

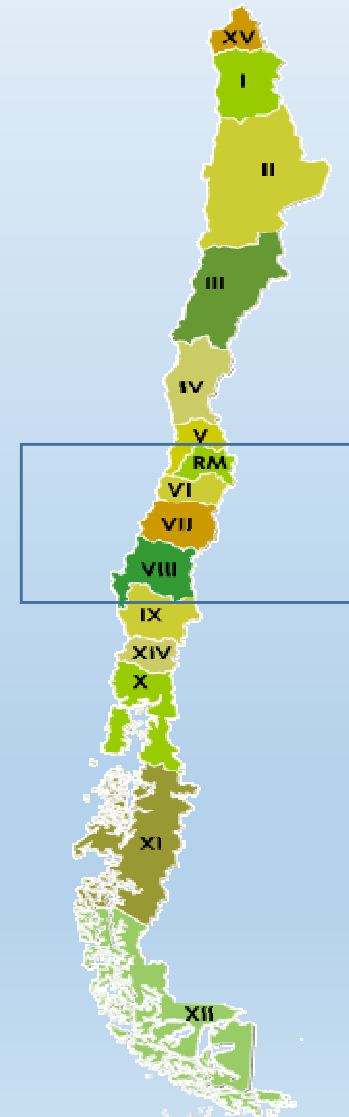
“Abate Fettel: how to increase its productivity in order to improve the producers’ profitability?”



“Current Situation and Future of Abate Fetel in Chile”

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Chief of Apple Program
David del Curto S.A.

Where Abate Fetel is produced?



General Background

Favorable Factors for the Pear Production

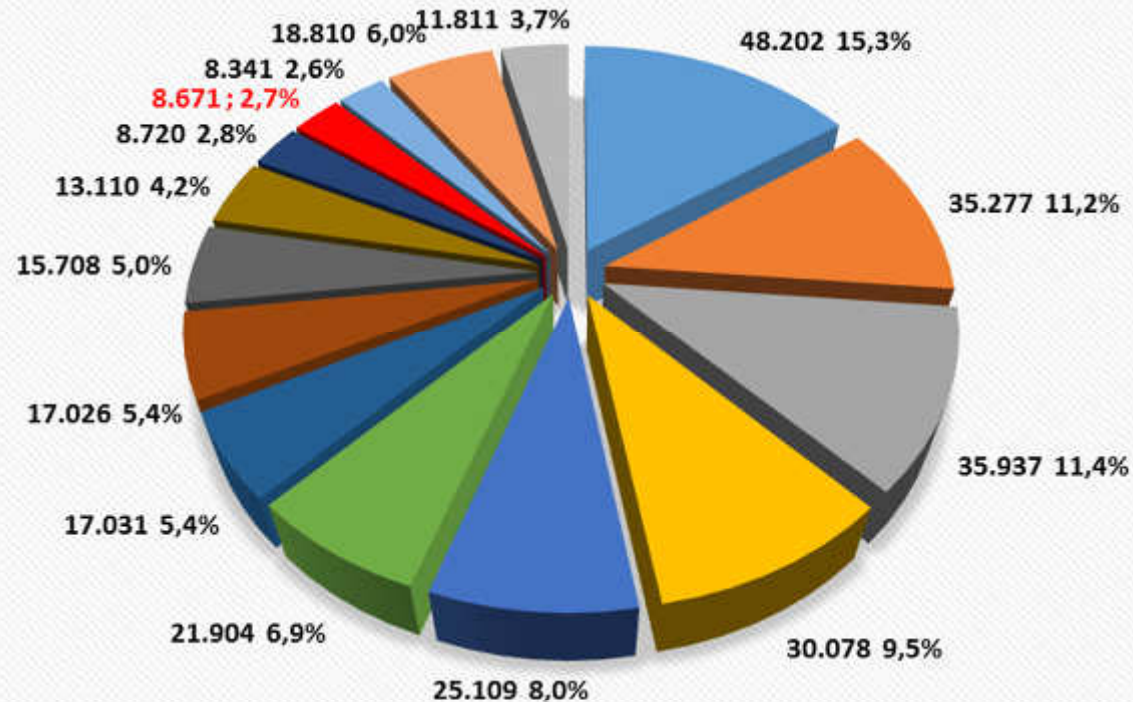
- Diversity of Climates and Soils to Produce.
- High Productive Potential (60-80 Ton/ha) with the Availability of Current Technology.
- Diversity of Export Markets thanks to Commercial Agreements and Compliance with Phytosanitary Protocols.
- Business Capacity to Develop Plantation Projects and Arrange Export Infrastructure.
- Mature Export Industry.

