Potato growing in Tasmania

Suitability factors for assisting in site selection

Soil

Soil type and drainage are interrelated factors that strongly affect a site’s suitability for potato (*Solanum tuberosum* L.) growing. Potatoes require deep friable soil to grow successfully and so well drained or moderately well drained clay loams (Ferrosols and Dermosols) are well suited or suitable. Sandy loams (Chromosols, Kurosols, Sodosols) with topsoils greater than 15 cm deep are marginally suited but those that have shallow topsoils (<15 cm deep) are classed as unsuitable.

Excessively drained loamy sands (Tenosols) are also suitable for potato growing. Imperfectly drained soils are marginally suitable and poorly drained soils (Hydrosols) are unsuitable. Site drainage can be improved with surface drains, raised beds or underground drains.

Topsoil pH was subdivided according to whether soil pH in water was more or less than 5.0 with sites having soil pH < 5.0 being classed as unsuitable. Soil acidity can be corrected with the application of lime or dolomite.

The amount of cobble sized stones and rocks (> 60 mm diameter) in the soil affects the ease of seedbed preparation, the harvesting rate and the wear and tear on machinery.

Consequently, suitability classes based on soil stone content were: less than 2%, 2 to 10%, 10% to 20%, and greater than 20%. On some sites, the stones can be sorted and removed thus improving suitability for potato growing.

Soil salinity can have a detrimental impact on crop yield and long term sustainability. Salinity, as measured by electrical conductivity of a saturated extract (ECse), was used to assess soil suitability. Classes were assigned according to whether soils had ECse less than 1.2 dS/m, 1.2 to 2 dS/m, 2 to 4 dS/m, or greater than 4 dS/m.

Landscape and paddock factors

Factors associated with the landscape and paddock including site slope, native pests, truck access and management history all contribute to the suitability of a particular site for potato growing.

The steepness of the land affects the risk of soil erosion, ease of machinery use and safety of paddock operations. Suitability classes were subdivided according to slope: flat – 10% slope, 10 – 25 % slope, and greater than 25% slope. Erosion control measures such as mulched rip lines should be used to minimise soil erosion.
Climate

Potatoes grown for processing require more than 130 frost free (>0°C) days with sites having less than this being classed as unsuitable. Seed potatoes require more than 90 frost free days. Sites with accumulated temperature of less than 1125 growing degree days above zero degrees Celsius, were also classed as unsuitable.

All potatoes require night time temperatures to fall below 20°C for a period of approximately 4 hours each night of the growing season to allow for recovery from high daytime temperatures and moisture stress.

Potatoes are grown in Tasmania predominantly with the use of supplementary irrigation. Sprinkler irrigation technology, either pivot or linear move, is considered to be more suitable than travelling gun irrigators for producing high yields. Rainfall aids in the economic production of crops but the likelihood of rainfall during harvest will reduce site suitability.

Developing rules to guide enterprise suitability mapping

Many plants require particular climatic and land characteristics for best performance. Frost, winter chilling, summer heat, drainage, slope and salinity are some of these characteristics. For each enterprise mapped by the Department of Primary Industries, Parks, Water and Environment (DPIPWE), the Tasmanian Institute of Agriculture (TIA) consulted industry experts and reference material to define land and climate “rules” that distinguish suitable from less suitable areas. These rules define the boundaries between the different classes of the enterprise suitability maps.

Suitability classes used are well suited, suitable, marginally suitable and unsuitable. Any limiting factors are also identified to guide the management practices that could help to overcome the limitations.

Landowners and potential investors are able to access comprehensive soil, climate, crop and enterprise information plus complementary farm business planning tools at:


Factors not considered in the analysis:

The total area of crop grown in a district and the distance to the processing factory can affect the logistics for contractors and cartage costs, and so influence the viability of potato cropping in a particular district.

Disclaimer

Information in this publication is intended for general information only and does not constitute professional advice and should not be relied upon as such. No representation or warranty is made as to the accuracy, reliability or completeness of any information in this publication. Readers should make their own enquiries and seek independent professional advice before acting or relying on any of the information provided.

The Crown and Tasmanian Institute of Agriculture, their officers, employees and agents do not accept liability however arising, including liability for negligence, for any loss resulting from the use of or reliance upon information in this publication.