

How the Potato came to Ireland

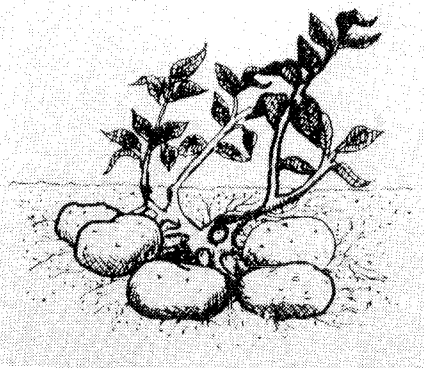
by Richard Ahern

Today the potato is generally regarded as a basic and uncomplicated vegetable. But there is nothing plain or simple about its origins and history. For all its homely appearance and widespread consumption throughout the world, the story of the 'spud' is shrouded in a web of myths and studded with a plethora of false trails. And the manner in which the plant came to Ireland is by no means clear or straightforward.

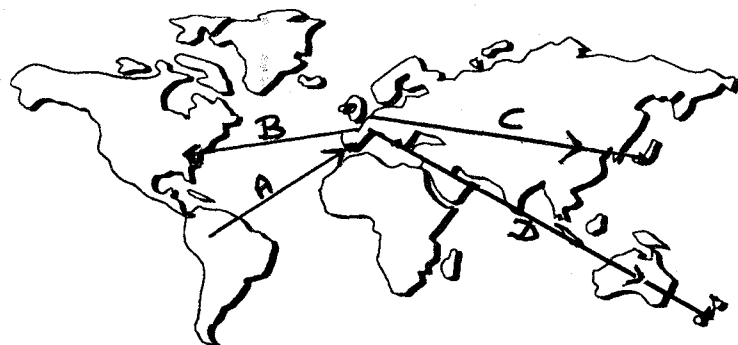
The potato is part of the *Solanaceae* family and is botanically related to the tomato, tobacco, eggplant, pepper, petunia and the deadly nightshade. The tuber-bearing species belong to the genus *Solanum*. The white-potato tuber is a staple food in most countries of the temperate regions of the world. It is grown as an annual crop, and the stem attains a length of up to almost 1 metre, with pointed leaves and white to purple flowers. The fruit is a many-seeded berry about the size of a cherry. Like the stems and the foliage, the fruit contains significant amounts of solanine, a poisonous alkaloid characteristic of the plant.

In ordinary cultivation, propagation is accomplished by planting the tuber, or a section of the tuber containing an eye, which is an undeveloped bud. New varieties are developed from seed produced after controlled pollination. Improved varieties may be propagated rapidly by using cuttings from the sprouts. Freshly-dug potatoes contain 78% water, 18% starch, 2.2% protein, 1% ash and 0.1% fat. About 75% of the dry weight is carbohydrate.

Today the potato is grown in about 80 countries throughout the world. In tonnage it ranks fourth in world production behind wheat, maize and rice,



POSSIBLE SPREAD OF THE POTATO AROUND THE WORLD



Late 1500s → A → Early 1600s → B → Late 1600s → C → Early 1700s → D

MIGRATION OF *Phytorrhthora infestans* TO EUROPE AND BEYOND



A → Mexico to USA (1842 -) → B → USA to Europe (1844) → C → Later Migrations (1845 +)

and is versatile, efficient and produces a healthy nutritious product in a short growth cycle.

Solanum tuberosum esculentum, to give it its official Latin name chosen by the Swiss botanist, Gaspard Bauhin, was discovered by the natives of South America, who were the first to sample its delights and benefit from its marvellous productivity. Archaeological records indicate that the potato was brought into cultivation about 2,000 years before the Spanish Conquest. However, more recent evidence from carbon dating has shown that it was present in South America as far back as 11,000BC; so, while it has been growing there for at least 13,000 years, the potato has only been cultivated from about 8,000 BC. It is now generally recognised that the centre of origin or genetic diversity of the potato is located near Lake Titicaca (60kms. west of Le Paz, the

highest large lake in the world, alt. 3,809m.) on the Peru/Bolivian border.

