

SEPTEMBER
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International Avocado Canopy Management Survey

Queensland Department of Agriculture and Fisheries



Queensland
Government

**Hort
Innovation**
Strategic levy investment

**AVOCADO
FUND**



INTERNATIONAL AVOCADO CANOPY MANAGEMENT SURVEY

DAF, September 2022

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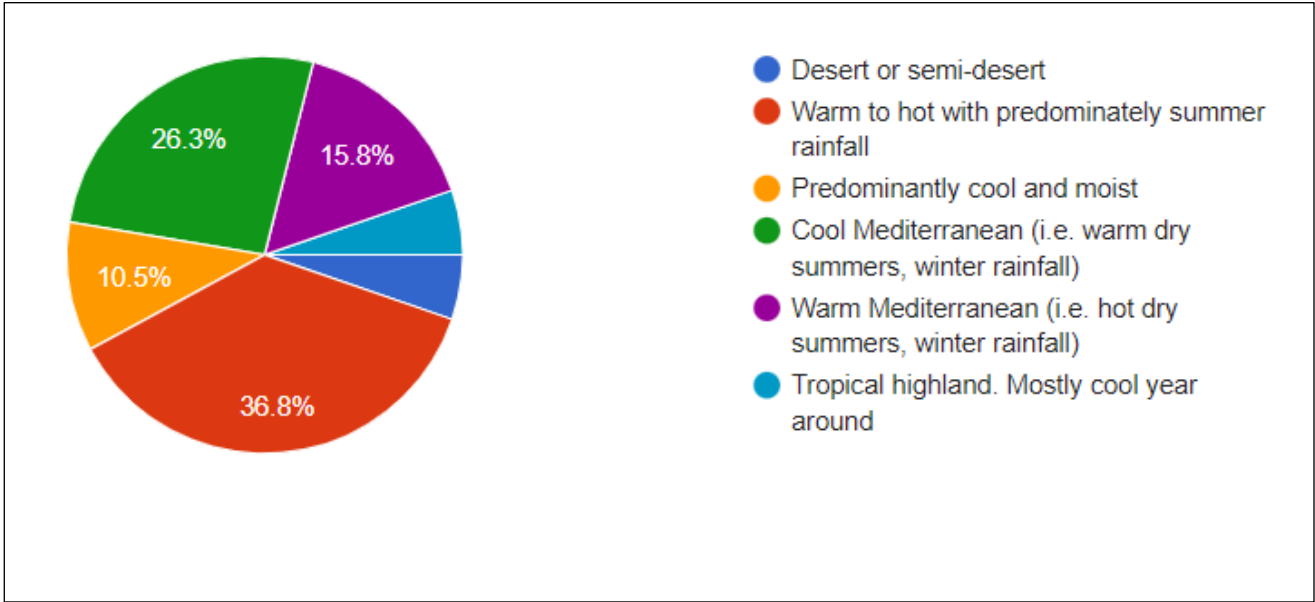
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COUNTRIES and CLIMATES

COUNTRY	NUMBER RECEIVED
New Zealand	2
South Africa	6
Zimbabwe	1
Tanzania	2
Israel	2
Spain	1
Chile	1
Peru	1
Colombia	1
Mexico	1
California, USA	1
	19

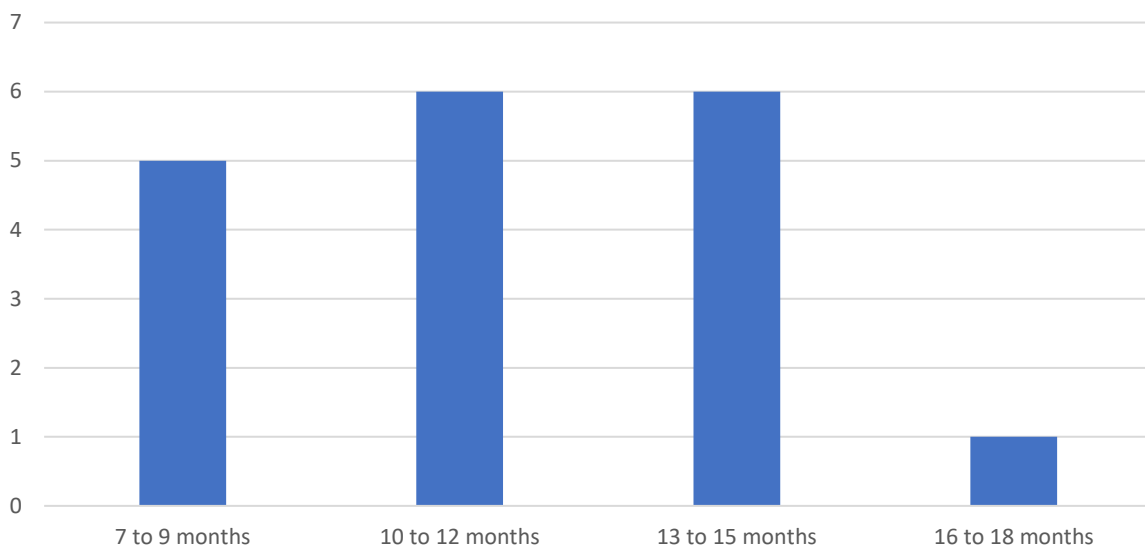
CLIMATES	COUNTRIES	NUMBER OF RESPONDENTS
Cool Mediterranean (warm dry summers, winter rainfall)	Chile, California, New Zealand & South Africa (Cape Province)	5
Warm Mediterranean (hot dry summers, winter rainfall)	Israel & Spain	3
Warm to hot, predominantly summer rainfall (subtropics)	South Africa, Zimbabwe, Tanzania, Mexico	7
Tropical highland, 6,000 feet, mostly cool all year	Tanzania	1
Predominantly cool & moist	Colombia, South Africa (Cape Province)	2
Desert or semi desert	Peru	1
		19



