# **The Barley Timeline**

# Barley selected for malting and distilling from the 1800s until the present day.

### **Barley and agricultural botany.**

Up until the early 1800s Scottish barley consisted of **landraces** (plants that have developed over time, through *adaptation to local environment*). They were grown from saved seed, the yields were small, highly variable from plant to plant, and farm to farm, and dependent on the weather. The native barley, with long stems, was easily knocked over by wind and rain. By the end of the 19th Century, by gradual selection and re-selection a number of malting lines had been developed Chevalier, Spratt, and Spratt Archer being examples.

Selecting from existing crops eventually stops being beneficial because successive generations become genetically more uniform. More variability must be introduced by crossing promising parental lines and then selecting superior lines from the progeny. In 1924 regional trials were established and carried out at the **Cambridge Centre for Agricultural Botany** where they began to compare the qualities of different seed varieties, growing them on adjacent quarter-acre plots.

#### What happens today?

With increased demand from the Distilling Industry barley continues to be very important crop for Scottish Farmers and here at JHI researchers work to meet the demands of breeders to develop new varieties that have;

- Greater disease resistance
- Improved grain yields as expressed in tonnes/hectare
- Shorter and stiffer straws so the plant is resistant to
- 'lodging' (collapsing in the field prior to harvesting) Ears that do not shatter so can be effectively mechanically harvested
- Earlier ripening to avoid the vagaries of Autumn harvest weather

A variety must be on the National List to be legally sold in the UK . After three years of further trials varieties are considered for inclusion on the Recommended List.

### The landraces.

These are growing at the end of the **Bere** barley plot.

Craig's Triumph, Long John Grant, Nottingham Long Ear, and Old Cromarty.

Why do we want to conserve landraces?

Landraces have become very rare, there is therefore a need to collect landrace seed, record it's characteristics and make it available to the plant breeding community.

As landraces are adapted to their local environment, they may have a role to play in producing varieties adapted to climate change.

Continued growing and regeneration of landraces plays an important role in maintaining sensitive habitats such as the machair of the Western Isles.

They also have a cultural value as part of Scotland's agricultural heritage

https://www.sasa.gov.uk/variety-testing/scottish-landraces/scottish-landrace-protection-scheme-slps

#### Spratt Archer 1912

A cross of the varieties Spratt (landrace 'Spratt' from Ireland crossed with landrace 'English Archer') was carried out by Herbert Hunter then working for Guinness and who went on to become the director of the National Institute of Agricultural Botany at Cambridge.

Spratt Archer is described in the NIAB annual report 1924 as 'a two rowed barley with drooping fairly long and lax narrow ears, and a short neck. It is semi erect to prostrate when young, tillers abundantly and is probably the heaviest yielding variety on most soils. The grain is very good quality.'

#### Proctor 1951

In the period following the Second World War the UK government was anxious to limit imports and increase agricultural productivity. In 1953 Douglas Bell, working at PBI, Cambridge introduced a new variety of barley, which he called **Proctor**, produced by crossing the two varieties **Plumage Archer** and **Kenia**, and was a significant improvement in both yield and malting quality. Proctor turned out to be an outstanding variety and from 1953 to 1960 dominated the crop. In the late 1950s it took 70% of the acreage and was on the NIAB Recommended List until 1978.



# **Bere barley**

Bere is a form of ancient six-row barley which has been grown in Scotland for thousands of years.

It is is one of the oldest cultivated 'landraces', which means it has evolved by adapting to the soils and weather conditions of the area where it is grown, in Scotland these would be in particular the North East, Orkney and the Outer Hebrides.

Bere grows quickly during the longer daylight hours of the Scottish spring and summer, it is known as 90 day barley and is sown later and harvested earlier than other barleys.

Today Bere is being grown in Orkney and on the west coast as a 'heritage grain' for limited edition whisky. Both Bruichladdich and Campbeltown distilleries are making whisky from Bere.

#### **Chevalier Barley 1830**

Chevalier was the main variety grown here in the Carse of Gowrie, Angus and Perthshire for around 60 years. It was first trialled in 1830 and continues to be grown today for malting by 'Crisp Maltings' for the booming craft beer industry.

