Project Number 81-Y3
Project Leader: Joo Kim
Project Name: 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

In cooperation with this project, two commercial mushroom farms (Miranda and Mills) carried out experiments on almond brush mushroom compost. Their results were encouraging though Miranda farm terminated the experiment before it completed full Harvesting cycles. This early termination (after two flushes of harvesting) was due to fly infestation on the growing bed which might have been caused by poor insect control practices. However, the total yields harvested at the Mills farm were as high as that grown on regular compost. It was also observed that the yields from first two flushes at the Miranda Farm were as good as those harvested from the controls. This was an over 200% increase in yield compared to what we harvested last year during the same period.

However, the composting process took a much longer period than traditional straw compost even though the brush size was reduced from three inches to one inch.

It is proposed that the development of composting techniques and formulas based on almond brush be further studied.

EXPERIMENTAL PROCEDURE

One inch screened ground almond brushes were composted at the commercial mushroom farm, Mills Mushroom Farm, in Geyserville, in the following composition and manner:

A. 100% Almond Brush Mushroom Compost Weight Ratio (%)

Almond Brush	75.66
Gypsum	5.67
Lime	.38
Grape Pomace	12.11
Cotton Seed Meal	.76
Cotton Hull	2.26
Chicken Manure	3.16

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

Almond Brush + Straw	75.66

Other additives are the same as the above.

Almond Brush Mushroom Compost Field Curing Procedure

Date	Action	Almond Brush & Supplements	Water Spray
7/22/81	Prewet	31 Cubic Yards	Water Added
7/23	Ricked		Water Added
7/26	Turn		Water Added
7/30	Turn		Water Added
8/4	Turn	Temp Rose to 118°F.	Water Added
8/10	Turn		Water Added
8/16	Turn	Temp. 110 -126°F.	Water Sprayed
8/23	Turn		Water Sprayed
8/29	Turn		Water Sprayed
9/6	100% Almond Brush 50% + 50% (Almond Brush + Regular) Divided		
9/7	Supplements Added (except grape pomace) and Turn		
9/9	Grape Pomace Added and Turn		
9/12	24 Trays (15 ft.^{2}/tray) Filled with 100% Almond Brush (A) 24 Trays (15 ft.^{2}/tray) Filled with 50% + 50% (B)		

PASTEURIZATION

Composted A and B Trays were pasteurized in House I and House II at the temperature of above 140^{0}F. by steam. This process eliminated all harmful organisms. No amonia problem was observed.

SPAWNING AND CASING

The spawn growth seemed better in A and B trays than regular compost. When mycelium was fully grown, the trays were cased with casing soil (peat moss + lime).