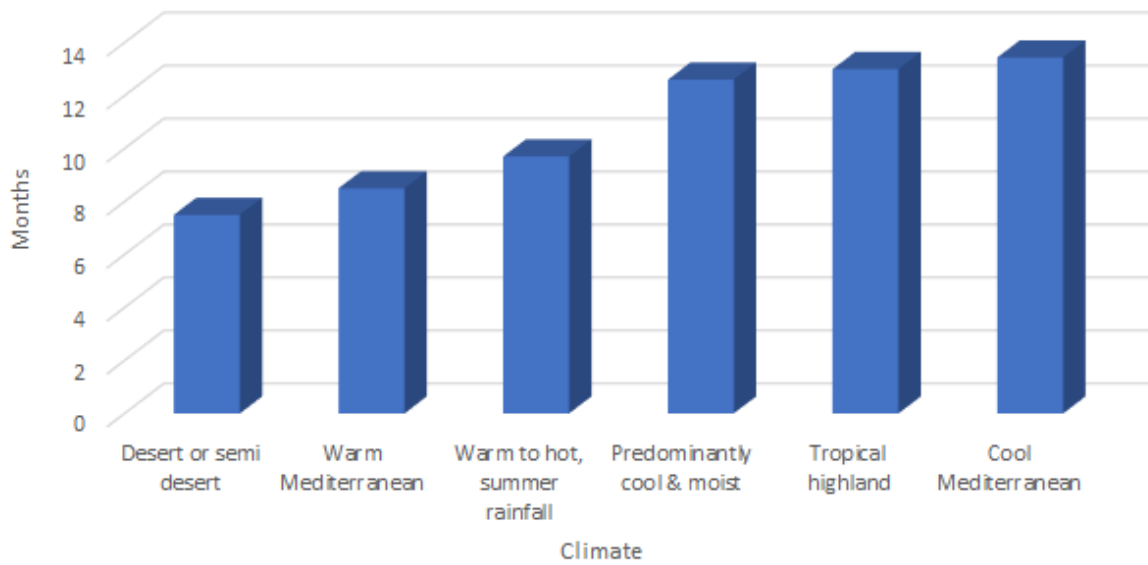
HASS FLOWERING, HARVEST TIMES and TIME FROM FRUITSET TO HARVEST

CLIMATE	REGION	MAIN MONTHS OF FLOWERING (S. hemisphere equivalent)	MAIN MONTHS OF HARVEST (S. hemisphere equivalent)	TYPICAL TIME PERIOD (months) FROM FRUITSET TO HARVEST
Cool Mediterranean (warm dry summers, winter rainfall)	S Africa, Cape	Oct	Oct	12
	Calif	Sep, Oct, Nov, Dec	Oct, Nov, Dec, Jan, Feb	13 – 20
	Chile	Oct, Nov	Oct, Nov, Dec, Jan	10 – 12
	NZ	Sep, Oct	Sep, Oct, Nov, Dec, Jan, Feb	11 – 17
	NZ	Sep, Oct, Nov	Sep, Oct, Nov, Dec, Jan, Feb	12 - 14
Warm Mediterranean (hot dry summers, winter rainfall). Israel & Spain	Israel	Sep, Oct	Apr, May, Jun, Jul, Aug, Sep, Oct	8 – 10
	Israel	Sep, Oct	Jun, Jul, Aug, Sep, Oct	8 – 12
	Spain	Sep, Oct	Jun, Jul, Aug, Sep, Oct	9
Warm to hot, predominantly summer rainfall	S Africa, Tzaneen	Jul, Aug, Sep	Apr, May, Jun, Jul, Aug	Depends on area and if hung late
	S Africa, Natal	Aug, Sep	Jul, Aug, Sep	10
	Tanzania 1	Jun, Sep	Aug, Sep, Oct, Nov	13
	Zimbabwe	Aug, Sep	Apr, May, Jun	7 – 10
	S Africa	Aug	Feb, Mar, Apr	6 – 8
	S Africa	Jul, Aug, Sep	Mar, Apr, May, Jun, Jul	10
Mexico	Jul, Aug, Sep & Apr, May, Jun	Jul, Aug, Sep, Oct, Nov & Feb, Mar, Apr, May, Jun	10 - 14	
Tropical highland, mostly cool all year	Tanzania 2 (6000')	Aug, Sep	Aug, Sep, Oct, Nov	12 - 14
Predominantly cool & moist	S Africa, Cape Province	Aug, Sep, Oct	Oct, Nov, Dec, Jan	12 – 14
	Colombia	Jul, Jan	Jul	12
Desert or semi desert	Peru	Sep, Oct, Nov	Apr, May, Jun, Jul, Aug	7 - 8