Another school of thought suggests that the 48 chromosome (or tetraploid) potatoes now grown in Europe have mainly originated from Chile and not from the north-western part of South America as originally believed. This conclusion was probably influenced by the findings of a Russian botanic team which carried out a comprehensive study of the species in South America from 1925 to 1933 and concluded that the first introduction was of *S. tuberosum* from Chile. Even at that time the Russian team did concede the close relationship between *S. tuberosum* and *S. andegenum*, which was associated with the more northerly areas of South America. However, this theory has been disputed on the grounds that it was unlikely, if not impossible, that viable tubers could have reached Europe from

Chile at this time. It is claimed that it is much more likely that the initial tubers brought to Europe were of the Andean type (*S. andegenum*) and probably originated in Columbia and may have been exported through the port of Cartagena (in N.W. Columbia, in the Caribbean).

The first European contact with the South American potato is attributed to the Spanish soldier, Pedro de Cieza de Leon, who came across the tuber in the Upper Cauca Valley of Colombia, in 1538. The potato did not reach Spain until the year 1565, and it is recorded that it was subsequently served to Europeans in a Seville hospital in 1573 and perhaps earlier. From Spain the tubers were transported by Catholic monks to Italy and from there to Belgium and the rest of Europe by the Papal Legates. The potato was introduced to China and Japan in the 17th century and New Zealand in the 18th century. To reach North America the potato travelled back across the Atlantic from Europe and appears to have been first grown in Virginia, where it was observed in 1620 and in Pennsylvania in 1685. However, the earliest authentic record of its cultivation in N. America is in 1719 at Londonderry, in New Hampshire.

The identity of the individual who was first responsible for bringing the plant to Europe is still unclear and, like many other aspects of the saga, the matter is still surrounded by legend, mystery and tradition. What does seem to be clear is that the original import to Europe was not of a single variety as we understand the term today but as a mixture of genetic lines. It is also possible that a number of imports took place around the same time or that true seed may have been the original source of the plant.

By the middle of the 17th century one can find many references to the potato as a source of food for the Irish. This would suggest that even by that time it was extensively grown in Ireland. However, it cannot be established with any degree of certainty when the potato was introduced here or by whom, but it is claimed to have been brought in sometime within the last 15 years of the 16th century. This would mean that it has now been grown here for some 400 years.

Many different theories of how the potato was introduced have been investigated and one such theory attributes the introduction to Sir Francis Drake (1540?-96), who spent some two years hiding in 'Drake's Pool' outside Crosshaven, Co. Cork, on his return from South America. It is known that Drake first came across the potato on 28 November, 1577, on the Isle of Mocha, Chile (in the Pacific Ocean, 30kms off the coast, near Temuco). It is not clear what interest he took in this new food source at that time. However, at a later date, Drake took potatoes on board at Cartagena as food for his crew. He left there on 30 March and arrived in Plymouth on 26 July, 1586, a little late but in time to have planted any remaining tubers.



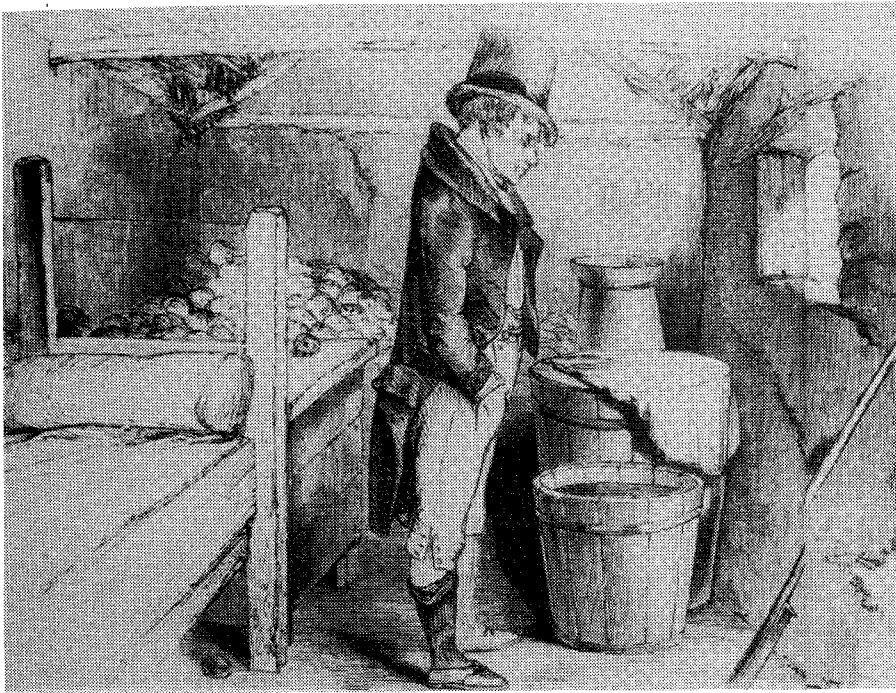
A farmer taking potatoes to market. Engraving, *Pictorial Times*, 28 February, 1846.

