

# Pistachio<sup>1</sup> Growth Stages - Female Trees



**Timing:** Begin sampling at stage 7.3 taking fresh shoot tips from at least 20 representative trees. A second sample should be taken at 'nutshell' hardening (7.5). Nutrition should be monitored throughout seed development by taking two samples at equal intervals apart, especially if the previous analyses showed deficiencies. A final sample should be taken before harvest to determine any postharvest requirements and / or fruit quality and storage risks.

**Sample volume:** 40 shoot tips.

**Sampling:** Collect 10 cm of new shoot tips from current season's growth at mid crown height (or shoulder height for large trees); sample from the same trees for subsequent sampling.

**Fruit Sampling:** select at least 50 young fruit from around the whole tree before 'nutshell' hardening 7.5

It is recommended to return to the same representative trees for all samples and to sample fruit at the same time as shoots.

Primary stage	Secondary stage	Description	Comments
5		<b><i>Inflorescence emergence</i></b>	
	5.1	<b>Pre-flower</b>	Lateral axillary inflorescence buds on one year-old wood begin to swell.
	5.5		Mid bud burst.
	5.9		Late bud burst.
6		<b><i>Flowering, early leaf and shoot development</i></b>	
	6.1	<b>Flowering &amp; fruit set</b>	Beginning of flowering: 10% of flowers open.
	6.5		Full flowering: 50% of flowers open.
	6.9		Flowers fading: ovary growing. First leaves unfolding. Signs of developing shoots visible.
7		<b><i>Fruit, main leaf and shoot development</i></b>	
	7.1	<b>Fruit and seed development</b>	Shoot growth has commenced, first leaves fully expanded
	7.3		Leaves fully expanded, shoots > 20 cm long, fruit and endocarp <sup>2</sup> growth, no seed enlargement.
	7.5		'Nutshell' has hardened - seed enlargement, main shoot growth has slowed.
	7.7		Seed has filled the hardened 'nutshell' to about 70%, fruit growth slowing. A second flush of shoot growth may have occurred.
	7.9		Seed has filled the 'nutshell'. All growth completed.
8		<b><i>Maturity</i></b>	
	8.1	<b>Harvest</b>	Fruit at full size and colouring.
	8.5		Husk or hull covering the shell starting to becoming loose on few fruit
	8.9		Harvest
9		<b><i>Beginning of dormancy</i></b>	
	9.1	<b>Senescence</b>	Shoot growth completed: foliage still fully green.
	9.3		Beginning of leaf fall.
	9.9		All leaves fallen.

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<sup>1</sup> Botanically Pistachios are drupes, like e.g. stonefruit, mangos, coffee, olives, most palms

<sup>2</sup> Endocarp = inside layer of the fruit, which directly surrounds the seed; forming the 'nutshell' in pistachios