MONTHS FROM FRUITSET TO HARVEST



MONTHS FROM FRUITSET TO HARVEST

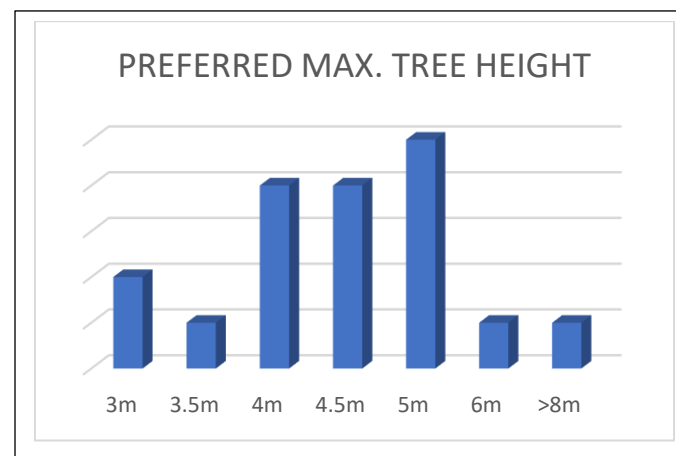
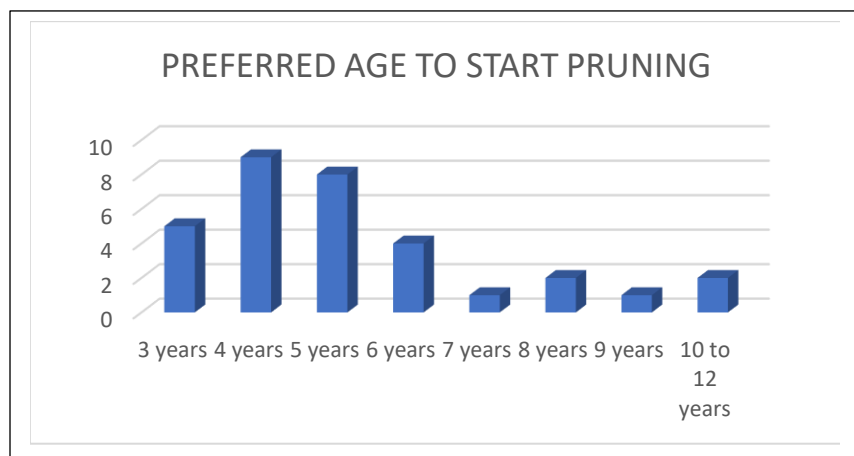


OUT OF SEASON FLOWERING

CLIMATE	YES	NO
Cool Mediterranean	2 <ul style="list-style-type: none"> The trees might flower all winter, through spring and early summer if the conditions are right, but main crop is set late spring (Calif) Winter or Autumn set does occur, but seldom in commercial quantity (NZ) 	3 <ul style="list-style-type: none"> Under cold winter the phenology is homogeneous during the year (Chile) Some out of season flowering from Carmen that is harvested for domestic market, but this is limited.
Warm Mediterranean	-	3
Warm to hot, summer rain predominantly	5 <ul style="list-style-type: none"> Some years and some areas there is out of season flowering June flower Mainly an early area so management is geared to that This does not happen every year but occasionally 	2
Tropical highland	1 <ul style="list-style-type: none"> A small random flowering resulting in a small harvest 	
Predominantly cool & moist	1	1
Desert or semi desert	-	1

TREE SPACING, PREFERRED TREE HEIGHT and PREFERRED AGE TO START PRUNING

CLIMATE	REGION	TREE SPACING (m)	PREFERRED MAX TREE HEIGHT (m)	PREFERRED AGE TO START PRUNING
Cool Mediterranean	S Africa, Cape	6x3	3m	3
	Calif	6x6	5m (Calif)	8 – 10
	Chile	3x3, 5x2, 6x3	3m (Chile)	3 (high density) – 5
	NZ	7x7	5m	5 – 7
	NZ	9x9	6m	4
Warm Mediterranean	Israel	6x3 & 6x4	4.5m	5 – 6
	Israel	6x4	4.5m	4 – 5
	Spain	6x6	4m	6
Warm to hot, summer rain	S Africa	7x4	-	4
	S Africa, Natal	8x5	5m	4
	Tanzania 1	7x3.5	4m	4
	Zimbabwe	7x7	4 to 5m	8
	S Africa	7to9x5	5m	4 to 5
	S Africa	7x6, 8x4	4 or 5m	3 or 5 depends on variety
	Mexico	10x10	>8m	10 to 12
Tropical highland	Tanzania 2	8x4	5m	5+
Predominantly cool & moist	S Africa, Cape	6x4	3.5m	5
	Colombia	6x3	4m	3
Desert or semi-desert	Peru	6x4	4m	3 to 4



ROOTSTOCKS and THEIR EFFECT ON CANOPY MANAGEMENT

CLIMATE	TYPE	ROOTSTOCKS	ROOTSTOCK AFFECT ON CANOPY MNGT?
Cool Mediterranean (warm dry summers, winter rainfall)	Clonal Clonal Both Both Both	Dusa Dusa, Toro Canyon, Duke 7 Zutano, Velvick, WI* for salt, clonal Dusa Historically Zutano. New on Dusa, Bounty & SR1 Seedling Zutano & clonal Dusa	- - Anticipate will affect start-date of pruning. Bounty more vigorous than Dusa. No
Warm Mediterranean (hot dry summers, winter rainfall). Israel & Spain	Seedling Seedling Both	All WI*: Degania 117, Ashdot17, Zrifin 99 All WI*: Degania 117, Ashdot 17, Ferchaild, Degania 62, Zrifin 99 Duke 7	- No effect -
Warm to hot, predominantly summer rainfall	Clonal Clonal Seedling Clonal Clonal Both Seedling	Dusa Dusa - Dusa Dusa, Bounty, Velvick, Edranol, Duke 7 Dusa & Bounty -	Some rootstocks more vigorous - - Yes Vigorous ones definitely = more pruning No obvious effects on healthy trees Yes it has an influence.
Tropical highland, mostly cool all year	Seedling	-	-
Predominantly cool & moist	Clonal Both	Dusa Natives, Duke 7, Latas	- Yes, it does influence, e.g. Duke 7, induces greater vegetative development.
Desert or semi-desert	Seedling	Zutano, West Indian. Use of clonals is in initial stage	-

