

# Mushrooms

## A Teagasc Advisory Newsletter

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## Organic Day at Oak Park



On the 3<sup>rd</sup> of March, a demonstration was held at Teagasc, Oakpark for spreading organic manures on land. Hacketts of Monaghan demonstrated a Bergman spreader with horizontal rotors and 2 spinning disc spreaders for spreading spent mushroom compost (SMC). The spreader contains approx 13 tonnes of SMC. This is about the recommended rate / hectare depending on the Nutrient Management Plan of the farm. The available NPK nutrient value is approx €200.

## Disease Control Workshops



During March and April, Teagasc, in conjunction with CMP, delivered a series of seminars on disease identification and control. These were presented by Helen Grogan, Teagasc, Kinsealy and Tom Kellegher, Teagasc, Monaghan. They were very well attended and very beneficial to growers and their staff. The aim was to update growers and their key disease control personnel on the latest information on mushroom disease identification and control. Some of the key points are summarised below.

## Trichoderma:

- At least 33 recognised species.
- *T. aggressivum* is the most harmful.
- *T. aggressivum* targets spawn grains and supplements.
- Millions of tough-walled *Trichoderma* spores produced in a handful of infected compost.
- High risk time is when spawning compost.
- When you have an outbreak, cookout and disinfect thoroughly.

## Cobweb:

- At least three Cobweb species.
- Main feature is large dry spores which are easily airborne.
- Extremely easy to spread in air if mishandled during treatment and watering.
- Spot treatment requires gently positioning a dampened tissue over the disease colony then applying salt from the outside to inside.
- Watering over untreated colonies is the best way to spread disease throughout the crop, therefore cover and salt before watering.
- Turn off fans when treating and watering.

## Verticillium:

- Produces masses of sticky spores that spread in water.
- Infects mushroom pins, caps and stipes.
- Reservoirs of spores can be detected almost everywhere on an infected farm.
- Protect casing and casing operations from dust and water splash.
- Casing operatives should have no contact with the rest of the farm on casing day.
- Care required at power washing so as not to spread spores in water splash.
- Identify and treat outbreaks prior to watering.
- Minimise dust levels.
- Fly control is essential in dealing with

*Verticillium* due to the very sticky spores.

- Sporgon 50WP is still an effective fungicide
- Cookout early before a problem becomes very serious.

## MXV Brown Mushrooms:

- Research has been conducted on what factors influence 'brown mushroom' symptom expression.
- Conclusion: symptom expression is variable but it is only seen when an MXV virus infection is present.
- Symptoms are not always expressed in an infected crop.
- Agronomic factors do not trigger 'brown mushroom' symptoms.
- Once you have an outbreak, the infection is spread by mushroom mycelium in the compost and spores; cookout is required to kill all mushroom mycelium through the depth of compost.

## Flies:

- Two problem species – Sciarid and Phorid.
- Phorids are a summer problem: the best control method is to physically exclude them.
- Sciarids are the most damaging pest in mushroom production.
- Life cycle is short – 21 to 28 days depending on temperature.
- Second generations are most damaging due to very high numbers.
- Correct use of nematodes (*Steinernema feltiae*) will give reasonable control – store properly and in date, mix in cold water, agitate during application, use correct application rate and crucially the correct **application time**.
- Phase II compost – apply in two splits, one at casing and again 5-7 days after casing.
- Phase III compost – apply 5 to 15 days

after casing or 18 days prior to anticipated outbreak of flies. This is because larvae are most susceptible to nematodes 18 days before adults emerge. Therefore consider the stage of cropping when fly numbers seem to explode and apply nematodes 18 days earlier.

- Full recommended dose is 3 million/m<sup>2</sup> or 2 splits of 1 million/m<sup>2</sup>.

- If unsure of timing, use the higher rate. Within 1 week of applying nematodes, 80% will die if there are no larvae in the casing. Each nematode-infected larva will reproduce 4,000 new nematodes. Therefore timing of application is really important.

