

Grower Summary

M 060

Developing alternatives to peat
in casing materials for
mushroom production

Annual 2013

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Further information

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HDC
Stoneleigh Park
Kenilworth
Warwickshire
CV8 2TL

Tel – 0247 669 2051

HDC is a division of the Agriculture and Horticulture Development Board.

Project Number: M 060

Project Title: Developing alternatives to peat in casing materials for mushroom production

Project Leader: Dr Ralph Noble

Contractor: East Malling Research

Industry Representative: Mr James Rothwell, Little Hall Farm Mushrooms Ltd

Report: Annual Report 2013

Publication Date: March 2014

Previous report/(s): N/A

Start Date: 01 January 2013

End Date: 31 March 2015

Project Cost: £63,810.00

Headline

Mushroom yields and quality from casing prepared from rewetted blocking peat and milled peat fines were comparable with those from wet dug peat casings. The incidence of bacterial blotch and the population of blotch causing *Pseudomonas tolaasii* were reduced by the use of the blocking peat casing or by the addition of 25% bark fines to wet dug peat casings.

Background and expected deliverables

Previous research has shown that the most promising peat substitutes in mushroom casing are composted bark fines, mature green waste compost, recycled casing, recycled granulated waste rockwool slabs and filter cake clays. Coir was incorporated into some commercial blends for several years but it is no longer used due to the increased demand and cost of the raw material, particularly for uses such as strawberry grow bags. However, spent coir is a significant disposal problem for the soft fruit industry. In this project, the effect of using the above materials individually and in combinations of materials will be investigated. The specific objectives of the project are:

1. To update and summarise any more recent information on peat alternatives in casing published since HDC project M 53
2. To produce data that meets the requirements of EA low risk waste status and/or food safety regulations
3. To undertake commercial farm trials with the five most promising alternative materials identified from small-scale experiments in M 38 and M 53
4. To test how experimental physical, chemical and microbial standards for casing materials relate to mushroom yield, quality and blotch incidence on commercial farms
5. To electronically monitor crop water management and casing water status, and determine how these interact with the performance of casing materials and the occurrence of blotch
6. To communicate and disseminate results to industry
7. To monitor industry uptake of peat substitute casing materials.

Summary of the project and main conclusions

Discussions with several European casing manufacturers has shown that decreasing availability of wet dug peat for mushroom casing is a problem not only in Britain but also in the Netherlands and Belgium. Other types of peat and peat production by-products are available in Britain in sufficient quantities to supply the mushroom industry. A review of potential alternatives to wet dug peat has shown that the most promising peat alternatives were composted bark fines, granulated recycled rockwool slabs, spent coir from grow bags,

PAS 100 green waste compost, and filter cake clays.

The main conclusions from mushroom cropping trials conducted at three farms were:

1. Mushroom yields and quality from an Everris casing prepared from dried blocking peat and milled peat fines were similar to Harte and Topterra wet dug peat casings.
2. Addition of 25% bark slightly improved yield from Harte casing at Farm A, but reduced yield in Harte casing at Farm B and in Everris and Topterra casings at Farms A and C. This was probably due to insufficient water being added to the latter casing mixes.
3. The effect of addition of 25% recycled rockwool at all three farms and in all three types of peat casing was not significant compared with the respective peat control casings.
4. Filter cake clay added at 20% in peat casing reduced mushroom yield but the effect of 12.5% clay was not significant.
5. Green waste compost was not a suitable casing ingredient at 25% inclusion rate due to reduced mushroom yield; spent coir was unsuitable because it encouraged green mould.
6. At one farm, bacterial blotch occurred on mushrooms grown on Topterra casing, with or without 25% recycled rockwool, but not on Topterra casing containing 25% bark or on Everris blocking peat casing.
7. The occurrence of blotch on different casings corresponded with populations of *Pseudomonas tolaasii* determined from a Taqman PCR test on the casing materials at the end of the second flush.

Financial benefits

The results to date have shown that casing prepared from dried blocking peat and milled peat fines, and rewetted before use, can produce comparable mushroom yields and quality to casing prepared from wet dug peat. Due to availability in Britain and reduced transport costs of dried materials, this could potentially result in a lower cost casing than casing prepared from wet dug peat. There is potential for suppressing bacterial blotch by controlling the type of peat and additives such as bark fines that are added to casing.

Action points for growers

None at this stage.