

**AgroBiodiversity Ireland – NUI Galway, February 9, 2012**  
**The Importance of Genetic Biodiversity in Food Crops**  
**Chrys Gardener, Irish Seed Savers Association**

**A Tale of Two Spuds**

At Seed Savers we like to introduce people to the idea of how important biodiversity is in food crops by citing an example from the Great Famine. Below are photos and descriptions of two different potato varieties grown during Famine times that dramatize the crucial importance of biodiversity in food crops.



**Lumper (Pre-1808, breeder unknown, Scotland)** *The Lumper is much reviled for its infamy as the potato which caused the Irish famine as well as being described as having poor flavour. This prejudice aside, the Lumper is a lovely potato to grow, with strong upright shoots & beautiful white flowers in abundance; produces big crops of large white-skinned potatoes with the characteristic deep eyes. Resistance to late blight is low, but high yields are possible if planted early and diseased stalks removed before tuber blight sets in.*



**Butes (or Beauties) (Pre-1936, Ireland)** *Very rare old variety which was never commercialised, this potato came to us through Thomas Harrington and Mary Grady of Kilmore. Maintained for many years by Danny Lynch of Kilmore, Butes were renowned in coastal parts of Kerry for having survived the potato blight in 1845 and '46. They are a round, white-skinned tuber with eyes of medium depth, which keep very well. Need space when grown in drills (16 - 18" apart), and need to grow-on well to produce a bulk of potatoes.*

The Lumper produced higher yields than any other potato variety available at the time, with up to 50% higher yields. Given the political situation of the time that resulted in very little land for Irish farmers, the Lumper was the potato that most people grew in order to try to feed their families. Thus when the blight first arrived in Ireland there was almost no genetic diversity in the potato crop which is why the blight was so widespread and led to the terrible famine.

However, in a small community in coastal Kerry, a different variety of potato called Butes were favoured by the locals. While the blight devastated the fields of Lumper potatoes, the Butes potato fields remained unscathed and saved the population of that area from starvation. This historically important potato, which still retains moderately

good blight resistance, might have been lost for good had it not been maintained by some residents of Kilmore, County Kerry and then sent on to ISSA where it is now part of our living genebank collection.

**Today we face the same possible threat due to the reduced genetic diversity of food crops that are now grown on a large scale.** Hybrid crops may offer benefits like higher yields (like the Lumper potato) or increased disease resistance, but these benefits come at a loss of genetic diversity. This is because hybrids are highly in-bred for just a few desirable characteristics and thus lose many potential traits that could help them survive other diseases or extreme weather conditions.

Only **open-pollinated** varieties can be grown and saved in a way that retains their original characteristics without sacrificing genetic diversity.

### **History of Irish Seed Savers**

Founded in 1991 by Anita Hayes, ISSA was originally in County Carlow then moved to our current 8 ha. site in Scariff, East Clare in 1996. Anita Hayes is an American who moved here with her Irish husband Tommy Hayes. Anita had learned to save seeds in America, inspired by the American Seed Savers Exchange, and she wanted to use Irish vegetable varieties in her garden.

When she learned there were no Irish seed companies she began searching for Irish seeds that had been collected and saved by Irish farmers and gardeners. People started sending her small amounts of seeds that had been saved in their families.

Anita grew these out in her gardens in increasingly larger numbers to bulk them out and increase the genetic diversity. Eventually she was producing enough seed to start giving it away to other gardeners.



No Irish vegetable varieties were maintained in an Irish genebank at the time, but Anita was able to locate varieties that had been sent to genebanks in other parts of Europe. Following her example, our staff recently re-patriated the Irish variety Buan Onion from a list of accessions held at Wellesbourne genebank. 'Baun' means long-life in Irish and true to the name this is a long-keeping onion that we now maintain in the ISSA collection.

Anita met Dr. Lamb and learned about his work conserving Irish apple varieties in the 1940's and 50's. Dr. Lamb helped ISSA establish a collection of Irish apple varieties using scion wood from the collection at UCD.



Staff at ISSA were initially funded by FAS scheme. It was established as a not-for-profit charitable organisation in the mid 1990's and became a member-supported organisation to increase financial support, with free seeds and seed potatoes to given to supporters in exchange for a donation. Today we are both a business and a charity, with sales of fruit trees, seeds, garden supplies as well as income from workshops, school tours and visitors funding our work in addition to PGRFA funding from DAFM. We also receive funding from Pobal for our community and voluntary projects, and funding from the Irish Environmental Network for our environmental initiatives.