## Winch Safety on Mushroom Farms

Growers ! pay close attention to the safe use of winches on your farm. In the shelf system, the compost is pulled on the black winding Tencate Nicolon net which carries up to 5 tonnes of compost. On top of this net is a light polythene sheet to keep the net as clean as possible and to keep heat in the compost in winter. In the summer a perforated version is used for cooling the compost.

**Filling the compost:** The filling winch is set up at the opposite end of the shelf to emptying and pulls in the net + sheet + compost the full length of the shelf with 2 wire ropes. There is a safety cage on this roller winch.

The main danger is fraying ropes pulling in 5 tonnes of compost.

**Emptying the compost:** At every shelf, the new net and polythene sheet have to be started on the roller and three problems arise :

- 1.The black winding net is attached by a steel bar to the roller and needs a few turns with hands on the roller to start turning. The temptation is to use the motor to do the few first few turns while settling the net with both hands on the roller. Danger.



- 2.The main problem: The light polythene sheet appears after a few turns of the motor-powered roller. Sometimes it does not wind itself on the roller and falls down - as in the photograph. It then has to be manually started on the roller with a hand wind around. **Extreme danger.**
- 3.Less often, the black winding net is not square on the roller at the start and a fold at the edge occurs. This could wrongly be solved by a hand pull. **Extreme danger**

**Proposed solution to emptying problems:**

- 1.The winch motor must be switched off while adjusting the nets on the roller.
- 2.A new positive pedestal switch should be fitted to the winch motor so that the motor only works if the switch is kept pressed by hand. Thus when the operator releases the switch to wind on the polythene sheet, the motor immediately stops and handling can be safely done.
- 3.Growers must insist that emptying workers operate the switch by continuous hand pressure.

## All Ireland Mushroom Conference 2011

The next All Ireland Mushroom Conference has been organised for Thursday 20<sup>th</sup> October 2011 in the Hillgrove Hotel, Monaghan. The programme for the day will be:

- Mushroom Conference.
- Workshops.
- Mushroom Trade Show (all day).
- Poster exhibition.

Visit to Monaghan Mushrooms new farm at Tyholland (Friday 21<sup>st</sup> Oct)

The organising committee has commissioned an energy-use study of two similar sized mushroom farms powered by different sources of energy. Electricity, oil and biomass usage will be compared and assessed. This will be presented at the Conference. Energy use is an area where every mushroom farm can make savings. Full details of all the subjects and the agenda will be available closer to the event. The Conference will be beneficial to growers and their staff.

## Pesticide Issues

**Dual compliance:** Mushrooms grown in Ireland and sold in the UK. must be produced in compliance with both the Irish and the UK lists of Approved Pesticides and Biocides. This could result in a reduced choice as some pesticides are permitted in Ireland but not permitted in the UK. Exporting growers: please check your reference lists. The Tesco Nurture Audit is an example of this requirement for dual compliance.

### Important changes for the attention of all mushroom growers :

**New Maximum Residue Limit for the active ingredient in Disolite and Environ.**

The active ingredient in Disolite and Environ is Ortho Phenyl Phenol (OPP). In January 2011, a new Maximum Residue Limit for OPP of 0.05 mg/kg in mushrooms came into effect. Disolite and Environ are widely used disinfectants on mushroom farms. **Before fresh compost touches any surface the disinfectant should be thoroughly rinsed off with clean water.**

### Census of Mushroom Production in Republic of Ireland 2010

No of Farms		Estimated Compost Tonnage used					
2010	2011	2009			2010		
		Phase 2	Phase 3	Totals	Phase 2	Phase 3	Totals
85	78	60,278	124,800	185,078	51,220	131,378	182,598
kgs/tonne		249.4	317.5		250	318	
<b>Farm Gate Value:</b> @ € 1.804/kg		€ 27.2 m	€ 71.6 m	€ 98.8 m	€ 23.1 m	€ 75.4 m	€ 98.5 m

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