Pyrethrum growing in Tasmania

Suitability factors for assisting in site selection





Climate

Climatic factors are important in determining site suitability for the growing of a successful pyrethrum crop (*Tanacetum cinerariifolium*), including: risk of frost at key growth stages, growing season temperature, temperature during harvest, and seasonal rainfall.

Pyrethrum requires a temperature of 16 degrees C or below for at least 2 weeks during winter (June – August) for vernalisation to occur. However, frost during this winter period can affect plant growth. Hard frosts (below -2° C) are more damaging than light frosts (-2° C to 2° C).

Frost risk at the budding stage (16 October – 7 November) was assessed by assessing the chances of frosts of different severity. Chances of a) less than I year in 10, b) between I year in 10 and I year in 5, c) between I year in 5 and 3 years in 10, and d) more than 3 years in 10 were assigned to different suitability classes.

Optimum conditions during flowering occur when mean daily maximum temperatures during November – December are less than $25 \circ C$ and sites with consistently higher temperatures are considered less suited to pyrethrum growing. Hot days after cutting (20 December – 31 January) can also affect pyrethrum yield. Pyrethrum is 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 more than 5 mm of daily rainfall on 3 or more consecutive days during flowering (16 November – 31 December) will reduce site suitability.

Landscape and paddock factors

Factors associated with the landscape and paddock including site slope, altitude, the size of paddock available and management history all contribute to the suitability of a particular site for pyrethrum 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 - 20%, and greater than 20\% slope. Erosion control measures such as mulched rip lines should be used to minimise soil erosion.

Paddocks of less than 3 ha are not well suited for efficient production and a recent history of 1 to 3 years of pasture reduces suitability with more than 3 years of pasture immediately prior to pyrethrum considered unsuitable.

Fact Sheet

Soil



Soil type and drainage are interrelated factors that strongly affect a site's suitability for pyrethrum growing. Soil texture, as defined by topsoil clay content, was used as a primary subdivision of soil type suitability with well drained red volcanic loams (Ferrosols) well suited and other well drained clay loams (Dermosols) being suitable. The suitability class for sandy loams (Chromosols, Kurosols, Sodosols) depends on the depth of topsoil and depth to sodic heavy clay. Excessively drained loamy sands (Tenosols) and deep sands (Rudosols) are marginally suitable while poorly drained soils are unsuitable for pyrethrum growing. Site drainage can be improved with surface drains, raised beds or underground drains.

Soil suitability was also subdivided according to whether topsoil pH in water was less or more than 5.5 with strongly acid soils marginally suited or not suitable. Soil acidity can be corrected with 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: less than 10%, 10 - 20% and greater than 20%.

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 2 dS/m, between 2 and 4 dS/m, or greater than 4 dS/m.

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 Agriculture of (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:

http://dpipwe.tas.gov.au/agriculture/investing-in-irrigation



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.

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