

## TABLE GRAPE CULTURAL PRACTICES

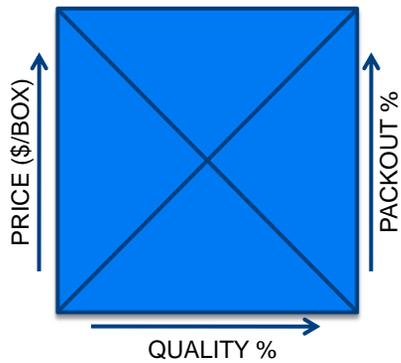
### GROWING SEASON CULTURAL PRACTICES / 1

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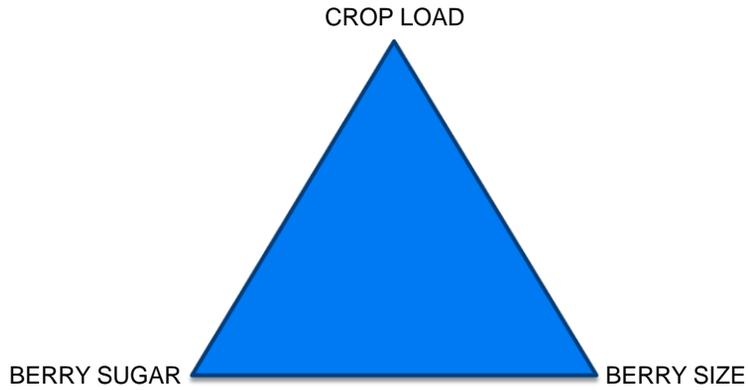


### Cultural Practices

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# Cultural Practices



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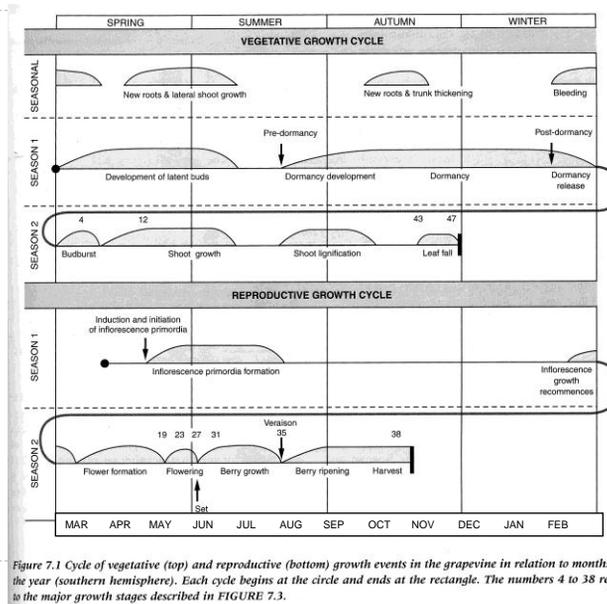


Figure 7.1 Cycle of vegetative (top) and reproductive (bottom) growth events in the grapevine in relation to months of the year (southern hemisphere). Each cycle begins at the circle and ends at the rectangle. The numbers 4 to 38 refer to the major growth stages described in FIGURE 7.3.

## Cultural Practices - Pruning

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### Aims of Pruning:

- Establish and maintain vine in a form that will facilitate vineyard management
- Produce fruit of a desired quality
- Regulate the number of shoots and therefore bunch number and size
- Regulate vegetative growth of the vine

### Pruning:

- Maintenance
- Training



## Cultural Practices - Pruning

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- ▶ How many buds per vine?
  - ▶ What to consider
    - ▶ Variety
    - ▶ Fruitfulness
    - ▶ Desired crop load per vine or per ha
    - ▶ Average bunch weight
    - ▶ Yield/Pruning weight index



## Cultural Practices - Pruning

	CROP LOAD (bunches/m <sup>2</sup> )	FERTILITY (bunches/bud)
Prime	6.0	1.4
Flame Seedless	5.5	1.4
Superior Seedless	6.0	0.55
Ralli Seedless	5.5	0.55
Midnight Beauty	6.0	1.2
Thompson Seedless	5.5	0.5
Regal Seedless	6.0	1.6
Crimson Seedless	6.0	0.7
Autumn Royal	6.0	1.1
Victoria	6.0	1.4
Alphone Lavallee	6.0	1.5
Majestic	6.0	1.3
Redglobe	6.0	0.9

