45 Years of Irish Mushrooms 1970 - 2015

Gerry Walsh

Teagasc (Retired)

These are selected highlights to tell the story of the ROI Mushroom Industry from the 1970s to the present.

To begin, a look at the mushroom output spanning this period:

Year	Total Mushroom Production (tonnes)	Estimate exported to UK
1971	3,110	50%
2014	69,635	75%

The 1970s

In Ireland, mushroom production in the 1970s was on the wooden tray system (Photo 1). There were 6 to 7 large farms with over 100,000 sq.ft bed area and 20 smaller farms. The large farms produced their own compost from wheaten straw, poultry litter and horse manure when available. Peak heat was achieved by steam in specialised houses in the wooden trays. The trays were transported by forklift to a spawning machine and were then stacked in the growing houses. The capital investment to do both the composting and growing was huge and limited any access for new growers to the industry.

Photo 1 Early tray system

Dutch Industry: By contrast the Dutch Industry was based on fixed steel shelving rather than mobile trays. Centralised compost farms produced and delivered Phase 1 compost to the mushroom growing farms. The compost was filled onto the shelves by elevators then peak heated, spawned and grown in the same houses. These growing farms with fixed shelving and machinery, and in-house peak heat involved very large capital investment.

Mobile Compost in Ireland: Most of the smaller growers in Ireland were supplied with Phase 1 compost. An example of compost for supply was in the mid 70s, Dudgeons in Monaghan a large tray grower, was selling 300 to 400 t per week to the small tray growers in the Monaghan area.

Peak Heat on the Small Farms: This Phase 1 was trucked to the farms and filled into wooden trays and peak heated. The peak heat facilities were limited to hot water pipes and boosted by burning coke in barrels. The Phase 2 pasteurisation was variable.

Developments: There was research in the 1970s into new developments, which would take the mushroom industry in Ireland to the next stage.

KINSEALY IN THE 70s

The Mushroom Research Unit in An Foras Taluntais (Agricultural Institute) Kinsealy made an important decision in 1970 to build an insulated polythene plastic house.

Three areas of mushroom research were carried out:

1. Spawned Casing.
   Spawn run compost from the current crop was mixed into the casing. This had the effect of reducing clumping mushrooms on the bed surface thus improving mushroom quality. This technique was developed further during the decade and was widely used in the mushroom industry.
2. Synthetic compost.
   Compost mixes using straw, poultry litter and other additives were being researched in many countries. Kinsealy developed a synthetic formula in trials using raw materials available in Ireland.
3. Plastic Bag:
   Production in plastic bags was developed in Denmark in 1959 and used widely in France and Italy. These systems used wide bags 45 cm high. Kinsealy researched growing in different bag types and eventually proposed using a 60 to 70 cm high plastic bag containing approximately 20 kg compost. The quality of the mushrooms produced on the bag was excellent and the yield/t was the same as in trays or shelves.

Bulk Peak Heat

Peak heating in trays and shelves was not going to be suitable for the bag system as it required large capital expenditure. Bulk peak heating in Holland involved compost on nets on concrete floors. Forced air from underneath came either from perforated pipes on the floor or slatted floors and fans. This was being developed in the 1970s. Pat Walsh, while researching bulk peat heat, observed in this system a cold spot at the outside wall of the building which would reduce the peak heat in that area. Following discussions with Cathal Mc Canna, a new type of building was planned, instead of a concrete building, an insulated polythene tunnel containing a reinforced concrete bin on a slatted floor. As the concrete bin was independent of the outside cover, the compost touching the wall was insulated and the entire bulk was properly peak heated. This tunnel system reduced the capital required. A prototype peak heat house was built in Kinsealy. Photo 2 shows the eventual commercial peak house in Ireland.

Photo 2 Phase 1 being filled into early commercial peak heat tunnel.

Elements Ready: Thus, by the late 1970s the elements for a new system had come together:

1. Produce compost using the normal stack method.
2. Using mobile grabs and elevator, move the Phase 1 into the bulk slatted insulated tunnel.
3. Using the grabs transport the Phase 2 to a spawning machine and bagger (Photo 3).
4. Deliver bags by truck to satellite growing farms with plastic tunnels suitable for mushroom production (Photos 4 - 8).
5. Grow in plastic bags for 3 or 4 flushes, remove spent bags, sterilise the tunnel and re fill.

Photo 3 Early Phase 2 tunnel emptying system with mobile grabs

SATELLITE SYSTEM BEGINNING

In 1979 in Co Wexford, Pat Walsh, and in Monaghan, Ronnie Wilson and Noel Howlin launched satellite systems, to produce brown mushrooms for processing.

Wexford: In the winter of 1979, a series of public meetings were held in the County Advisory Office, Enniscorthy, and the mushroom satellite system was planned. In Gorey, Pat Walsh built a compost yard equipped for bagging and sold the first compost as Phase 1 to an existing grower in December 1979. The satellite mushrooms were to be transported to a processing factory in Dublin with the first farms ready for compost in 1980. The farm size was 3 tunnels with a boiler and cold room. The tunnels were 22 ft x 110 ft, which accommodated 1000 bags on the floor. The fill was approximately 20 t and 1 tunnel was filled every 4 weeks. The boiler supplied hot water to an exchanger in each tunnel. The capital investment was 20,000 Irish pounds.

