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YOUNG PISTACHIO MANAGEMENT

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BEFORE PLANTING

- **Climate**
  - Winter chill
  - Heat requirement
  - Rain during harvest
  - Frost
- **Soil requirements and preparation**
  - Pistachios often planted on less favourable soils but like all tree crops perform better with favourable soil conditions
  - Online soil and landscape resources available
  - Soil surveys provide detailed site specific soils information which can be used to design irrigation systems, identify potential drainage issues etc.
- **Soil amelioration and preplant fertilisers**
  - Preplant soil analyses will indicate whether soil ameliorants (lime, gypsum, organic matter) and/or preplant fertilisers are needed.

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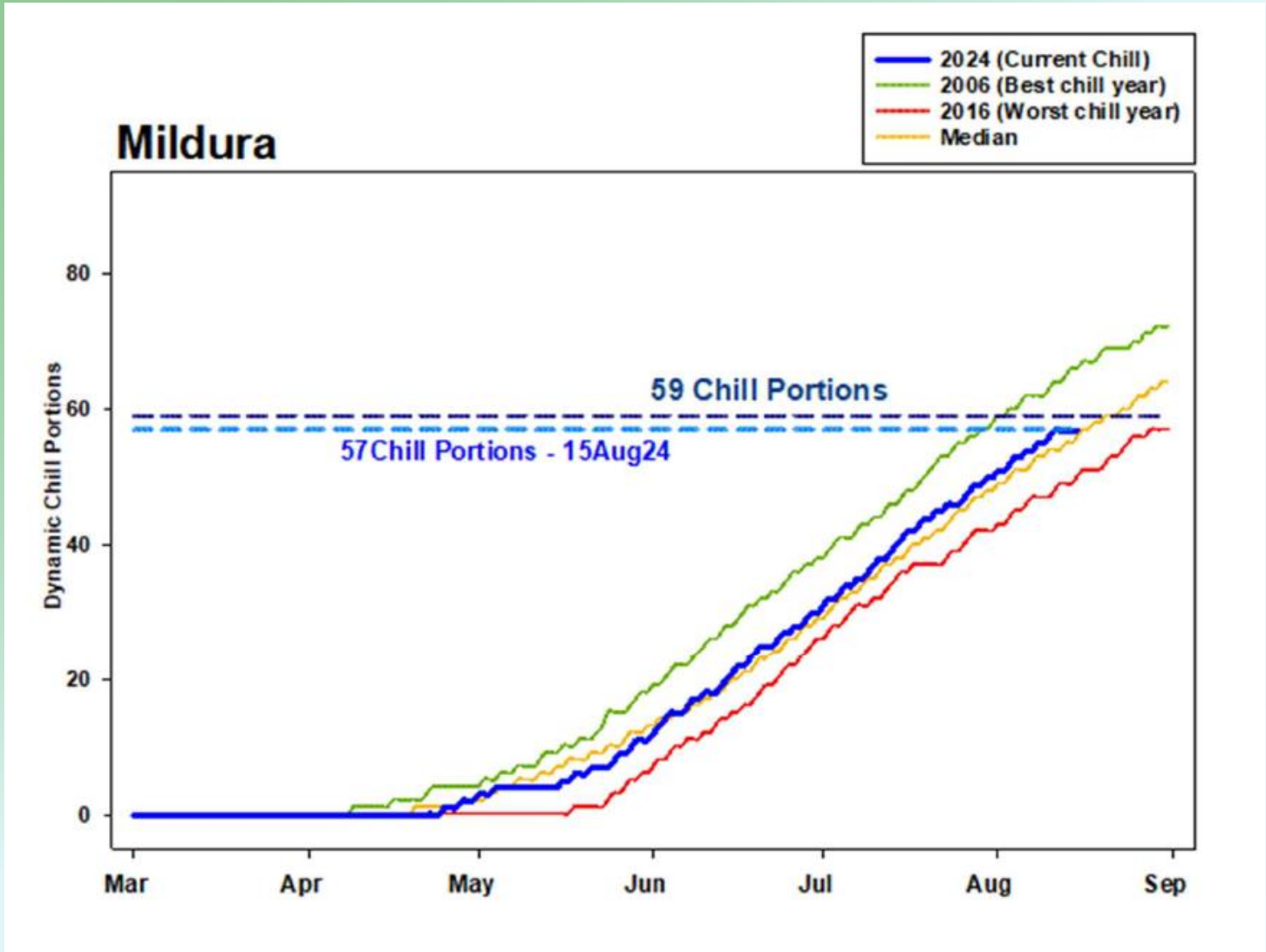
DYNAMIC CHILL PORTIONS - MILDURA