## Cultural Practices - Pruning

- ▶ How many buds per vine?
  - ▶ A study case
    - Superior Seedless
    - Spacing: 3mt x 3mt. 1100 vines/ha
    - Desired Crop Load: 25 tons/ha (25000kg/ha)
- ▶ Crop Load per vine: 22kg
- ▶ Average Bunch Weight: 700gr
- ▶ Bunch Number/vine: 32 bunches / vine
- ▶ Consider fruitfulness, budbreak percentage
- ▶ Bud number/vine: 90



## Cultural Practices - Pruning

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- ▶ How many buds per vine?
    - ▶ A study case
      - Redglobe
      - Spacing:
      - Desired Crop Load:
    - ▶ Crop Load per vine:
    - ▶ Average Bunch Weight:
    - ▶ Bunch Number/vine:
    - ▶ Consider fruitfulness, budbreak percentage
    - ▶ Bud number/vine:
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## Cultural Practices - Pruning

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- ▶ Pruning
    - ▶ 1. Calculate Yield/Pruning Weight Ratio
    - ▶ 2. How to use this index?
      - ▶ For a table grape vineyard this index should be between 3,5-5
      - ▶ High values (>6) indicate low vigor vines
      - ▶ Low values (<3) indicate high vigor vines
    - ▶ 3. Decide final number of buds/vine
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## Cultural Practices - Pruning

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### ▶ Cane or Spurs?

- ▶ Cane:
  - ▶ To be chosen for varieties with low fertility in the basal buds
  - ▶ Gives bigger bunches
  - ▶ Lower uniformity
  - ▶ Harder to prune
- ▶ Spur:
  - ▶ To be chosen for varieties with high fertility
  - ▶ Great uniformity
  - ▶ Greater bunch quality
  - ▶ Very easy to prune
  - ▶ Cordons to be renewed



## Cultural Practices - Budburst

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## Cultural Practices - Budburst

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### ▶ BUDBURST

- ▶ Percentage bud break can be expressed as
  - ▶ # shoots per vine/ # count nodes per vine X 100
- ▶ Bud fruitfulness
  - ▶ # bunches / # shoots

### ▶ POOR BUDBURST

- ▶ Variety
  - ▶ Chilling hours
  - ▶ Cane size and quality
  - ▶ Water
  - ▶ Plant Growth Regulators (PGRs)
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## Cultural Practices - Budburst

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### ▶ Hydrogen cyanamid (DORMEX)

- ▶ Powerful tool to compensate chilling hours in many species
  - ▶ Allowed table grape to be grown in tropical or desert conditions (Brazil, India, Northern Australia, Coachella Valley,...)
  - ▶ High toxicity for workers
  - ▶ Earlier and more uniform budbreak
  - ▶ To be sprayed 2-6 weeks before expected budburst
  - ▶ Rates vary from 2,5% to 5% of DORMEX
  - ▶ Very important the spray coverage of the buds
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## Cultural Practices – Shoot Growing

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## Cultural Practices – Shoot Growing

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- ▶ **Shoot Thinning**
    - ▶ As important as pruning
    - ▶ Remove double shoots, sterile shoots, weak shoots, suckers
    - ▶ To be done between 20-60cm
    - ▶ Do not to earlier or later that stage
  - ▶ **Bunch count**
    - ▶ To be done at this stage
    - ▶ **Very important**
  - ▶ **Bunch removal**
    - ▶ When crop load is very high
    - ▶ Second bunches, small bunches usually are removed
    - ▶ Rule of thumb:
      - ▶ One bunch per shoot thicker than a pencil's diameter (7mm)
      - ▶ Two bunches if shoots are thicker than 12 mm
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## Cultural Practices – Shoot Growing

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- ▶ **Cluster elongation**
  - ▶ Do we really need it? (just in some cases)
  - ▶ GA at 5-10 ppm at bunch elongation
- ▶ **Pulling Leaves :YES/NO?**
  - ▶ YES: removing basal leaves before bloom will increase air ventilation and provide good bunch exposure to chemical sprays
  - ▶ NO: basal leaves have the highest photosynthetic activity at this stage. Removing them can reduce carbohydrate production and have consequence on fruit set.