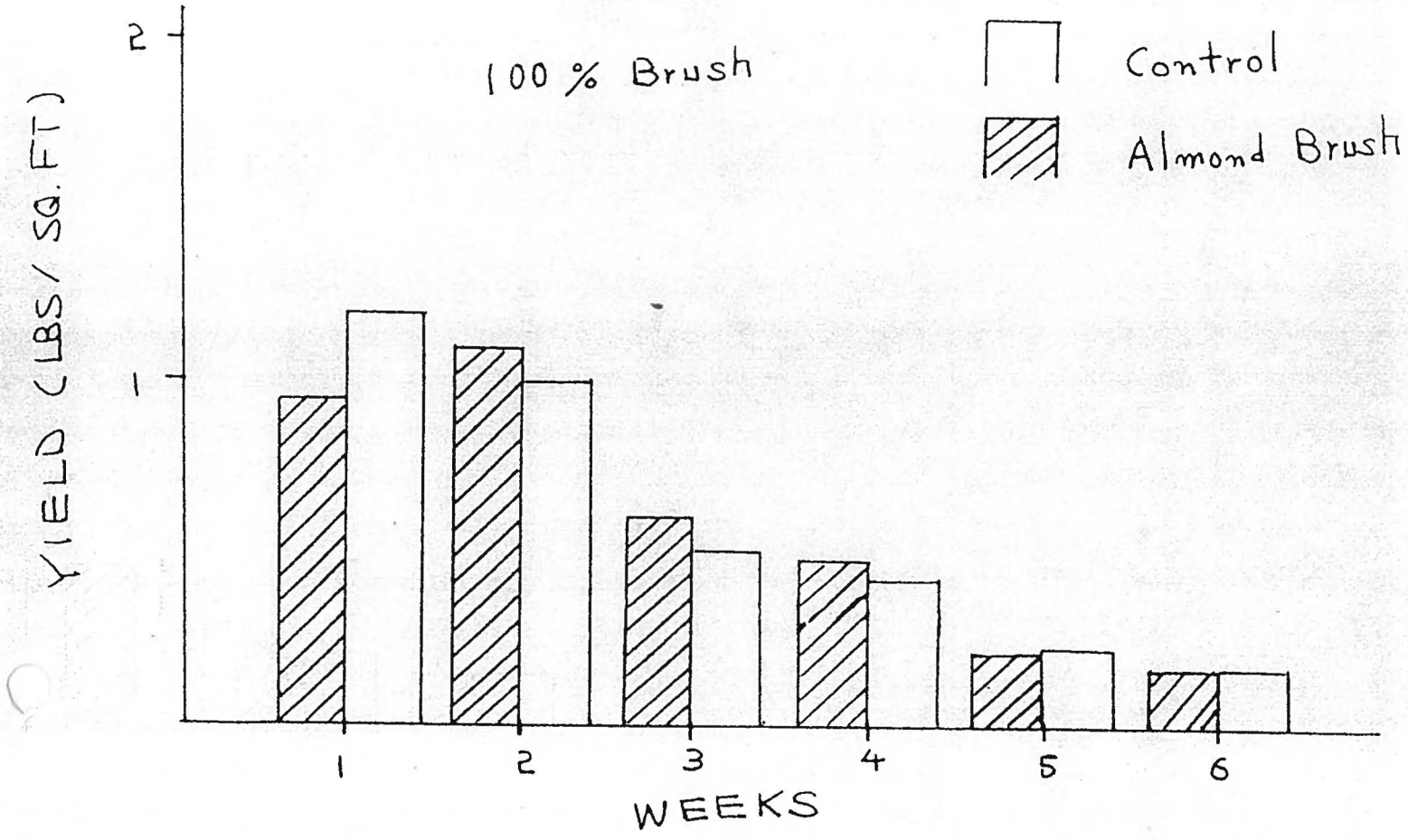
MUSHROOM HARVESTING

Three weeks after casing first flush appeared and harvested for the period of six weeks. The harvested amount of each flush is shown in "RESULTS" of this report.

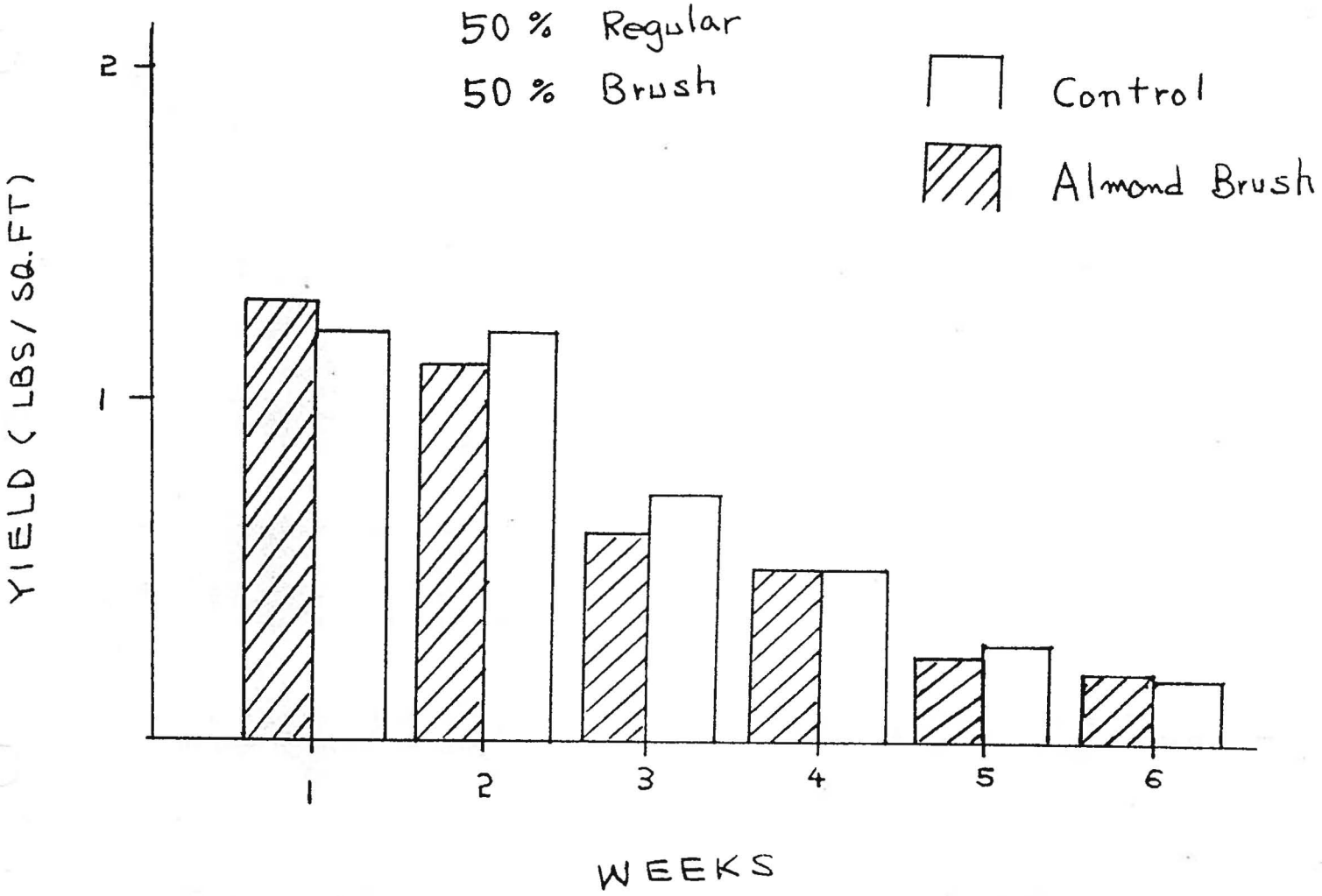
RESULTS

Comparison results between almond brush compost and controls (regular compost) are shown in the following figure:

A. <u>100% Almond Brush</u>



B. 50% Brush + 50% Regular



DISCUSSION

Ground Almond brush with proper additives can produce mushrooms as good as regular composts do.

However, it requires further development of composting techniques and improved composition formula to utilize this almond brush to produce higher mushroom yield.

It is also desired to study pre-wetting methods to reduce field curing period, and to understand water absorbing and holding characteristics of brushes and their behavior during the mushroom growing period.

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81-43

January 12, 1982

Mr. Robert K. Curtis
Associate Research Director
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