Poppy growing in Tasmania

Suitability factors for assisting in site selection

Climate

The primary site suitability factors contributing to the growing of a successful poppy crop (*Papaver somniferum*) are climatic, including: risk of frost at key growth stages, growing season temperature, seasonal rainfall, and humidity at harvest.

Frost at the late hook stage (1-15 November approx.) and at flowering (15 November – 15 December approx.) can affect yield and quality. Hard frosts (below -2 ^{o}C) are more damaging than light frosts (-2^{o}C to 2^{o}C, or less than 2^{o}C) during the critical growth stages.

Frost risk at the late hook stage and at flowering was assessed by assessing the chances of frosts of different severity. Chances of a) less than 1 year in 10, b) between 1 year in 10 and 1 year in 5, c) between 1 year in 5 and 3 years in 10, and d) more than 3 years in 10 were assigned to different suitability classes.

Optimum growing season conditions occur when mean daily maximum temperatures during November – January are between 20^{o}C and 23^{o}C and sites with temperatures outside this range are considered less suited to poppy growing.

Poppies are grown in Tasmania predominantly with the use of supplementary irrigation. Rainfall aids in the economic production of crops but the likelihood of heavy falls during planting, excess rainfall just prior to or during harvest, and of summer storms resulting from tropical cyclones that come from the northeast, all reduce site suitability.

Some coastal areas in Tasmania are exposed to humid on-shore winds that reduce the amount of drying required for harvesting. Accordingly, some areas in close proximity to the east and north coasts are classed as marginally suitable for poppy growing.

Landscape

Factors associated with the landscape including site slope, the risk of flooding and air drainage contribute to the suitability of a particular site for poppy 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 – 5% slope, 5 – 10 %, 10 – 20%, and greater than 20% slope. Different soil types often had different slope requirements due to differing susceptibility to erosion according to soil texture. Erosion control measures such as mulched rip lines should be used to minimise soil erosion.

The frequency of flood risk during the growing season was assessed according to the likelihood of occurrence as: none, less than 1 year in 5, and more than 1 year in 5.

Soil

Soil type and drainage are interrelated factors that strongly affect a site's suitability for poppy growing. Soil texture, as defined by topsoil clay content, was used as a primary subdivision of soil type 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, depth to sodic heavy clay (less or more than 15 and 30 cm), and whether subsoils are heavy clays or underlain by gravels. Excessively drained loamy sands (Tenosols) and imperfectly to poorly drained black cracking clays (Vertosols) are marginally suitable. Coastal sands (Rudosols) are unsuitable due to the high risk of wind erosion causing sand blasting of young plants. Site drainage can be improved with surface drains, raised beds or underground drains.

Sites were considered unsuitable for poppy growing if total soil depth was less than 40 cm.

Topsoil pH is important in determining poppy yield and so suitability was subdivided according to whether soil pH in water was less than 5.3, between 5.3 and 6.0, or greater than 6.0. Soil acidity can be corrected with application of lime or dolomite.

The amount of large stones (> 200 mm 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, and 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 Wealth from Water, 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:

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

Factors not considered in the analysis:

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

The proximity of nearby houses, sensitive crops or valuable trees will be considered by field officers for individual sites.

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