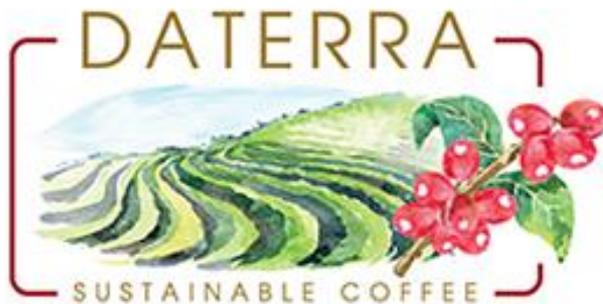




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GREEN HARVEST

# Fruit Thinning or green harvest

## **Definition - What does *Green Harvest* mean?**

Green Harvest is a crop thinning method used to decrease the crop yields and improve the flavor concentration of the remaining grape bunches. In this process, unripe grapes are trimmed so that the nutrients reach the ripe bunches and increase their quality.

Green harvesting is a relatively modern practice most often used to produce a quality wine. Removing the small, immature, un-ripe grapes while they are still developing encourages the vine to put all of its energy into maturing and ripening the remaining grapes.

## **Fruit thinning**

In favourable conditions fruit trees set more fruit than is ideal. Fruit thinning involves removing excess fruit to improve fruit size and quality. It is carried out on apples, pears, plums, peaches and nectarines.

## Suitable for...

Many healthy fruit trees drop fruit naturally in early summer in what is known as the 'June drop'. Where a heavy crop has set, too many fruitlets may remain on the branches, resulting in a final crop of disappointingly small fruits. Deliberate thinning of the fruitlets produces better-sized, ripe and healthy fruits, albeit in smaller numbers.

Fruit thinning may be necessary on a range of tree fruit including apples, pears, plums, peaches and nectarines for the following reasons:

- The main purpose of thinning is to improve fruit size and quality
- When a tree is carrying a very heavy crop, the fruits are often small and of poor quality
- Thinning allows sunlight and air to penetrate the branches, so improving evenness of ripening
- There is a risk of branches breaking if trees overcrop
- Thinning lessens the demand on the tree's resources so it is able to make good growth and develop fruit buds for the following year so avoiding the risk of biennial bearing
- Fruit thinning may reduce the spread of pests and diseases, such as brown rot

# How

- > Usually done when the fruits are starting to grow
  - > Dependin on the rendement & the variety, 30% to 60% of the green can be taken off
  - > In the wine industry : take off the bigger fruits
  - > Manual or chemical
  - > Good to be done 1 year on 2
- ow to thin fruit

Apples: Cooking apples are thinned harder than dessert apples to obtain larger fruits; aim for one fruit every 15-23cm (6-9in). Dessert apples can be thinned less severely, with one or two fruits every 10-15cm (4-6in). Leave just one fruit per cluster. Thinning can be done using secateurs, long scissors or with a firm tug between thumb and forefinger. Remove misshapened, blemished fruit or poorly positioned fruit and the 'king' fruit at the centre of the cluster which is sometimes abnormally shaped. Aim to leave the strongest and best shaped.

cycles) on [Arabica coffee](#) at two different sites. The first experiment (Expt 2a) was conducted from 7 June 2012 to November 2013 at 'Gomma-I' coffee [plantation](#) site located at 1570 m elevation, 7° 57' N, 36° 42' E, with annual mean daily minimum and maximum temperatures and rainfall of 14, 17 °C and 1600 mm, respectively. The soil of the area is characterized as a Eutric Nitosol type, with pH ranging from 4.5–6.0 ([Mekonnen and Belehu 2007](#)). The second experiment (Expt 2b) was conducted from 14 May 2013 to November 2014 on a farmer's field located in Mana district of Jimma zone. The site is located at an elevation of 1750 m, 8° 67' N, 37° 07' E (GPS model 60, Garmin, Calgary Canada). The annual mean daily minimum and maximum temperatures and relative humidities of the area were, respectively, 14.2, 24.1 °C and 49.4 and 92.1% ([POWER, 2012](#)). The soil of the area was characterized as a Nitosol type, with pH ranging from 4.5 to 5.5.