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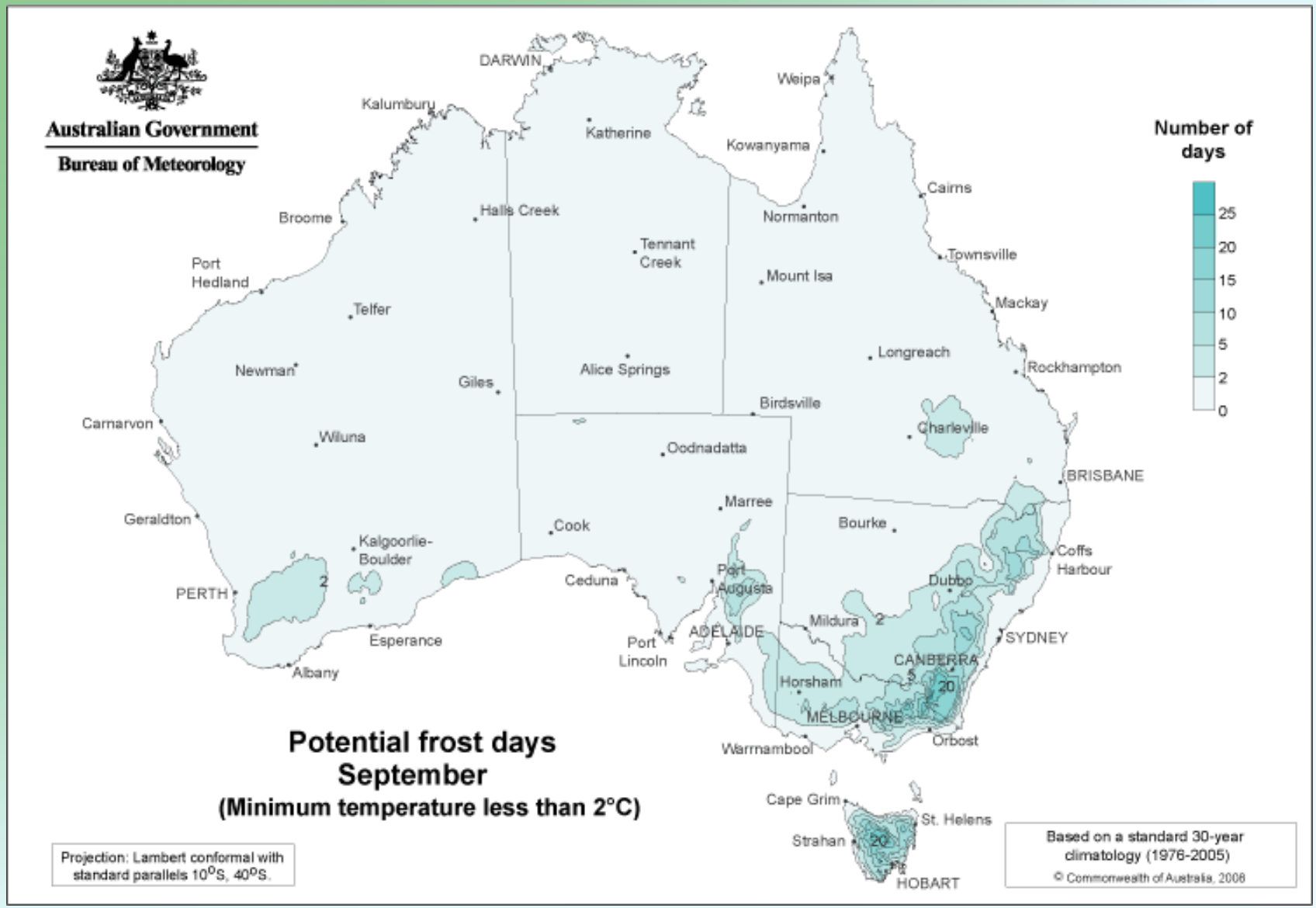
POTENTIAL FROST DAYS



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EXAMPLE SOIL ANALYSIS DATA

Element or Test	Topsoil	Subsoil A
Depth - (cm)	0-15	15-30
pH_{water}	8.4	8.6
$pH_{calcium\ chloride}$	7.8	7.9
Organic carbon - (%)	0.39	0.31
Colwell Phosphorus (P) - (mg/kg)	9	3
Phosphate Buffer Index (PBI)	45	55
Colwell Potassium (K) - (mg/kg)	304	270
Extractable Sulfur (S) - (mg/kg)	56	27
Exchangeable Calcium (Ca) - (meq/100 g)	9.08	10.11
Exchangeable Magnesium (Mg) - (meq/100 g)	1.37	1.75
Exchangeable Potassium (K) - (meq/100g)	0.78	0.69
Exchangeable Aluminium (Al) - (mg/kg)	0.02	0.04
Exchangeable Sodium (Na) - (meq/100 g)	0.15	0.14
Cation exchange capacity - (meq/100 g)	11.4	12.7
Exchangeable sodium percentage	1	1
DTPA Extractable Copper (Cu) - (mg/kg)	0.9	1.1
DTPA Extractable Zinc (Zn) - (mg/kg)	0.9	0.4
DTPA Extractable Manganese (Mn) - (mg/kg)	4.7	3.9
DTPA Extractable Iron (Fe) - (mg/kg)	5.2	3.7
Extractable Boron (B) - (mg/kg)	0.5	0.4
EC_e - (dS/m)	1.76	0.97
Chloride - (mg/kg)	8	10
Calcium Carbonate - (%)*	1.47	1.83