* WI . . . West Indian

EARLY TREE TRAINING – NURSERY and EARLY YEARS IN ORCHARD

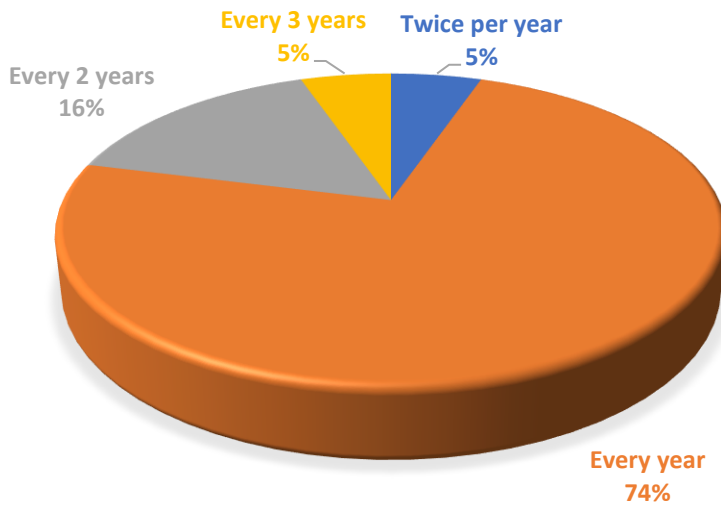
CLIMATE	MEASURES TAKEN TO TRAIN TREES IN NURSERY	MEASURES TAKEN IN 1 ST 2 OR 3 YEARS IN ORCHARD TO TRAIN OR SHAPE
Cool Medit.	No Pinching out tips for branching No No Training to a central leader	Pinching out tips for branching & training to central leader No Training to central leader Branches below ~60cm are removed in Yr 2 to improve sprinkler coverage & encourage single main trunk. Other training is not common. Pinching out tips, training to central leader & 3 to 5 main branches
Warm Medit.	Pinching out tips for branching Pinching out tips for branching Training to a central leader	Pinching out tips for branching Pinching out tips for branching & training to about 3 to 5 main branches Training to about 3 to 5 main branches
Warm to hot, summer rain	Pinching out tips for branching No Pinching out tips for branching No No Train to central leader but for space efficiency in nursery Pinching out tips for branching	Pinching out tips for branching & training to about 3 to 5 main branches No No Pinching out tips for branching & training to about 3 to 5 main branches Pinching out tips for branching & training to central leader Removing central leaders to encourage 3 or 4 main branches to allow for an open bowl/vase tree shape Training to about 3 to 5 main branches
Tropical highland	Pinching out tips for branching	Pinching out tips for branching
Predom. cool & moist	Training to a central leader Training to a central leader	No Training to a central leader
Desert or semi desert	No	

THE MAIN PRUNING - FREQUENCY, BEST TIME OF YEAR and CONSEQUENCES OF POOR TIMING

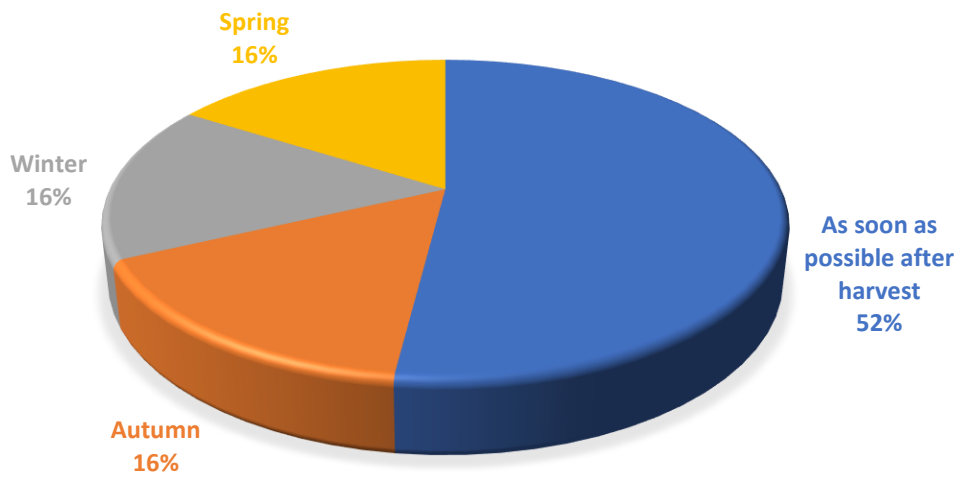
CLIMATE	REGION	HOW OFTEN MAJOR PRUNING CONDUCTED	BEST TIME OF YEAR TO PRUNE	CONSEQUENCES OF PRUNING TOO <u>EARLY</u> IN THE SEASON	CONSEQUENCES OF PRUNING TOO <u>LATE</u> IN THE SEASON
Cool Medit.	S Africa, Cape	Every year	Spring	-	Trees too dense
	Calif	Every year	After harvest, or winter if not much fruit	Rarely happens, usually too late	Canopy grows too much and too much needs to be taken out Lose flower potential for next season
	Chile	Every year	ASAP after harvest	Early in winter is better	More vigorous regrowth if healthy trees pruned in spring that requires additional follow up
	NZ	Every year	Autumn and winter for healthy trees and spring for sick trees	Sunburn possible, fruit still on tree can be lost.	Less regrowth but this can be desirable
	NZ	Every 2 years	First major prune in spring, then groom in autumn	If a major prune, sunburn on exposed limbs & very vigorous watershoot regrowth	
Warm Medit.	Israel	Every 2 years	End of winter	Risk of frost damage	Risk of heat wave damage
	Israel	Twice per year	ASAP after harvest	Risk of frost and early closing of rows	Miss the effect of open orchard (light) on differentiation, flowering & set.
	Spain	Every year	ASAP after harvest	Usually, lower yields are obtained that year since less flowering will occur	Flowering next year will be reduced since there will be no time for the summer flush to develop
Warm to hot, summer rain	S Africa, Tzaneen	Every year	ASAP after harvest	Regrowth	Damage to flowers
	S Africa, Natal	Every year	Spring	We have fruit on the trees so we don't prune early	Damage new fruitset
	Tanzania 1	Every year	ASAP after harvest	Fruit is lost	Wasted energy on flower and fruitset
	Zimbabwe	Every year	ASAP after harvest	-	Affect following crop
	S Africa	Every year	Previously pruned after harvest (late	Much regrowth and reduced fruitset	Difficult to make the pruning decisions with flower and fruit on the tree