Another more universally accepted theory attributes the introduction to Sir Walter Raleigh (1554-1618), who is said to have brought the root from Virginia. However, this is considered to be highly unlikely, as Raleigh was never in Virginia, where the crop was unknown at that time. Of his five expeditions only one touched on Ireland (Smerwick, Co. Kerry) and the crew was in a state of semi-starvation on arrival. Other unsubstantiated reports suggest that the potato was first introduced to Youghal by Raleigh. He had a large estate in the area and was Mayor of Youghal from 1588 to 1590, around the time it was first introduced. It is also apparent that its cultivation was well understood in that area at an early stage, indicating that it may have been introduced to Cork earlier than to many other areas.

While some discount the Raleigh theory, others give it a little more credibility. Belief in it seems to be centred firstly on the fact that Heriot (Raleigh's agent) is stated to have received tubers from Drake's ship which left Cartagena on 30 March, 1586. There is also a statement by Robert Southwell that his grandfather, Sir Robert Southwell, who obtained tubers

from Raleigh, was the first person to bring the root to Ireland. If this is true, then its introduction here could have been in 1586.

There was a belief that the potato had come directly from Spain to Ireland. This may have had some credibility in that there was a flourishing trade between the two countries at that time and, in about 1740, there was a reference to the potato as an *Spaineach Geal*, or the White Spaniard. It has also been linked to a shipwreck off the Galway coast involving the Spanish Armada, in 1588. Maurice Lenihan, in his *History of Limerick*, states that in '1565 John Hawkins, who had come from Santa Fe in South America, introduced potatoes to Ireland'. Hawkins (1532-'95) was, in fact, an English navigator and kinsman of Francis Drake and, in 1588, he served as rear-admiral in command of the *Victory* during the defeat of the Spanish Armada. In 1590, he made an unsuccessful voyage to the Azores in search of the Spanish silver fleet and, in 1595, the Queen sent Drake and Hawkins on an expedition against the Spanish forces in the West Indies. This mission was a failure and both of them contracted dysentery in the Caribbean and were buried at sea.



The interior of a peasant's cottage. Engraving, *Pictorial Times*, 24 January, 1846.

It seems to be generally agreed that the potato found an agreeable home in Ireland and its cultivation and use spread rapidly. Due to the widespread devastation and misery which prevailed at the end of the sixteenth century, there was not the normal prejudice which one would expect towards a new food crop. It was also free from disease, easy to grow and conserve, highly productive, pleasing to the palate, and required the minimum of cultivation and financial outlay, while at the same time producing its own seed for the following crop. Suitable meteorological conditions (wet and overcast) were attributed to the general acceptability of the potato in this country.

Its early history in Ireland is unclear. The written sources are confusing and sometimes contradictory. The first official record is to be found in the Montgomery Manuscripts which refer to potatoes being grown in Co. Down in 1606. If, as is suggested, it made its initial appearance in the south, it must have been rapidly adopted as a source of food to have reached the north some 20 years later. The council book of Youghal Corporation records that there was a toll on potatoes (roots) as early as 1623, again indicating that it had a level of general cultivation at an early stage.

Rural peasants had a cheap and plentiful source of food, as the potato could grow in the poorest conditions, with very little labour. The seed potatoes only needed to be laid on spade-dug beds and covered with earth. This was very important, because labourers had to give most of their time to the farmers they worked for, and had very little time for their own crops. Planted in April/May, the early potato crop would come into season in late August, and the potatoes would be sown in pits until the following May. The summer was therefore a time of some hardship, because families had to buy

expensive oatmeal to eat until the new crop came in. If they could not afford oatmeal, they would travel the roads begging, to buy food for the 'summer hunger'.