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BEFORE PLANTING

- **Water**
  - River or groundwater. Water quality can vary.
  - Irrigation requirements. Pistachios are considered drought tolerant but require considerable irrigation for optimal performance.
- **Rootstocks and varieties**
  - Most recent Australian plantings have used Pioneer Gold I (PG I) or UC Berkeley I (UCB I) rootstocks.
  - *Pistacia terebinthus* and *P. atlantica* are older rootstocks and were commonly planted in the early days of the Australian industry
  - The rootstocks vary in vigour, cold tolerance, susceptibility to diseases, salinity tolerance, micronutrient uptake efficiency.
- **Varieties**
  - Sirora was bred for Australian conditions and is the main variety grown.
- **Male tree percentages**
  - Pistachio is wind pollinated and so male trees are interspersed through the orchard. More recent plantings use 4% male trees

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OTHER CONSIDERATIONS

- **Juvenility**
  - Pistachio trees have a long juvenile period (6-8 years) before they start producing fruit
- **Pest and disease**
  - Pistachio in Australia have few pests. Key diseases are anthracnose, Xanthomonas and Botryosphaeria shoot and panicle blight.
- **Hulling and processing**
  - Pistachios need to be hulled as soon as possible following harvest to maximise quality.
- **Biennial cropping**
  - Pistachios will biennial crop meaning alternate ‘on-crop’ and ‘off-crop’ seasons.

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FIRST SEASON

- **Good establishment**
  - Tree losses kept to a minimum.
  - Keep a close watch on irrigation.
- **Solid but not excessive growth**
  - Key aim is having a rootstock that can be budded in January.
  - Allow scion to grow for the rest of the season.
- **Key management issues**
  - Water, wind and weeds!
  - Windbreaks – permanent or temporary?
  - Cover cropping
  - Nutrition

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COVER CROPPING

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WINDBREAKS

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NUTRITION - YOUNG TREES

- **Macronutrients**
  - *Nitrogen*
    - Small and regular feeds.
    - Minimise potential losses of nitrogen via leaching etc.
    - Which forms of fertiliser?
  - *Phosphorus*
    - Preplant applications
    - Can consider small applications through fertigation in spring
  - *Potassium*
    - Preplant applications – often not necessary
    - Can consider small applications through fertigation in spring
    - More important once trees start cropping

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NUTRITION – YOUNG TREES

- **Micronutrients**
  - *Zinc*
    - Young trees particularly susceptible.
    - Zinc immobile in plants so regular zinc foliar nutrient sprays needed to ensure new growth is treated.
  - *Copper*
    - Have observed symptoms on young trees in recent seasons.
    - Regular copper chelate foliar nutrient sprays appear to be effective.
  - *Manganese*
    - If mancozeb based disease management sprays applied, the young trees should receive sufficient manganese.
  - *Iron*
    - Common in spring especially if soils are wet.
    - EDDHA-chelated iron applied through fertigation is best treatment option. Iron foliar nutrient sprays not as effective.

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NITROGEN DEFICIENCY

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ZINC DEFICIENCY

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COPPER DEFICIENCY

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IRON DEFICIENCY

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FIRST SEASON – JULY

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FIRST SEASON – SEPTEMBER

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FIRST SEASON – OCTOBER

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FIRST YEAR – DECEMBER

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FIRST YEAR – FEBRUARY

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FIRST YEAR – MAY

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SECOND AND THIRD SEASONS

- **Vigour and training – SECOND SEASON**
  - Traditional training – aiming to establish tree framework. Requires multiple training passes to develop primary, secondary and tertiary branches.
  - Modified central leader training – Trees at desired height can be headed in winter prior to second growing season. Minimal in-season training.
- **Vigour and training – THIRD SEASON**
  - Traditional training – continue to develop tree framework.
  - Modified central leader training – Primary scaffold limbs selected in winter prior to third growing season. Minimal in-season training.
- **Key management issues**
  - Water, wind and weeds!
  - Tree guards
  - Rootstock
  - Nutrition