	S Africa	Every year	summer/early autumn) but due to early area had too much regrowth, now prune later as season changes (temps dropping) in Autumn ASAP after harvest (autumn & winter)	Trees can become too vegetative especially if big cuts were made.	Flowers get cut off but is this a negative or positive?
	Mexico	Every 3 years	ASAP after harvest	You lose production	You lose fruit
Tropical highland	Tanzania 2 (6000')	Every 2 years	ASAP after harvest	Loss of fruit	Growing fruit will be pruned off
Predom. cool & moist	S Africa, Cape	Every year	ASAP after harvest	Current year crop loss, excessive growth	Next season crop loss
	Colombia	Every year	ASAP after harvest	It brings the flowering earlier the next year.	It delays the subsequent flowering
Desert or semi desert	Peru	Every year	ASAP after harvest	One would be able to bring the flowering earlier one or two weeks in some branches	One would be pruning during full flowering
CLIMATE	REGION	HOW OFTEN MAJOR PRUNING CONDUCTED	BEST TIME OF YEAR TO PRUNE	CONSEQUENCES OF PRUNING TOO <u>EARLY</u> IN THE SEASON	CONSEQUENCES OF PRUNING TOO <u>LATE</u> IN THE SEASON

FREQUENCY OF PRUNING



BEST TIME OF YEAR TO PRUNE

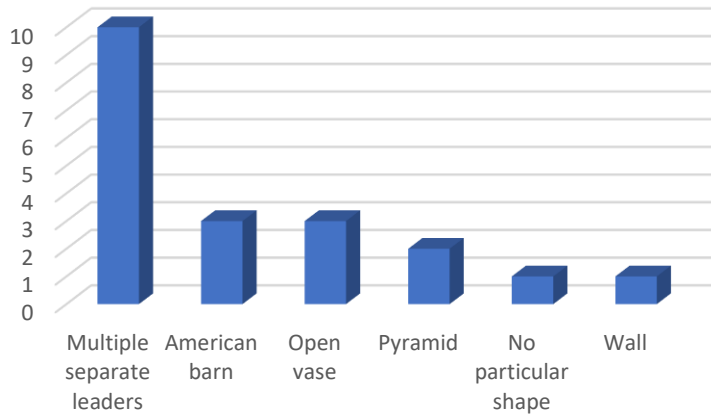


a) TREE SHAPE b) MAJOR PRUNING METHOD c) PROPORTION OF CANOPY REMOVED

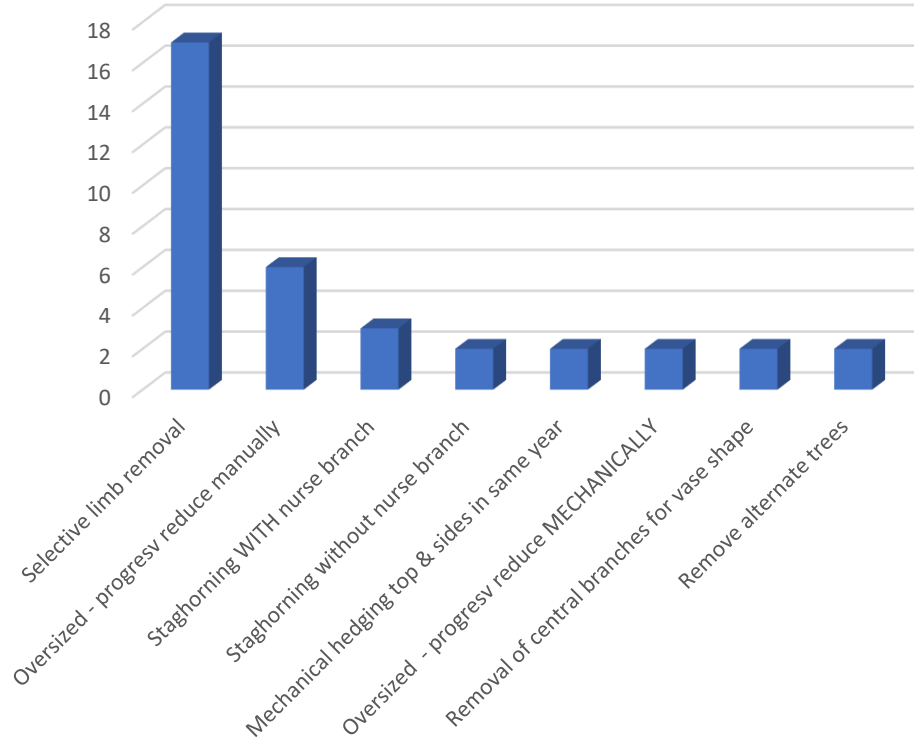
CLIMATE	REGION	TREE SHAPE PREFERRED	COMMON PRUNING METHOD(S)	% REMOVED	% REMOVED THAT CAUSES EXCESS VEGETATIVE TREES
Cool Mediterranean	S Africa, Cape	Pyramid	Selective limb removal – manual	20%	30%
	Calif	Multiple separate leaders	Selective limb removal – manual, Staghorning w/o nurse branch & removing alternate trees	15%	Limit cuts to thinning, avoiding heading cuts if possible 50%
	Chile	No particular shape: incl 'walls'	Over-sized trees - progressive reduction of size by removing one or more major limbs per year over several years. Selective limb removal – manual, Over-sized trees - progressive reduction of size by removing one or more major limbs per year over several years	25 – 30%	40%
	NZ	Multiple separate leaders	Selective limb removal – manual, Over-sized trees - progressive reduction of size by removing one or more major limbs per year over several years	30%	50%
Warm Mediterranean	Israel	Multiple separate leaders	Selective limb removal – manual	25%	More than 30%
	Israel	Combination of American barn (sometimes coming to each side once every second year) + removing one main limb every year'	Selective limb removal – manual, Mechanical hedging top and sides in same year, Over-sized trees - progressive reduction of size by MECHANICAL hedging, one side or top at a time, over several years	15-20%	More than 30%
	Spain	Open vase	Selective limb removal – manual	20%	40%
Warm to hot, summer rain	S Africa, Tzaneen	Multiple separate leaders	Selective limb removal – manual, Over-sized trees - progressive reduction of size by removing one or more major limbs per year over several years.	15-20%	35%
	S Africa, Natal	Multiple separate leaders	Selective limb removal – manual	20%	25%
	Tanzania 1	Multiple separate leaders	Selective limb removal – manual	7%	No
	Zimbabwe	Multiple separate leaders	Selective limb removal – manual, Staghorning, with & without a temporary 'nurse' branch,	20%	Not sure