Between 1570 and 1675 the potato became a supplementary food and a standby against famine. This factor saved Ireland in the winter of 1629-30, when there was a scarcity in England and again during the Cromwellian War of 1645-52. As early as 1659, Robert Boyle (1627-91, an Irish scientist who helped to dissociate chemistry from alchemy) had plans for experiments with potatoes to determine the effect of seed-cutting on productivity, and composts on quality. In 1633, Boyle's gardener sent him a box of potatoes from his estate in Lismore, Co. Waterford, for

distribution to his friends in the Royal Society in England. The tubers were accompanied by a letter giving details as to the proper husbandry to adopt which indicated that the crop was well advanced in that area by the middle of the 17th century. The Irish also developed the 'lazy bed' system; one which was similar to some of the production methods in the Andes and it had distinct advantages in wet and poorly drained soils. All the cultivation was done by hand with a spade, referred to as a 'loy' or 'fack' which was very similar to the Peruvian 'taclla'. The parallel between the two cultural systems suggests they came about by adopting similar solutions to identical problems rather than a transfer of culture. Manure was provided by the farm animals and in some cases seaweed was also used.

John Foster, of Buckinghamshire, in a pamphlet dealing exclusively with the potato, was the first to refer to it as the 'Irish potato', in 1664, and this term is still in use in many parts of the world.

Over time its character must have changed considerably. The varieties introduced from Latin-America were used originally as seasonal garden crops; how they evolved into 'Irish potatoes', lasting 7 to 9 months of the year, remains unclear. In the following decades many different types were tailored to a range of soil and climatic conditions, unknown in Latin-America, in an attempt to stretch the season and provide insurance against crop failure. Unlike Andean users, however, the Irish failed (if they ever attempted) to devise a means of storing buffer stocks from one year to the next. Some peasants left them in the ground, digging only the amount needed for daily consumption, while others stacked them in a corner of their cabin or buried them in shallow pits where they kept for months without spoiling. Still, experimentation increased the potato's advantages.



Women digging potatoes in the mid-19th century. Engraving *The Lady's Newspaper*, 13 January, 1849.

Before 1700, the two principal sources of food for the masses of the population were pastoral products and grain. The moist and cool climate of Ireland provided an ideal environment for the rearing of livestock, and hence the production and consumption of meat, offal, milk and butter. Oats were grown extensively in Ireland; barley, wheat and rye grew in more favoured regions, mainly for export. Oats were incorporated into diets in a wide variety of ways. For example, oaten bread, porridge, and butter rolled in oats. Of these, the most commonly eaten was porridge.

Two main points of view are put forward regarding the importance of the potato in Irish history. The first argues that, by 1730, the Irish had become completely dependent on it. Because such a little amount of land is needed to grow enough to feed a family, this meant that people could more easily survive on less land. Consequently, more marriages began to take place at an earlier age and holdings were subdivided. Also the basic nutritive soundness of the produce meant that health was not impaired, women were consequently more fertile and more children began to be born, and to survive. This cycle meant a population explosion from 1730 onwards.

The second point of view is that dependence on the potato did not happen until 1780 and, since the rise in population occurred between 1730 and 1780, it cannot be seen to have been the cause of expansion, but rather its adoption as the staple diet was a result of the dramatic increase in the population from 2.8 million to 4 million.

Ireland experienced the 'Penal Laws', together with trade restrictions during the first 75 years of the 18th century. These led to the collapse of many industries and a general deterioration in economic activity. This was coupled with the insecurity of land tenure, rack-renting (high rent that annually equals, or nearly equals, the value of the property upon which it is charged), absentee landlords and the sub-division of small holdings. All these factors induced a nation-wide state of poverty and discontent which, in turn, led to greater dependence on the potato. For the first half of the 18th century it was the winter nourishment for the poor. However, in the next fifty years it became the staple food of all small farmers and cottiers for most of the year.

During the century there seems to be scant reference to any improvements in the husbandry of the crop, although potato-breeding seems to have been widely practised, and a number of famous assortments, such as 'the Black Potato' (pre-1730), 'the Apple' (1768), 'Cups and Lumper' (pre-1808), were all introduced during this period.

The latter part of the 18th and the first part of the 19th century saw a prolonged and rapid rise in the population. This rise was accompanied by an expansion of the area under potatoes and the use of very marginal land for this purpose. The early



The potato plant.



Diseased stem.

part of the 19th century can be characterised by the almost complete dependence of the majority of the populace on a single crop for their existence. As we approach the time of the famine, this dependency increased if anything, and the better quality potato varieties were gradually replaced by the higher-yielding, poor-quality Lumper. Apart from its use as a human food, the potato also found favour as animal feed, especially for pigs. In large parts of the country the reliance on this single variety and the inherent dangers of such a dependence was not frequently alluded to. However, there were warnings from the Select Committee for the Advances of Public Works in 1835 and again by a Captain Chad in 1839. These observations went unheeded and Ireland advanced irretrievably towards the inevitable disaster.

