Carrot 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 carrot (Daucus carota subsp. Sativus) growing. Carrots require deep friable soil to grow successfully and so sites with less than 40cm soil depth are classed as unsuitable. Well drained or moderately well drained clay loams (Ferrosols and Dermosols) are well suited or suitable. Any soils with grit or ironstone in the topsoil are classed as marginally suitable or unsuitable. Sandy loams (Chromosols, Kurosols, Sodosols) that have shallow topsoils or are on heavy clay subsoil at less than 40cm depth, are classed as unsuitable.

Excessively drained loamy sands (Tenosols) and deep sands (Rudosols) are also suitable for carrot growing. But 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 less than 5.5, between 5.5 and 5.7, between 5.8 and 6.0, or greater than 6.0. Site suitability increases with increasing soil pH. Soil acidity can be corrected with the application of lime or dolomite.

The amount of large stones (>200mm diameter) in the soil affects the ease of seedbed preparation and the wear and tear on machinery. Consequently, suitability classes based on soil stone content were: none, less than 2%, 2 to 10%, 10% to 20%, and greater than 20%. On some sites, the rocks can be sorted and removed thus improving suitability for carrot growing.

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 carrot 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. Sites with moderate to severe side-slope are classed as unsuitable. Erosion control measures such as mulched rip lines should be used to minimise soil erosion.

Paddocks with a history of more than three years of pasture immediately prior to carrots are considered unsuitable while a history of intermittent or continuous cropping is suitable for carrot growing.
Climate

Carrot growing is better suited to sites with a longer growing season which means that sites at more than 300m altitude are less well suited.

Carrots 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 frequent rain days or drizzle during the growing season, or rainfall during harvest will reduce site suitability.

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 cropping in a particular district.

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:


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