## Cultural Practices – □ Flowering

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- ▶ **Crucial time for final quality**
- ▶ **Weather conditions will influence fruitset**
  - ▶ Humidity. High relative humidity will cause excessive shatter and shot berries.
  - ▶ Temperature. High temperatures increase shatter. Cold temperatures might cause excessive fruitset.
- ▶ **Very important that vines have good balance at start of flowering (crop load/vine vigor)**
- ▶ **Shedding: clusters lose flowers before bloom starts or at bloom start. Given by extreme temperatures and excess of vigor. Do not worry. Don't change GA thinning programs.**



## Cultural Practices – □Fruitset

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- ▶ **Fruitset**
    - ▶ # berries/cm of rachis
    - ▶ Variety
    - ▶ Weather
    - ▶ Vine status
    - ▶ Fruitset will influence final grape quality
  - ▶ **How to reduce fruitset:**
    - ▶ Some varieties have natural high fruitset. This is a negative feature for table grapes.
    - ▶ Smaller berry size
    - ▶ Greater susceptibility to botrytis, rots and crackings
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## Cultural Practices – □Fruitset

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- ▶ **Reduce Fruitset: How**
    - ▶ GA
    - ▶ Urea
    - ▶ Use of plastic covers
    - ▶ Manual
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## Cultural Practices – □ Fruitset

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- ▶ **Use of GA for flower thinning**
    - ▶ GA is known to reduce fruitset in some seedless grapes
    - ▶ Do not spray on seeded grapes at flowering
    - ▶ Not well understood how it works:
      - ▶ 1. Pollenicide hypothesis
      - ▶ 2. Hormone balance hypothesis
      - ▶ 3. Growth or nutrient competition hypothesis
    - ▶ GA increases natural shattering about 30%. Higher rates than the prescribed ones have no or negative effects
    - ▶ GA at flowering will influence berry shatter at harvest
    - ▶ GA close to 100% flowering will positively influence berry size
    - ▶ GA at flowering influence bud fruitfulness
    - ▶ Not all varieties are sensitive to GA at flowering (i.e. Perlette)
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## Cultural Practices – □ Fruitset

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- ▶ **GA timings and rates**
    - ▶ Variety dependant.
    - ▶ Some varieties might need to be handsprayed
    - ▶ GA more effective at higher temperatures
  - ▶ **UREA**
    - ▶ 3 sprays of low-biuret urea at 1% during flowering sometimes reduce fruitset
    - ▶ For seeded grapes (where it is needed)
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## Cultural Practices – Fruitset

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▶ Thompson seedless

## Cultural Practices – Fruitset

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▶ Thompson seedless

## Cultural Practices – Fruitset

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▶ Crimson seedless

## Cultural Practices – □ Fruitset

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- ▶ Use of plastic covers:
  - ▶ In some table grape areas plastic is positioned on vineyards at budburst
  - ▶ Greater uniformity
  - ▶ Increase average temperatures in the vineyard
  - ▶ During flowering there is higher average temperatures than outside
  - ▶ Warmer temperatures increase shatter
  - ▶ Careful management of temperatures (warm can become too warm!!!)



## Cultural Practices – □Fruitset

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- ▶ **Increase fruitset:**
    - ▶ There might be conditions where fruitset is not adequate.
    - ▶ Weather
    - ▶ Vigor
    - ▶ Variety (Melissa, Midnight Beauty,...)
  - ▶ **What happens?**
    - ▶ There is high competition between shoots and cluster for photosynthesis products (source-sink). Clusters are weaker sinks than shoots.
  - ▶ **What to do?**
    - ▶ Shoot tipping: remove the shoot tips before bloom (1-2weeks). (\*)
    - ▶ Cluster tipping: at beginning of flowering (\*\*)
    - ▶ Vine girdling: at beginning of flowering (\*\*\*)
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## Cultural Practices – Fruitset

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## Cultural Practices – Fruitset

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## Cultural Practices – Fruitset

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- ▶ **Berry Thinning**
    - ▶ Sometimes it is not possible to reach an adequate fruitset
    - ▶ Need to loosen cluster manually
      - ▶ Clippers (scissors)
      - ▶ Hand
  - ▶ **Clippers**
    - ▶ Leave the top shoulders (4)
    - ▶ Remove every other shoulders
    - ▶ Tip (remove the tail)
  - ▶ **Hand**
    - ▶ Slower work but more precise. Use when there are many uneven berries
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## Cultural Practices – Fruitset

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