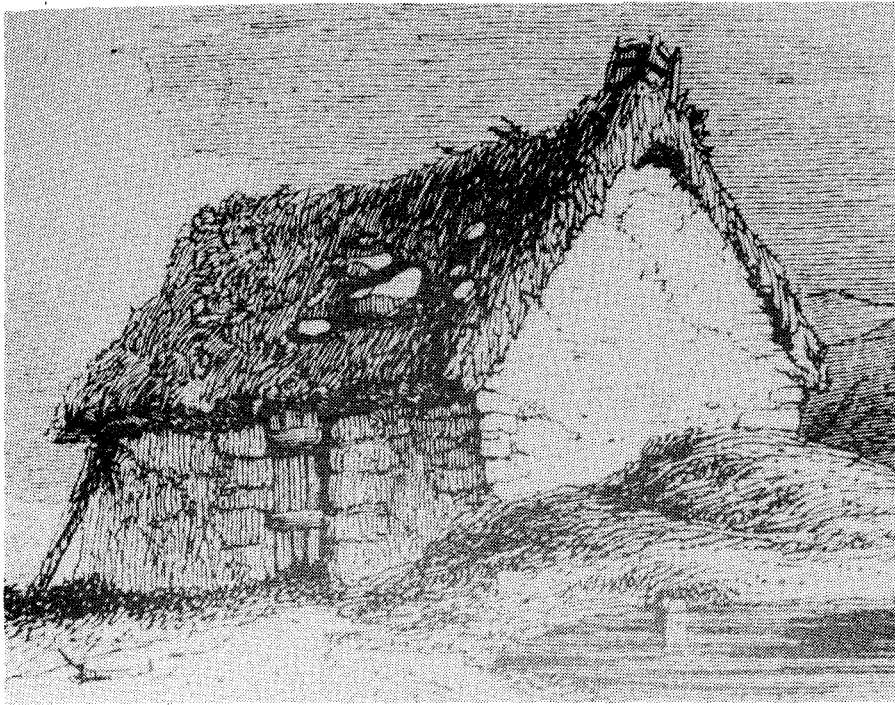
From the early part of the 19th century up to the famine there were eight general failures of the potato crop here. While three of these were attributed to the weather, the remainder were attributed to pathogenic (disease-causing agent) organisms. This was the first time that bacteria and fungi were associated with harvest failures.

Ireland, in 1844, had a large, vigorous population, and a land which ranged from fertile farms in the north and east to large tracts of bog and rock in the west and south. However, the majority of its people lived in conditions of poverty and insecurity. At the top of the social pyramid was the Ascendancy class, the English and Anglo-Irish families who owned most of the land, and had almost limitless power over their tenants. Some of their estates were huge - the Earl of Lucan, for example, owned over 60,000 acres. Many of these landlords lived in England and were called 'absentees'.

It was a very unbalanced social

structure, with a huge gap between the landowners and the next level, the farmers. The latter rented the land they worked, and those who could afford to lease large farms broke up some of the land into smaller plots. These were then let to 'cottiers', or small farmers, under a system called 'conacre'. Nobody had security of tenure, and rents were high. In the heavily-populated south and west, farms were scratched out of boggy or stony land and relatively little cash was used in the economy. The cottier paid his rent by working for his landlord, and he could also rear a pig to sell for the small amount of cash he might need to buy clothes or other necessary goods. There was a large number of agricultural labourers, who travelled around looking for work. These were very badly off, because not many Irish farmers could afford labour, and they would try to get the smallest patch of land to keep their families together. In 1835, an inquiry found that over two million people were without regular employment of any kind.

As the tenants did not own the land they worked on, they could be put out at any time for such reasons as non-payment of rent, or because the landowner had decided to raise sheep on the estate. There was no incentive to improve property, and instead a system of subdivision grew up. Cottiers and farmers who had no money for marriage dowries, or for educating children to other careers, would simply give them a portion of ground when they got married. Since they could never have security, or a guaranteed permanent home, there was no need to delay marriage, so people wed young and constructed primitive huts on whatever patch of land they could find. As Irish peasant families were normally large, this meant the portions of acreage got ever smaller and became poorer as they were over-worked.



A labourer's cabin.