	S Africa	American barn. The shape depends on variety and spacing. For instance Pinkerton is difficult to get into a typical shape in wider plantings. Maluma and Lamb Hass and to lesser degree Hass shapes easily into a central leader upright tree where Fuerte a more barn shape rather than a central leader is typical.	Selective limb removal – manual, Over-sized trees - progressive reduction of size by removing one or more major limbs per year over several years.	15-20%	Yes, 30%
	S Africa	Open vase. This depends on cultivar. Pinkerton will be more multiple separate leaders as this is how it naturally grows but generally we aim for open bowl / vase shape	Selective limb removal – manual, Over-sized trees - progressive reduction of size by MECHANICAL hedging, one side or top at a time, over several years, Removal of central branches to create an open vase shape, Staghorning, keeping a temporary ‘nurse’ branch, Removing alternate trees. Mechanical is only used when time is short or orchards are very overgrown. Must be followed up by manual pruning. Tree removal would only be done in older orchards with difficult spacings.	30%	30-40%
	Mexico	Multiple separate leaders	Selective limb removal – manual, Over-sized trees - progressive reduction of size by removing one or more major limbs per year over several years, Staghorning, keeping a temporary ‘nurse’ branch	-	I don’t know
Tropical highland	Tanzania 2 (6000’)	Open vase	Selective limb removal – manual, Removal of central branches to create an open vase shape	20%	Our trees are not vegetative unless very heavily pruned.
Predominantly cool & moist	S Africa, Cape.	Multiple separate leaders	Selective limb removal – manual	25%	35%
	Colombia	Pyramid	Mechanical hedging top and sides in same year	20%	30%
Desert or semi desert	Peru	American barn shape	Selective limb removal – manual, Over-sized trees - progressive reduction of size by removing one or more major limbs per year over several years	15 to 20%	If you prune off more than 30% you are able to have a reduction in the yield. Don't attempt pruning during the flowering after the flower is already established.

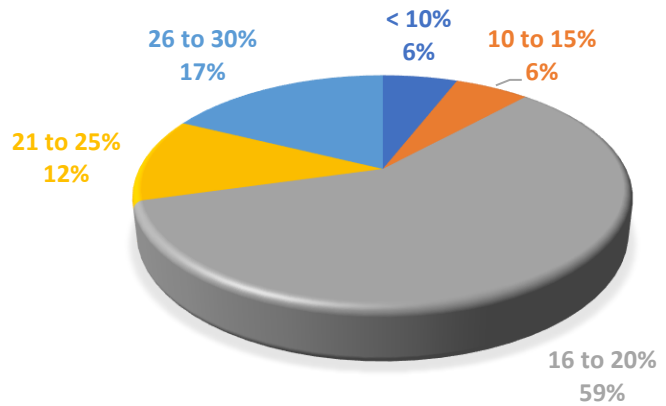
PREFERRED TREE SHAPE



PRUNING METHODS



% CANOPY REMOVED EACH YEAR



NEW or EXPERIMENTAL PRUNING STRATEGIES

CLIMATE	LOCATION	NEW OR EXPERIMENTAL STRATEGIES
Cool Medit.	California	Stub pruning, leaving about 45 cm of branch at the trunk to encourage new growth. It tends to crowd too fast though.
	Chile	'Walls'
	NZ	Starting to experiment with establishing a 2D canopy through establishing horizontal structural limbs and vertical productive shoots that come off.
	NZ	A few pioneering growers are trying various systems involving tying limbs to wires
Warm Medit.	Israel	Mechanical hedging top and sides. One row in Year 1, the other row in Year 2.
	Israel	We are trying new methods all the time.
Warm to hot, summer rain	South Africa	Later in the season pruning (positive result), trying out other strategies i.e. multi leaders, one major limb removed (cutting out 20-25% of the tree with one cut - seem to work in rehab conditions), continuous pruning. Still figuring out how to manage nutrition with the "late prune". Fuerte (and Pinkerton) seems to work well but Hass and other Hass types sometimes remaining too sparse too long.
	South Africa	Central leader on Maluma with closer spacings - trees are still young