The conservation and distribution of Irish varieties forms the core of our work, with 286 Irish accessions held in our collection and propagated on a regular basis to maintain vigour. Our accessions include 75 varieties of Brassica, 17 Irish potato varieties, 130 apple varieties, 22 types of oats, 5 pea varieties, and just one variety of irish carrot, barley and broad bean. We have been compiling data ton these Irish varieties which will be uploaded to the Eurisco database later this year once our new seedbank, which is currently under construction with LEADER funding, is complete. A draft of the Irish Seed Savers data for the Eurisco database is attached to this document.

### **PGRFA projects**

Grant funding from DAFM started in 1999 initially on a per project basis. Early work for DAFM was small grow-outs of the Irish Brassica collection.

#### **2003 - 2007**

- Maintain native Irish apple collection
- Utilisation of Irish Cultivars: Irish Green Pea
- Utilisation of Irish Cultivars: Balbriggan Brussels Sprouts
- Utilisation of Irish Cultivars: Irish Linseed/Flax

#### **2008**

- Research, collection, identification & preservation of endangered Irish apples
- Collection of indigenous crab apples & damsons

- Maintain national apple collection
- Heritage & under utilised cereals grown at Raheen
- Bulking up 3 wheat, 1 oat & 1 barley variety
- Replication of Irish linseed varieties
- Utilisation of native Irish Flax
- Utilisation of native Irish Brassica cultivars
- Plant orchards in schools using native Irish apple trees

## **2009 – Present**

Beginning in 2009 Irish Seed Savers was granted funding from DAFM on a year-by-year basis for multiple Core Activity Areas (CAA). In 2011 these were:

CAA 1. Maintenance of the full apple orchard collection

CAA 2. Bulking up and distribution activities of Irish PGRFA

- Propagation and distribution of Irish apple trees (approx. 6,000 per year)
- Regeneration of Irish vegetable and grain varieties (grow-outs and bulking up)
- Yearly grow-out and selection of Irish seed potato varieties
- Seeds and seed potatoes distributed to supporters and general public

CAA 3. Supporting on-farm management and conservation of Irish PGRFA

- Development of a seed growers training programme and Seed Guardian network to teach the skills of saving Irish seed varieties to over 40 farmer/growers in 2011

CAA 4. Maintenance of ISSA Genebank, to include regeneration and documentation activities as and when required

- Gene bank storage and regeneration of seed as required
- Development of seedbank database
- Compilation of data for inclusion into Eurisco database (to be completed when new gene bank facility is complete in summer 2012)

CAA 5. Carrying out preliminary characterisation activities on Irish PGRFA according to standard Bioversity International Descriptors

- Recording of descriptors, plus flowering & ripening dates, for Irish apples
- Characterisation work on Irish vegetable and grain cultivars



CAA 6. Promotional and Educational Activities to assist in creating public awareness on the need to conserve and use Irish PGRFA

- Educational programmes on Irish PGRFA for children ages 5-18
- Promote school gardening using Irish PGRFA
- Adult workshops on growing Irish vegetables and fruit trees
- Promote Irish PGRFA at events, garden shows, fairs, farmers markets, etc
- Open Days and events to promote Irish PGRFA
- Open daily to visitors for self-guided or group tours
- Articles and publications to promote Irish PGRFA



CAA 7. Creation of a new Irish Orchard Site

- 300 Irish apple trees were propagated by budding in 2010
- New Irish apple collection to be planted Spring 2012

**Conclusion**

- Irish Seed Savers Association is a **living** gene bank – varieties are regenerated regularly and distributed to get them out into Irish gardens and farms
- We are now teaching and training farmers and gardeners to save their own high-quality open-pollinated seed is the best security for our seed system
- Who decides what is 'native Irish'? A pea variety called 'Fill the Bucket' was sent to us by a Tipperary family that has been growing them for generations. There are other seeds with similar stories in our collection that are not yet recognised as official Irish varieties. All of the fruit or veg that is now called 'native Irish' came from other countries (eg. Potato from Central America) so what is the criteria to determine which are the Irish varieties of food crops?