While the bulk of the population lived rural lives, industry was beginning to emerge in Dublin, Belfast, Cork and Limerick. A middle class was developing as well, and about one-eighth of the population lived in urban areas. The road system was improving, with thirty coach routes to the main towns, but there were at this stage only 100kms of railway track, while Britain had 3,000kms. Many remote areas were almost completely inaccessible. The Devon Commission, which examined the Irish economic system in 1843, concentrated on the land system and the landlords as the chief cause of the widespread poverty and lack of security.

The insurance provided by the potato fell as its preponderance in the diet of the poor rose. An analysis of the yearly variation in crop yields suggests that the statistical probability of once-off major failure was small. Its dual role as human food and fodder crop - only 50% of the average output ended up in human stomachs - was one of its saving graces; it was the farmyard pig and hen who bore the brunt of mild scarcities.

At this time potatoes seem to have accounted for about 33% of all tilled land. Potato ground was farmed with great care; spade cultivation produced deep ridges, and generous doses of lime, manure, and seashand - carried for long distances when necessary - nourished the seed. Consequently, yields per acre were high. There were enough potatoes in most years to feed the 3 million or so who consumed little else.

The people enjoyed their potatoes, and modern dietary analysis suggests that meals of potatoes and buttermilk provided all the proteins, calories and minerals needed. In strictly nutritional terms the simple fare was fine, being deficient only in vitamins A and D. A boon of the humble potato was that it shielded the poor from

afflictions such as scurvy - 'the very rarest of diseases in Ireland', xerophthalmia (excessive dryness of the cornea) and pellagra (deficiency of niacin). The most careful assessment of diets at this time suggests that they were very good. The poor consumed quantities of other foods - milk was a seasonal supplement, and oatmeal was widely consumed in the north and east. Herrings were also widely available (about 25% of the Irish Poor Inquiry's informants in 1835-6 mention them). Other regional variations emerge from the western poor before the famine, and the role of bread and bacon in urban diet comes as no surprise, but it is the potato's domination that is most strikingly confirmed.

On the eve of the famine, across most of Ireland, the potato was the labourer's staple food and a crucial element in the agricultural system that had evolved since the mid-18th century. Much like the turnip in England, the potato's role in the rotation was to cleanse the soil and prevent leaching; tasks it fulfilled without reducing the earth's nitrogen content.

However, it was a source of concern to some authorities that people had nothing to fall back on if the potato ever happened to fail. Unfortunately, this fear was not taken very seriously. There had been occasional local crop failures, but the yield always came back the next year. A major scarcity in the years 1739-41 killed thousands, including possibly 20% of the population of Munster. Famines had also occurred in 1816-17, 1822, 1826 and 1831, causing large numbers of deaths from starvation and fever, but small-scale aid was usually made available fairly quickly, through a mixture of government help and private charity. Local relief committees had been established, and alleviation works set up, on a short-term basis.

In 1843, infestation was recorded in the north-eastern area of the USA, and for

some years prior to that a disease, known as 'taint' or fusarium dry rot, was prevalent in Europe, and trials with resistant cultivars from different countries were carried out. Large-scale imports of better varieties seem to have been brought into Belgium from the USA for the 1844 planting. At harvest time some discolouration and rotting took place in storage. The disease would appear to have come in on these imports, as it was present in Belgium by the end of June, 1845. It spread into France, Germany, the Netherlands, Switzerland and, by mid-August, 1845, to England, where it caused huge crop failures, in which thousands of people died. In these countries people were less dependent on the potato as a food, and a severe drought in Europe in 1846 helped to kill the disease there completely, so the effects were less catastrophic than in Ireland.

It was reported that the first observation of its occurrence in Ireland was on 20 August, 1845, in the Dublin area. The police were ordered to keep records of the spread of the condition, and from these we can see that the worst affected counties in this first year were Waterford, Antrim, Clare and Monaghan. However, damage was slight, because the early crop had already been lifted and less than 33% of it was lost - though this was bad the worst was yet to come.

Under pressure to produce as many potatoes as possible, farmers moved from the stronger types to the 'lumper' or 'horse potato' which could grow on the poorest terrain of all and gave a large crop. It had originally been developed as a food for animals, and was very soft and watery, with less vitamin content than other types. It was immune to diseases, such as 'dry rot' or 'taint', that attacked other potatoes; fatally, however, it had no resistance at all to the immediate cause of the Great Famine - the fungal disease called 'blight' (*phytophthora infestans*).

SOURCES

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