

## INTRODUCTION

Potato production is seen as an activity with considerable potential for expansion in Wales. Late Blight (*Phytophthora infestans*) is a major challenge to potato producers, with conventionally grown crops receiving as many as 14 prophylactic spray treatments during a single growing season. CALU's demonstration project uses potato varieties which have a natural genetic resistance to Late Blight, making them particularly suitable for low input and organic farming systems.

In 2006 CALU's demonstration of Sárpo potatoes at Henfaes looked at the effects of harvest date on yield.

## SITE AND CULTIVATION

The site was located at the Henfaes Research Centre, Abergwyngregyn North Wales (OS GR - SH659735).

Three plots each of 8m x 8m were prepared by ploughing (Fig 1) and stone separation (Fig 2). Double-row beds were used, 1.5m in width.

Plots were fertilised with a general fertiliser (16:16:16) at a rate of 70kg/ha and KCl at 200kg/ha.

## PLANTING

Three potato varieties were planted:

- **Orla**: a first early with reputed high blight resistance in tubers. The tubers were sprouted before planting.
- **Sárpo Una**: a new selection not yet Nationally Listed with high scores for both foliage and tuber blight resistance in 2005; Approved Stock (AS) certified seed was grown at Henfaes. The tubers were sprouted before planting.
- **Sárpo Mira**: a maincrop commercial variety with high blight resistance. Seed was certified Scottish, cold stored and still dormant when planted.

Seed was machine-planted on 18<sup>th</sup> May (Fig 3). Spacing was 30cm within the row.

## WEATHER

May had average rainfall. June was warm and dry. July was very dry and hot. The drought was broken in early August. Rainfall was substantial from then onwards into October.

To the south side of the plots there was a stand of trees which protected the plants on that side from excessive drought.

## SEQUENTIAL HARVESTS

Sequential harvests were started for Orla and Sárpo Una on 20<sup>th</sup> July (9 weeks from planting) and for Sárpo Mira on 15<sup>th</sup> September (17 weeks from planting). Ten plants were selected at random from each plot at each harvest at approximately weekly intervals. At each harvest, the total yield from each variety was graded, <30mm; 30-50mm; >50mm.



Fig 1 Deep Ridging



Fig 2 Destoning



Fig 3 Planting

## RESULTS

Chart 1 shows each size component of total yield at each harvest for all three varieties. The foliage of cv Orla started to show signs of maturity (yellowing and wilting) several weeks before that of Sárpo Una.

As expected of a maincrop variety, bulking of Sárpo Mira was slow. From the first harvest at 17 weeks, the yield of ware-sized tubers (>50mm) increased steadily from 1.1kg to 8.5kg at 22 weeks (per 10 plants). During this period, the 30mm - 50mm fraction steadily decreased as tubers grew into the larger size-fraction.

Blight was observed on the foliage of Orla in early August. The disease progressed in the next few weeks and defoliated some patches of the planting of Orla before it ripened off. Neither Sárpo Una nor Sárpo Mira was infected.



**Fig 4: Potatoes in Flower**

## DISCUSSION

Despite very dry conditions in midseason, plants grew well and yields were moderately high. The experiment was not replicated and therefore conclusions on yield should be treated with caution. The results show that total yields of Sárpo Una were higher than Orla from the first harvest at nine weeks. Total yields of Orla increased until the 12<sup>th</sup> week but did not increase substantially after that. In contrast, the total yield of Sárpo Una continued to increase over 14 weeks and was 162% of the yield of Orla at the last harvest.



**Fig 5: Sárpo Una**

## CONCLUSIONS

The demonstration showed clearly that Sárpo Una was able to yield a useful crop at 9 weeks and, under the conditions of the trial, was at least as early as cv Orla which is variously described as a first early and as a second early. It is also clear that Sárpo Una can be left to bulk for longer than Orla and produces a very heavy yield before the foliage eventually yellows and collapses.

The yield of Sárpo Mira continued to increase up to the last harvest (20<sup>th</sup> October) despite decreasing light intensity and day length, and may have continued later than this. Total yield of Sárpo Mira would probably have been greater had the seed been physiologically more mature and had been planted earlier.

National List assessments of cv Orla give a score of 8 for foliage blight and 8 for tuber blight. However recent trials by Sárvári Research Trust indicate that both of these scores are excessive. This year in a trial on Anglesey, Orla was one of the first cultivars to become blighted: foliage was 100% blighted before foliage senescence. In contrast Sárpo Una showed little or no blight at senescence. These observations indicate that Sárpo Una, unlike other varieties of early maturity, expresses a high degree of blight resistance and may well be suited to second cropping where blight resistance is an increasingly essential attribute.

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Chart 1 – Tuber size proportions of total yield

Sequential harvests

