50:50 (almond brush/straw) compost gave significantly higher yields than the traditional straw compost. However, the second experiment carried out during the summer showed essentially no difference between the 50:50 compost and control.

The observations during the last three years confirm that advantages of using almond brush (50:50) as mushroom compost are: (1) conditioning effect during the composting and spawning; (2) decreased grease caking problem; (3) provides easier escape of free ammonia from the compost during the pasteurization, and (4) significantly higher yield from 50:50 compost at a 5% level from three experiments out of six. (Tables 3 and 4). Also, some of the disadvantages are: (1) slower water absorbency during the prewetting and composting processes, and (2) reduced water retention capacity during the growing period, hence, more frequent watering is required.

As a continuation of the brush utilization as mushroom compost, additional yield comparison tests will be conducted with the methods and materials to remain the same. This will provide the mushroom industry with supporting data that will help them make a decision whether to adopt almond brush as one of the major compost media.

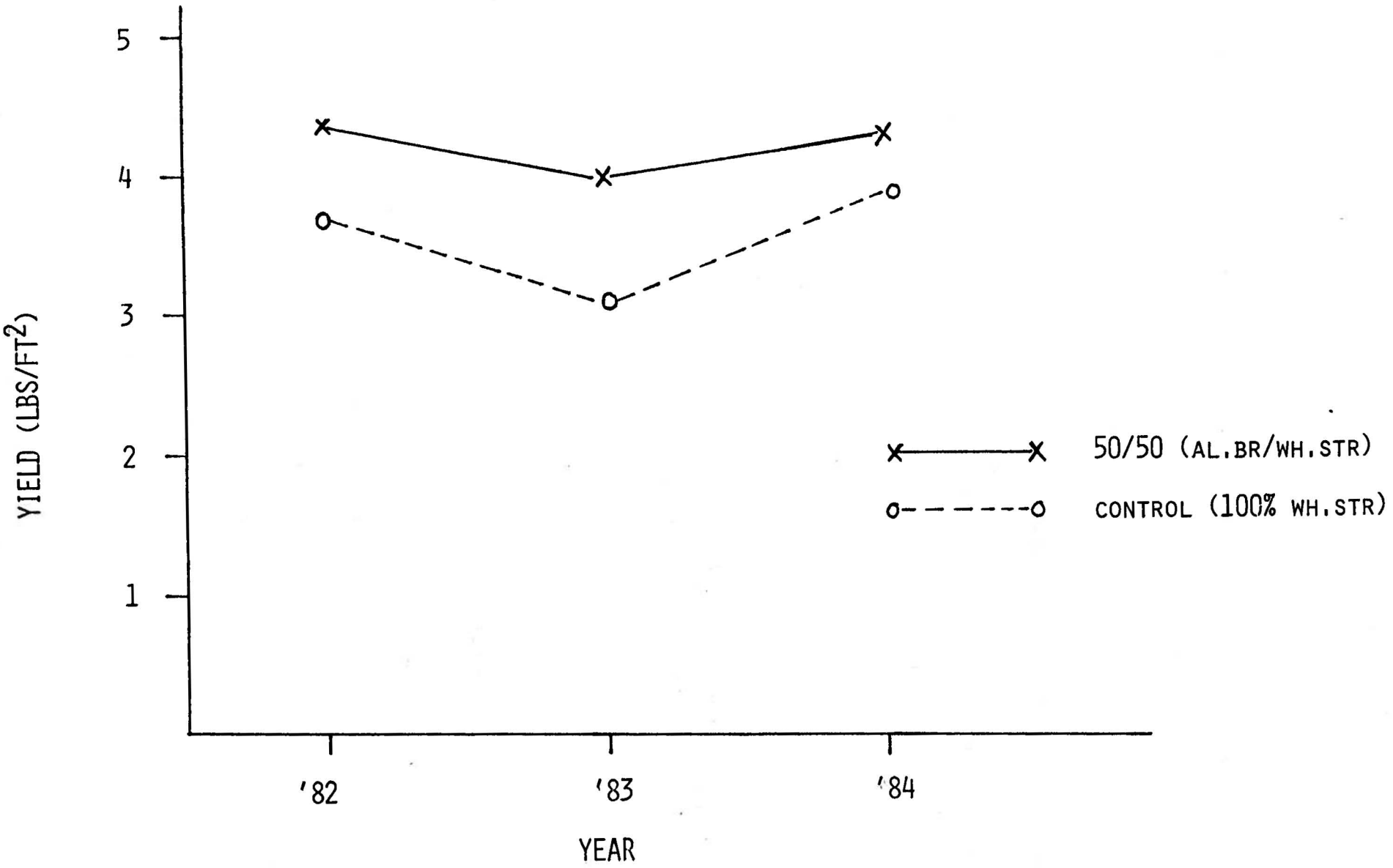

TABLE 3. YIELD COMPARISON FOR AUTUMN-WINTER (OCTOBER-FEBRUARY) EXPERIMENT (SIX WEEKS PICKING PERIOD)