Photo 4 Three tunnel bag unit

Photo 5 Bag delivery to farms

Photo 6 Early bag handling

Monaghan: A similar satellite system was planned and developed by Ronnie Wilson and Noel Howlin. In Tyholland, a compost yard and a mushroom processing factory were built in 1980/81. Noel recalls that on 5th of November 1979, 60 growers had signed up.

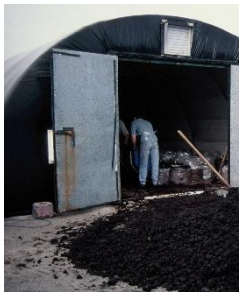

Photo 7 Preparing and applying casing manually to bags

Photo 8 Picking bags

Processing to Fresh

In 1981, the Wexford group switched to growing fresh white mushrooms exported initially by van to Cardiff. In 1985 the Monaghan group switched to the fresh trade.

THE 1980s and 1990s

Driven on by price and market requirements, the Irish bag system developed and adapted. Farms intensified production (Photo 9 – 11) by installing steel staging with a second layer of bags. This was followed by blocks on staging. Existing growers added new tunnels with the number of tunnels per farm increasing from 3 to 4 to 5. New growers came on board and built new farms. In 1995, 566 farms were in production.

In 1986 the last tray farm in ROI was closed.

Photo 9 Bags on staging

Photo 10 Palletised block delivery

Photo 11 Casing blocks on staging

Crisis in 2002

The Irish mushroom industry was under many pressures. Profitability fell due to static and falling prices and increasing costs and competition on the UK market from Polish expansion and Dutch supplies. A picker shortage arose in Ireland due to economic boom with higher wages available elsewhere. Foreign pickers, mainly from Eastern Europe, began to be recruited.

In 2004 the government Task Force Report recommended:

1. Increase Phase 3 supply.
2. Farms should have the option of investing in shelving and automation with grant aid.

The composters undertook this expansion of Phase 3 supply. Rationalisation led to farm closures and a number of other farms expanded with shelving. Output per farm rocketed. The polythene tunnels were lifted with straight bars to allow 3-6 layers of shelving. New straight sided tunnels were built (Photo 12). Fill/week went from *ca* 30 to 50+ t/wk and continued to rise on the larger farms.

Photo 12 Modern straight sided polythene tunnel

2005 to 2015

These trends continued, closure of farms reduced the national mushroom output but with good Phase 3 compost and expansion on remaining farms eventually the national output exceeded the previous highest output. The output is still growing and the 2014 figure is 69,670 t. We now have approximately 70 farms, with 40 of these being large enterprises. The largest farms fill 150 t/wk plus.

<u>Other forces</u>

Many challenges had to be overcome in the industry in this period

1. <u>Minimum wage:</u> This issue had to be tackled if the industry was to survive. Price problems and declining profit margins per lb meant growers had difficulty meeting the hourly rate. The answer was to change growing techniques in order to produce mushrooms in layers allowing grazed picking (Photo 13). Continuous picker training saw rates increase from 30 lb/hr to 50+ lb/hr (11 kg/hr to 22 kg/hr).

Photo 13 Spread of pinning to improve picking speed and quality

2. Marketing: To compete with Polish and Dutch, and to negotiate with the supermarkets, a sophisticated Irish marketing organisation was developed by the Irish Exporters. Bord Bia led promotions, e.g. the recent *More to Mushrooms* campaign was funded by the EU and the Irish and UK growers. UK preference has meant Irish companies had to establish a presence in UK by buying and building mushroom farms. This presence and cooperation with UK growers is an important part of recent Irish Mushroom story.

3. Health and Safety and Supermarket Protocols: Growers are trained in safe use of Pesticides courses by Teagasc. The course is approved by the national standard body Fetac and links in with supermarket farm inspections like Natures Choice. The DAF Pesticide control service is involved in this training.

4. S.M.C: Spent mushroom compost is a useful organic manure and can be land spread under the EU Clean Water Regulations. The Teagasc Advisory Service monitors the nutrient content and issues recommendations on agricultural land use.

5. Irish Compost Producers: Composters researched worldwide for new ideas in Phase 3 production methods, putting this on the ground involved large investment. Production increased from 52,000 t in 2000 to over 180,000 t in 2012.

6. EU Producer Group: Ireland has availed of marketing aid under the EU rules for the Fruit and Vegetable Sector. This has been a big help to the Irish Industry.

2015

This brings us to the current date in September 2015. The estimated ROI mushroom production is 69,500 t with approximately 75% exported to the UK. There is also a small export to France and Iceland.

Finally, tribute is paid to the composters, researchers and advisors in Teagasc and AFBI, spawn companies, the Department of Agriculture, Bord Bia and many others who have played their part in the Irish Mushroom Story. A special tribute must to be paid to the growers who invested their money, put research into practice and adapted continually to really dynamic challenges down the years. I wish to thank Cathal McCanna, Pat Walsh, Noel Howlin and Martin Hussey with whom I discussed the detail of this talk.

Automatic filling and casing