In both cases, eight-year old Arabica coffee trees of [cultivar](#) 74-40 (resistant to coffee berry disease), were planted under [shade trees](#) (35–45% shade measured with a ceptometer, LP-80, Decagon Device, Inc., Pullman), at a spacing of 2.0 × 2.0 m between coffee plants and rows were selected and used for the experiments. Sixteen coffee trees of comparable size and morphology were selected for the study, taking care that the starting size of trees would not differ significantly among treatments. Following this selection, four fruit load treatments were manually imposed on all fruit bearing branches of the plants on 7 June 2012 (Expt 2a) and 14 May 2013 (Expt 2b). No fruits were removed in the control treatment while 25, 50 or 75% of the fruits were removed from each node of the branches in the other three treatments resulting in four treatments namely T100, T75, T50 and T25. The experiments were arranged in a completely randomized block design with four replications. Red berries were harvested from 18 to 26 December 2012 (Expt 2a) and from 28 October to 13 November 2013 (Expt 2b).

# Conséquences

- > Increase cherry's size
- > probably less problems with berryborrer
- > Less fruits : higher quality - better coloration
- > Better harvest next year

improved bean size and weight at lower radiation levels. Fruit **thinning** and higher altitude significantly improved beverage quality, size and weight of coffee beans. **Thinning** beyond 50%, however, did not further improve the quality attributes. Effects of shade, nitrogen, fruit

Thinning the extra fruit is important not only to get a good crop of fruit this year, but to get a decent crop next year. Excess fruit that remains too long on the tree will impact fruit size, formation of flower buds, crop potential for the following year, and overall tree health. An overload of fruit greatly reduces the tree's carbohydrate reserves and can also affect the tree's ability to withstand disease and winter injury.

<https://www.mygardengeek.com/thinning-fruit-trees-when-less-is-more/>

## Fruit thinning and shade improve bean characteristics and beverage quality of coffee (*Coffea arabica* L.) under optimal conditions

These results demonstrate that fruit **thinning** enhanced bean size and hastened the maturation process. Palmer *et al.*<sup>36</sup> have also shown for apple trees that lighter crop loads resulted in earlier fruit maturity and enhanced quality compared with heavy crop loads. In the present experiment the shorter duration of the bean-filling period was counterbalanced by an ample carbohydrate supply to growing fruits due to high leaf-to-fruit ratios in their vicinity. As leaf-to-fruit ratios varied greatly within the coffee canopy, more investigation is under way to test the effect of coffee berry position and yield distribution on bean characteristics and beverage quality. Fruit thinning is a common practice to improve fruit growth and quality for many fruit trees such as peach, kiwi and apple.<sup>18,35-37</sup> However, this management practice (via chemical spraying or manual thinning) is rarely implemented by coffee growers worldwide despite the fact that it has been long documented that coffee trees experience a biannual bearing pattern and overbearing branch die-back due to competition for carbohydrates between coffee berries and developing young branch parts, thus conditioning the production level of the following year.<sup>5</sup> This is due to the fact that neither

Fruit thinning enhanced coffee bean beverage quality (Table 3). In both Expts 2a and 2b, the trend indicated higher acidity, aroma, body, aftertaste, flavour, balance and overall preference the lower the fruit load with an optimum curve, peaking at T50. Thinning beyond 50%, did not further improve coffee beans physical and beverage qualities. Fruit thinning did not significantly affect coffee bean balance. Similar to shade and nitrogen nutrition, fruit thinning significantly improved individual weight and size of coffee beans (Bote and Vos, 2016). Compared to beans in T100, dry weight and individual bean size in T25 increased by an average of 20 and 13%, respectively.

Table 3. Means of bean quality attributes of field grown coffee trees as affected by different fruit load treatments.