MINOR PRUNING METHODS

CLIMATE	LOCATION	MINOR PRUNING METHODS				
		Correctional pruning e.g. erratic branches, thinning out water shoots etc	Light mechanical trimming of hedged surfaces	Manually thinning out regrowth after limb removal	Skirting	Other
Cool Medit.	South Africa			Y		
	California	Y		Y	Y	
	Chile	Y		Y	Y	
	NZ	Y		Y		
	NZ	Y		Y		
Warm Medit.	Israel			Y	Y	
	Israel		Y	Y	Y	
	Spain	Y		Y	Y	
Warm to hot, summer rain	South Africa		Y			
	Tanzania	Y				
	Zimbabwe	Y		Y		Tipping
	South Africa	Y		Y		Tipping
	South Africa	Y		Y		
Mexico	Y		Y	Y		
Tropical highland	-					
Predom. cool & moist	Colombia				Y	
Desert or semi desert	Peru	Y			Y	

CINCTURING

CLIMATE	LOCATION	CINCTURING	SUCCESS OR FAILURE OF CINCTURING
Cool Medit.	California	Y	Very successful
	Chile	Sometimes	Works for a secure bloom in off season. The limbs start to be old. Less vigour.
	NZ	N	Girdling has not been very successful under NZ conditions.
Warm Medit.	Israel	Sometimes	The growers conduct it (minority) & believe it is very successful. My personal opinion based on long experience and research - Zero!!
Warm to hot, summer rain	South Africa	Sometimes	It does work.
Desert or semi desert	Peru	Sometimes	Yes, it is successful to promote a better flowering.

a) PHYTOPHTHORA b) PRUNING IN AN 'OFF' YEAR

CLIMATE	LOCATION	a) DOES PHYTOPHTHORA AFFECT PRUNING DECISIONS?	b) PREFER TO PRUNE IN AN 'OFF' YEAR?	b) DOES PRUNING IN AN 'OFF' YEAR MAKE TREES MORE VEGETATIVE?
Cool Medit.	South Africa	No	Yes	No
	California	Treat first then prune.	Yes	No, they have the labour and it fits in with their practices.
	Chile	Only to recover trees	Yes	Yes, I don't agree but the growers tend to do it.
	NZ	Yes. Sick trees are often pruned anytime from autumn through to spring to balance canopy to root volume as part of recovery. Ideal that fruit removed ASAP and then tree pruned in spring.	Yes	No, generally trees in 'off' year flower heavily in spring with subsequent fruit set limiting vegetative growth.

	NZ	Yes, trees can be invigorated by heavier pruning.	Yes	No
Warm Medit.	Israel Israel Spain	No No Only in affected trees to remove some branches.	No No No preference	No, it has no connection
Warm to hot, summer rain	South Africa	Less vigorous trees need less pruning, very sick trees may be staghorned.	No	Yes, it definitely does.
	South Africa	No	No	N/A
	Tanzania	No	Yes	No
	Zimbabwe	No	Yes	Yes
	South Africa	Yes. Stressed trees or trees with poorer condition gets different strategy depending on the condition. Cutting back harder on sick trees, earlier pruning etc.	No	Vigorous area so pruning is done annually. Some years may require harder prune and height control but because fruits are off when pruning is done decisions are fairly easy.
	South Africa	Yes - severely affected trees will get harder cuts (followed by tree painting) - this assists in tree rejuvenation	No preference	Possibly but not 100% sure
	Mexico	Yes	No preference	Yes.
Tropical highland	Tanzania	A sick tree will be pruned more.	No preference	We have little vegetative growth here, we need more.
Predom. Cool & moist	South Africa	No	No	Yes
	Colombia	It reduces root rot.	No	No
Desert or semi desert	Peru	If the tree is sick, it is best to carry out intense pruning and conduct phytosanitary/pesticide treatment.	No	It is best to prune every year.
CLIMATE	LOCATION	DOES PHYTOPHTHORA AFFECT PRUNING DECISIONS?	PREFER TO PRUNE IN AN 'OFF' YEAR?	DOES PRUNING IN AN 'OFF' YEAR MAKE TREES MORE VEGETATIVE?