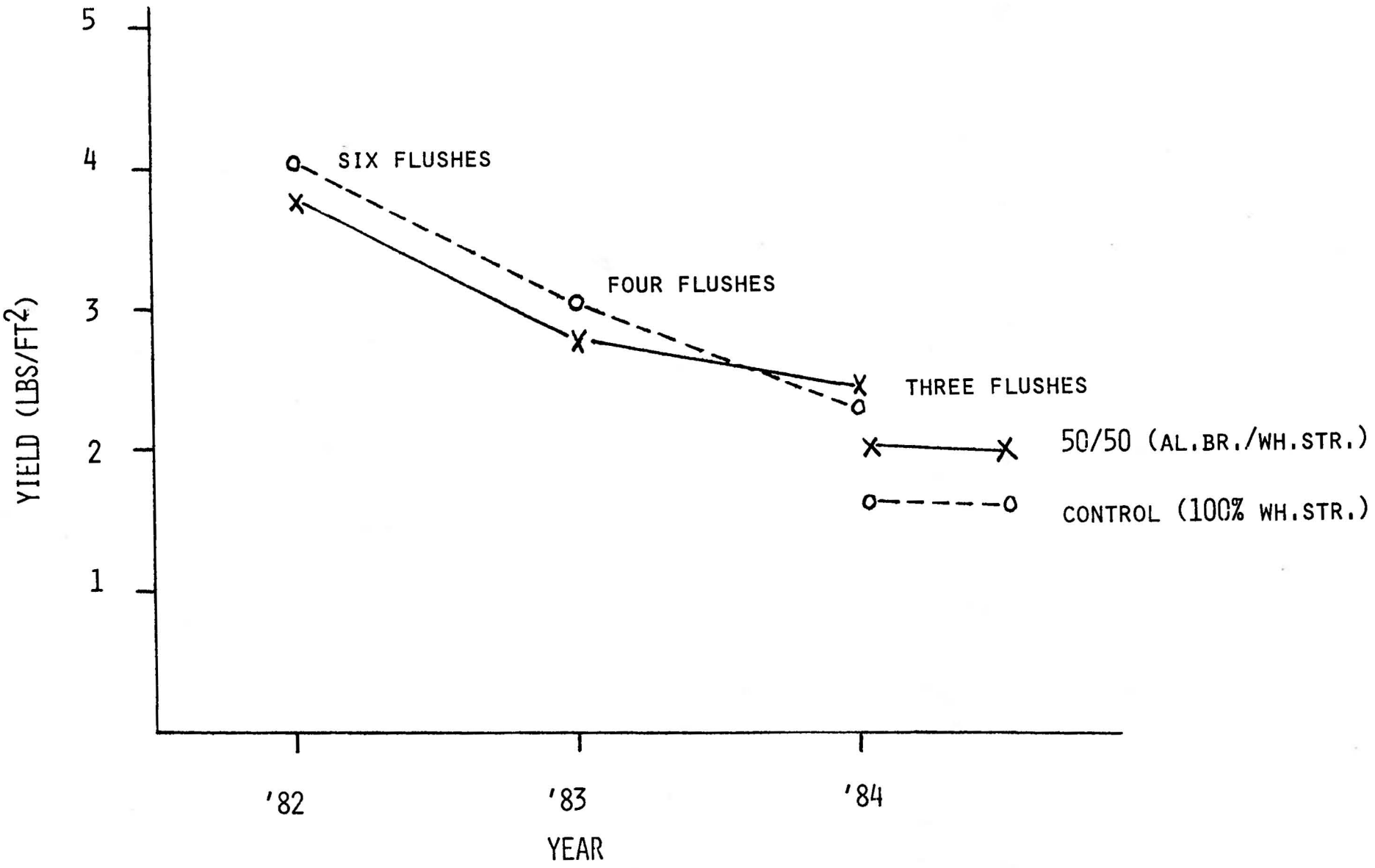

TABLE 4. YIELD COMPARISON FOR SPRING-SUMMER (APRIL-AUGUST) EXPERIMENTS.