Record 23

Teagasc
Oak Park
Carlow

059-9170200

4 June 2020

Re; Irrigation of salad potato crops

To whom it concerns;

It has come to my attention that a query has arisen over the need to irrigate salad potato crops grown by [redacted] Salad potato crops are a challenging crop to grow with very detailed agronomy package required. Traditionally these potatoes were imported into Ireland from the UK and Europe but as the market has grown here the demand for Irish grown salad potatoes has also grown over the last number of years. Teagasc in conjunction with Bord Bia and the IFA have recently completed a project with the aim of up-skilling growers to grow salad varieties to try to meet some of this extra demand and subsequently displacing imports.

One of the key aspects of growing salad potatoes is the prevention of the skin blemishes such as common scab, which can only be achieved by ensuring that there is adequate soil moisture at tuber initiation hence the requirement for irrigation. If the crop becomes blemished they are almost valueless as they are only suitable for animal feed. Given that the costs of growing salad potatoes can range from €4,000 – 5,000 per hectare, the risk of not protecting the crop from various diseases is substantial.

One of the key outcomes form the project was for Teagasc to publish advisory notes for growers who wished to grow salad potatoes. Please see overleaf a section from our website https://www.teagasc.ie/crops/crops/potatoes/salad-potatoes-agronomy-/irrigation/ which provides information on the requirement to irrigate and the recommendations in terms of timing and amounts needed.

If you have any other queries on this matter please do not hesitate to contact me.

Yours Truly,
Seamus Phelan

Shay Phelan
Teagasc
Potato Specialist
shay.phelan@teagasc.ie

Irrigation

Growing salad potatoes is a specialist activity. If the specifications are not achieved the crop will have little value. Besides specifications for size the other main criteria relate to quality. This means virtual freedom from blemishes. Common scab is the most important cause of blemish and quality loss. To prevent infection from the bacteria that cause common scab (*Streptomyces spp*.) adequate soil moisture should be present during the critical period of tuber initiation and for several weeks afterwards. For salad crops, it is desirable to have the availability of irrigation to counter the risk of inadequate soil moisture during the critical period.

Populations of pathogenic Streptomyces bacteria on the surface of tubers increase rapidly after tuber initiation, with the increase faster in dry soils than wet soils. These pathogenic populations can be suppressed by antagonistic micro-organisms but these antagonists are favoured by moist soil conditions. Thus soil moisture in the critical 2-4 weeks after tuber initiation must be maintained below a maximum soil moisture deficit level.

AHDB Potatoes in the UK have published guidelines for maximum soil moisture deficit for common scab control. (https://potatoes.ahdb.org.uk/publications/irrigation-and-effective-early-season-water-management). An adapted table is shown in Table 1.

Table 1. Maximum soil moisture deficit (SMD, mm) for common scab control in different groups of varieties

	Group	Susceptible	Intermediate	Resistant
Soil texture	Example salad varieties	Maris Peer (5)	Charlotte (4) Exquisa (7) Perline	
Sand		9.8	14.6	18.8
Loamy sand		12.0	17.9	23.1
Sandy loam		13.4	20.0	25.8
Sandy silt loam		14.4	21.5	27.7
Silt loam		16.3	24.3	31.4
Clay loam/clay		14.4	21.5	27.7

The SMD values are for the top 25cm of ridge and stone-free ridge profile. Values in brackets are published ratings for common scab resistance in the AHDB Potatoes variety database (http://varieties.ahdb.org.uk/), a low figure indicates greater susceptibility to common scab

Additional factors to optimise the impact of irrigation

1. Ensure salad crops are grown in soil with a fine tilth. Where soils are cloddy, voids or air spaces exist in the soil and uniform moisture on the surface of developing tubers is difficult to achieve. In such soils a lower soil moisture deficit may need to be maintained
2. Aim to avoid over-irrigation and periods of soil saturation as this may lead to other effects on skin quality. When irrigating, aim to return the soil to field capacity. Thus if the soil moisture deficit is 18mm, avoid applying more than 18mm irrigation
3. Where salad crops are planted evenly and emerge evenly tuber initiation will also occur evenly. This will reduce the critical period for susceptibility to common scab. If emergence is uneven, maintaining SMD below the target will be required for a longer period.
4. To maintain adequate soil moisture, irrigation scheduling or an accurate water balance sheet should be used
5. Tuber initiation is defined as when the swollen tip of the stolon is twice the width of the stolon. In practice, to avoid missing the start of the critical period of tuber

initiation, maintaining the soil moisture below the maximum SMD should start just before tuber initiation begins

After the critical period for common scab, the requirement for irrigation in salad crops is much less and much higher soil moisture deficits can be tolerated