PLANT GROWTH REGULATORS

Abbreviations: Unico = uniconazole Paclo = paclobutrazol GA = Gibberellic acid NAA = Naphthalene acetic acid Cyto = cytokinins

CLIMATE	LOCATION	PGRs IN CANOPY MNGT	THOSE USED	WHEN APPLIED	HOW APPLIED	FUTURE OF PGRs?	NEW PGR STRATEGIES?
Cool Medit.	South Africa	Y	Unico	At flowering & Sumr/autm leaf flush	Foliar	Yes	-
	California	Y	GA, NAA to pruning cuts	At flowering & pruning cuts	Foliar	Unico & paclo not registered in US & won't be	
	Chile	Sometimes	Unico	At flowering & Sumr/autm leaf flush	Foliar	Under Chilean conditions we never found residue.	
	NZ	Y	Paclo, Unico, GA	Paclo as soil drench in spring & as required through growing phase. Unico limited to 10-15cm spring vegetative flush devpt, GA use limited but some success with March application (autumn) to prevent flower differentiation in newly planted trees.	Soil drench & foliar	Expect will be phased out over time. Some larger orchards using wider tree spacing with this in mind.	
	NZ	Sometimes	Unico	At flowering	Foliar		
Warm Medit.	Israel	Researching	Unico	Autumn	Through irrigation	There are no residues. I think it will be accepted.	Still studying
	Israel	Y	Unico & GA	At flowering & Sumr/autm leaf flush	Foliar	Not so far, in the future it may be an issue.	Trying all the time. Some positive effects in early experiments, difficult to translate to commercial protocols
	Spain	N				PGRs are not allowed in Europe, & I think that in the future fruit produced with PGRs may not be accepted.	

Warm to hot, summer rain	South Africa	Y	Unico	At flowering	Foliar	Who knows!	Summer unico experimental to manage vigour & testing MRLs. Testing to come in earlier in orchard life with unico & paclo (especially in high vigour situations, varieties, rootstocks, soils, areas) to get trees to make a proper first yield.
	South Africa	N				I think it causes more alternate bearing.	
	South Africa	Sometimes	Unico, Paclo	At flowering & sumr/autm leaf flush	Foliar	It is a concern for the vigorous areas.	
	South Africa	Sometimes	Unico	At flowering	Foliar	Uniconazole is a red flag product for some supermarkets but at this stage not too worried. It is necessary to use them.	
Mexico							
Tropical highland	Tanzania					'Not needed here'.	
Predom. cool & moist	South Africa				Pole brush	Has to be properly studied. Multiple PGR's are used routinely in apple production.	Trehold® (NAA) in latex should be considered as a pruning stub treatment.
	Colombia	Y	Unico	At flowering	Foliar	Yes. They need to look for other alternatives.	Cyto & seaweeds
Desert or semi desert	Peru	Y	Unico. GA on young trees to reduce flower intensity	At flowering	Foliar	You should apply taking into account the period of care (withholding period).	
CLIMATE	LOCATION	PGRs IN CANOPY MNGT	THOSE USED	WHEN APPLIED	HOW APPLIED	FUTURE OF PGRs?	NEW PGR STRATEGIES?

a) PRUNING WHERE THERE IS ALWAYS FRUIT ON TREE b) OTHER COMMENTS c) RESEARCH NEEDED

CLIMATE	LOCATION	a) CANOPY MGMT TO REDUCE LOSSES WHERE ALWAYS FRUIT ON TREE	b) OTHER COMMENTS ABOUT CANOPY MGMT	c) AREAS OF RESEARCH IN CANOPY MGMT
Cool Medit.	South Africa	Prune after picking		Improving fruitset More 2D canopy research to allow orchard efficiency and use of new Agritech. The economics of the most commonly employed systems
	California	Prune in winter before flowering, but no one does	It's hard to do. Labour hard to find, especially qualified pruners	
	Chile	Prune & girdling		
	NZ	Selective limb removal with tagging of limbs with fruit for removal ASAP or the following year.	Very diverse approaches but successful ones have common principles of maximising light interception, considerate of spray and harvest access, rejuvenation of wood to create different aged wood in tree, managing crop load.	
	NZ	Mark limbs for removal in advance, then strip pick those limbs so they can be removed as soon after harvest as desired.	Once started, it can never stop. Doing something is better than doing nothing. If using contractors, the simpler the system used the better.	
Warm Medit.	Israel	Close the eyes and prune.		Optimizing canopy management for each variety/rootstock combination
	Spain	No experience in this.		
Warm to hot, summer rain	South Africa		None, it's something we know more than 20 years ago but still not enough	Yes, most definitely
	South Africa Tanzania	Limb removal after harvest.		Different strategies for different areas.
	South Africa	Central leader system	I find it interesting that most (all) fruit industries have been working with positive productivity effect (at least since the 80s) towards central leader	Warm area pruning timings (with nutrition). Timings for different varieties. Maintenance pruning strategies to minimise unwanted

	South Africa		training systems but we see recent moves in the avocado industry to relook at open vases. Tree spacing determines canopy management strategy.	regrowth and maintain productivity. PGR use (soil application, via drip irrigation applications). Vigour/growth regulation in future PGR free situations. Rootstocks with PRR resistance without high vigour :)
	Mexico	Prune part of the tree one year, another part in another year, and successively like this.	Pruning, in an ideal world, should be done all year round. But increasing labour costs make this ideal difficult to achieve on many farms.	Some growers in SA swear by central leader pruning (NB Hass). It would be good to do a comparison with open bowl/vase pruning in one area / orchard to see the impact.
Tropical highland	Tanzania	Prune as soon as possible after harvest		
Predom. Cool & moist	South Africa	Selective pruning of whole limbs.		
	Colombia	To favour/support more the principal flowering and attempt to get the tree to bear more (fruit) from this.		How to avoid off-season ('naughty') flowering.
Desert or semi desert	Peru	In Peru, the harvest takes place during a defined stage.		Yes, mechanized pruning.
CLIMATE	LOCATION	CANOPY MGMT TO REDUCE LOSSES WHERE ALWAYS FRUIT ON TREE	OTHER COMMENTS ABOUT CANOPY MGMT	AREAS OF RESEARCH IN CANOPY MGMT