Expt	Fruit load (%)	Acidity	Aroma	Body	Aftertaste	Flavour	preference	Balance
2a	25	7.67 <sup>ab</sup>	7.5 <sup>a</sup>	7.58	7.25 <sup>b</sup>	7.75 <sup>a</sup>	7.58 <sup>ab</sup>	7.67
	50	7.92 <sup>a</sup>	7.5 <sup>a</sup>	7.75	7.58 <sup>a</sup>	7.92 <sup>a</sup>	7.83 <sup>a</sup>	7.75
	75	7.50 <sup>b</sup>	7.1 <sup>b</sup>	7.42	7.17 <sup>b</sup>	7.33 <sup>b</sup>	7.42 <sup>bc</sup>	7.42
	100	6.91 <sup>c</sup>	7.2 <sup>b</sup>	7.00	6.99 <sup>c</sup>	7.10 <sup>c</sup>	7.01 <sup>c</sup>	7.08
	<i>P</i>	<b>0.04</b>	<b>0.04</b>	<b>0.21</b>	<b>0.04</b>	<b>0.02</b>	<b>0.02</b>	<b>0.06</b>
2b	25	7.77	7.35 <sup>b</sup>	7.67 <sup>a</sup>	7.17 <sup>b</sup>	7.25 <sup>b</sup>	7.25 <sup>b</sup>	7.37
	50	7.73	7.50 <sup>a</sup>	7.69 <sup>a</sup>	7.60 <sup>a</sup>	7.69 <sup>a</sup>	7.71 <sup>a</sup>	7.65
	75	7.38	7.49 <sup>a</sup>	7.33 <sup>b</sup>	7.53 <sup>a</sup>	7.59 <sup>a</sup>	7.60 <sup>a</sup>	7.55
	100	7.28	6.95 <sup>c</sup>	7.25 <sup>b</sup>	6.93 <sup>c</sup>	7.11 <sup>b</sup>	7.17 <sup>b</sup>	7.11
	<i>P</i>	<b>0.07</b>	<b>0.013</b>	<b>0.02</b>	<b>0.01</b>	<b>0.01</b>	<b>0.01</b>	<b>0.25</b>

# Parcelle Lomi Micro Lots 2021

This year the goal is to produce four distinct micro-lots for the following reasons:

- Produce from the same trees four distinct and delicious coffees to further demonstrate to our clients the complexity and craft that goes into coffee production
  - One lot from fruit thinning processed with inoculation
  - One lot from control trees processed with inoculation
  - One lot from control trees processed without inoculation
  - One lot from control trees processed with Methode Beaujolais
- Investigate the effect on cup quality when ripe cherries are harvested and processed from trees that have undergone fruit thinning
  - One lot from control trees and one lot from fruit thinning trees. Both processed with CIMA inoculation to control the fermentation variable.
- Go one step further in understanding the value proposition of inoculating with a yeast during the processing
  - Change in cup quality, change in cost of production, possibility to produce at scale, longevity of green coffee quality in storage.
  - One lot from control trees processed with CIMA and one lot from control trees processed without inoculation
  - Once green coffee has arrived at Lomi 2kgs of each lot will be stored in Grainpro style storage conditions. The coffee will be roasted and cupped every three months to assess quality.

# Parcelle Lomi Micro Lots 2020

Parcelle Lomi Yellow  
Bourbon

Tree Harvesting

Ripe cherries from green  
Harvested Trees

Ripe cherries from control  
Trees

Cherry Processing

Pulped cherries submerged in  
water processing

Pulped cherries submerged  
in water processing

Whole Cherry  
natural processing

Mucilage removal

Yeast Lallemand CIMA  
processing protocol

Wild  
Fermentation

Wild  
Fermentation

Yeast Lallemand CIMA  
processing protocol

Methode Beaujolais

Volume Target

Volume Target  
120kg cgreen  
coffee

Volume Target  
120kg green  
coffee