Chevalier is a *two row, narrow eared variety*. There are several versions of how Chevalier came into existence the following from a manuscript *History of Debenham* (Suffolk) 1845:

About the year 1820, John Andrews, a labourer, had been threshing barley and on his return home that night complained of his feet being very uneasy and on taking of his shoes he discovered in one of them part of a very fine ear of barley. He planted a few grains from it in his garden. The following year the Rev John Chevalier was visiting the cottage and saw the ears of barley growing, he asked for the seed to be kept for him. He grew a small ridge and went on to cultivate an acre.

### Plumage/Plumage Archer 1914 -1950s

A two rowed barley from the Swedish Landrace variety, it was bred by Dr Beavan at Warminster Matings as 'Beavan's Plumage' in 1906, 'with erect fairly long and dense broad ears spreading awns, and a long neck. It stands well is semi erect when young, tillers quite well.' Dr Beavan stated that it was 'not well suited for soils in poor condition.'

Dr Beaven went on to breed 'Plumage Archer', the very first genetically true variety of barley in the world. This hybrid was the result of crossing 'Plumage', Beaven's own 'Plumage' landrace variety with 'English Archer', a UK landrace variety. 'Plumage Archer' was commercialised in 1914. Plumage-Archer and Spratt-Archer held 80% of the total barley acreage by 1940.

#### **Brage 1924**

A two rowed barley described by NIAB 1924 report as having arooping, short, fairly dense, narrow ears, a long neck which bends on itself after the style of Chevalier. It is semi erect when young, tillers fairly well, and should give satisfactory yields of quite good quality.'

Growing behind it in the Timeline is a modern Norwegian variety also named **Brage** a 6-row barley which was produced by the company *Graminor*. The Agronomy Institute at Orkney College who supplied the seed are interested in its potential for the north of Scotland because it is early maturing and is reported to have reasonable grain and straw yields.

#### Golden Promise 1962

First trialled in 1962 and recommended for growing in Scotland in 1968, Golden Promise continued to be planted until the 1990s. It was the dominant barley variety grown in Scotland in the 1970s and early 1980s. This classic variety's short height, high yields, strong growth, an even but relatively small grain, and early maturity made it particularly suited to malt production for distilling. Golden Promise was so popular that most whisky aged between 35 and 40 years old today will have been made with Golden Promise grain.

Golden Promise was important to research because it was developed via mutation breeding using gamma rays. Understanding the function of the mutation in Golden Promise and its interactions with other genes means that favourable traits can be bred into our current varieties of barley.

#### <u>Optic 1995</u>

A two row spring barley variety originally launched for brewing and distilling, it was first recommended in 1995, when it introduced an important step forward for growers by combining high yield with very high grain quality for malting. Optic was very useful to maltsters as it made malt suitable for UK

brewing, export brewing and malt distilling. Optic accounted for over 40% of the spring malting barley

purchased in Scotland in 2008. While other varieties have come and gone during its lifetime, Optic has been a dependable variety, and growers have learned how to get the best from it over the years.

# **Spratt 1850**

Spratt barley also known as Fan or Battledore has a flattened ear with a pronounced two-row structure. It is described by Lawson and Son in their Agriculturist's Manual of 1836, as having a 'short' ear, very broad at the base, tapering towards the extremity; grain standing out from the rachis\* with awns spreading much to both sides. This sort is scarcely in cultivation nor does it seem deserving of more attention', however Spratt continued to be grown in trials until the early 1900s.

\*The rachis connects the stem (tiller) to the ear (spike)

# Kenia 1935

During WW2 research continued so that yields could be improved. Kenia a short-strawed Danish variety was introduced at this time, although it had inferior malting quality to Spratt-Archer and Plumage-Archer. Kenia was used for barley trials from 1935 and is a cross of **Binder x Gull** (a Swedish barley). It was grown until the 50s, when Kenia crossed with Plumage Archer became Proctor, a very important malting barley.

A major advance was the breeding in 1943 of **Pioneer** by Bell at the Plant Breeding institute (PBI) in Cambridge from a cross between **Kenia** and **Tshermarks** an Austrian variety. This gave the UK it's first true winter variety.

## Concerto 2009

Concerto is currently the most common spring barley grown in the UK.

It has shown a consistency of yield in both seasonal and regional trials data. The variety is relatively tall with good agronomic attributes. Concerto quickly became the 'benchmark variety' for the malting and distilling industry after its introduction in 2009, producing high yields of malting quality grain. It has good resistance to mildew but is susceptible to Rhynchosporium/ leafblotch/scald, which affects the ears and leaves of barley. Concerto continues to be used by many Scottish distilleries for malting and distilling.

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