Unfavorable factors

- Changing Climate in last seasons (Frosts and Spring Rains, Hail, Summer Stress (High T°).
- Far Markets (higher cost)
- Russet poor in seasons of little cold and wintry rain.
- High use of labor competes in Harvest Period of Apples (Galas).
- High Competition for Species with Higher Profitability (Cherries, Blueberries) and Less Use of Labor (Walnut, Hazelnut).
- High Production and Supply of North Hemisphere affects Competitiveness of the Chilean Pear Abate Fetel.

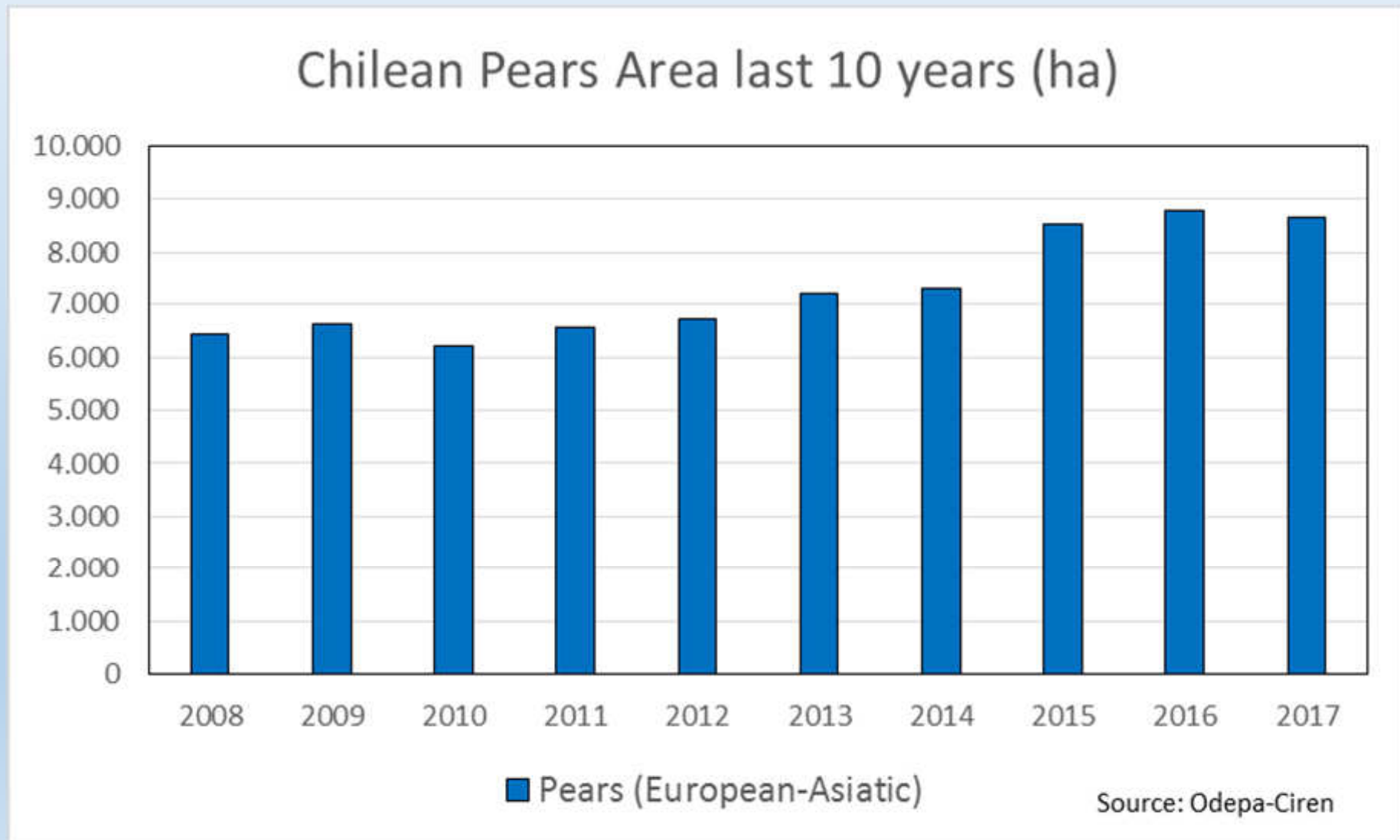
Statistical Information

Distribution (has-%) Fruit Trees in Chile at 2017



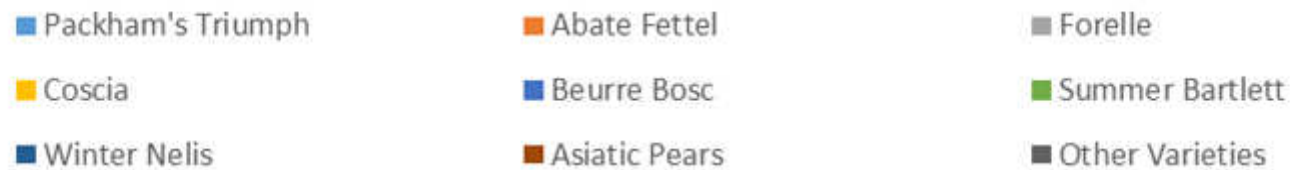
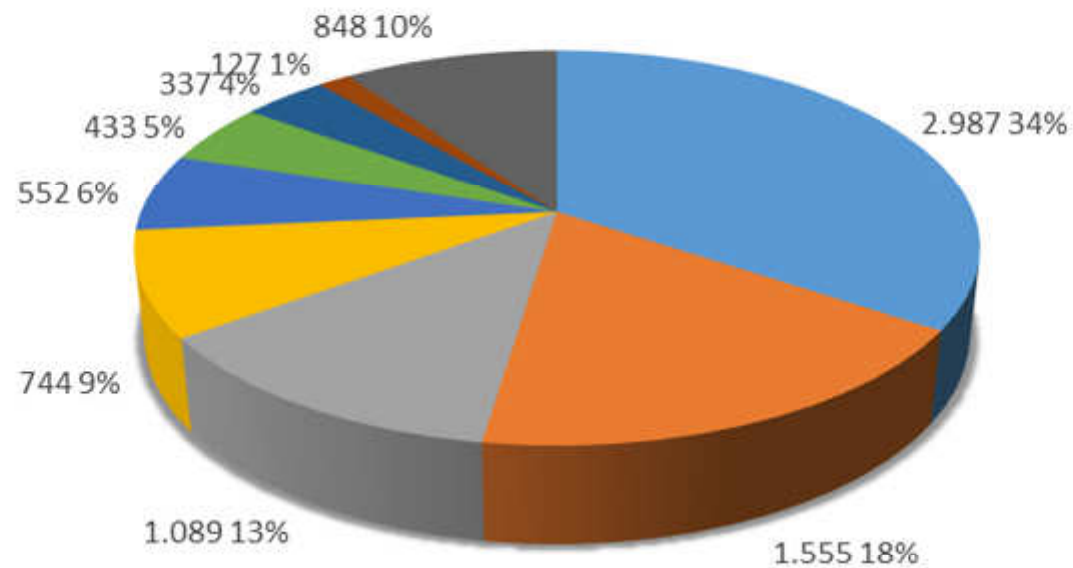
Source: Odepa-Ciren

Evolution of Pears Area in Chile

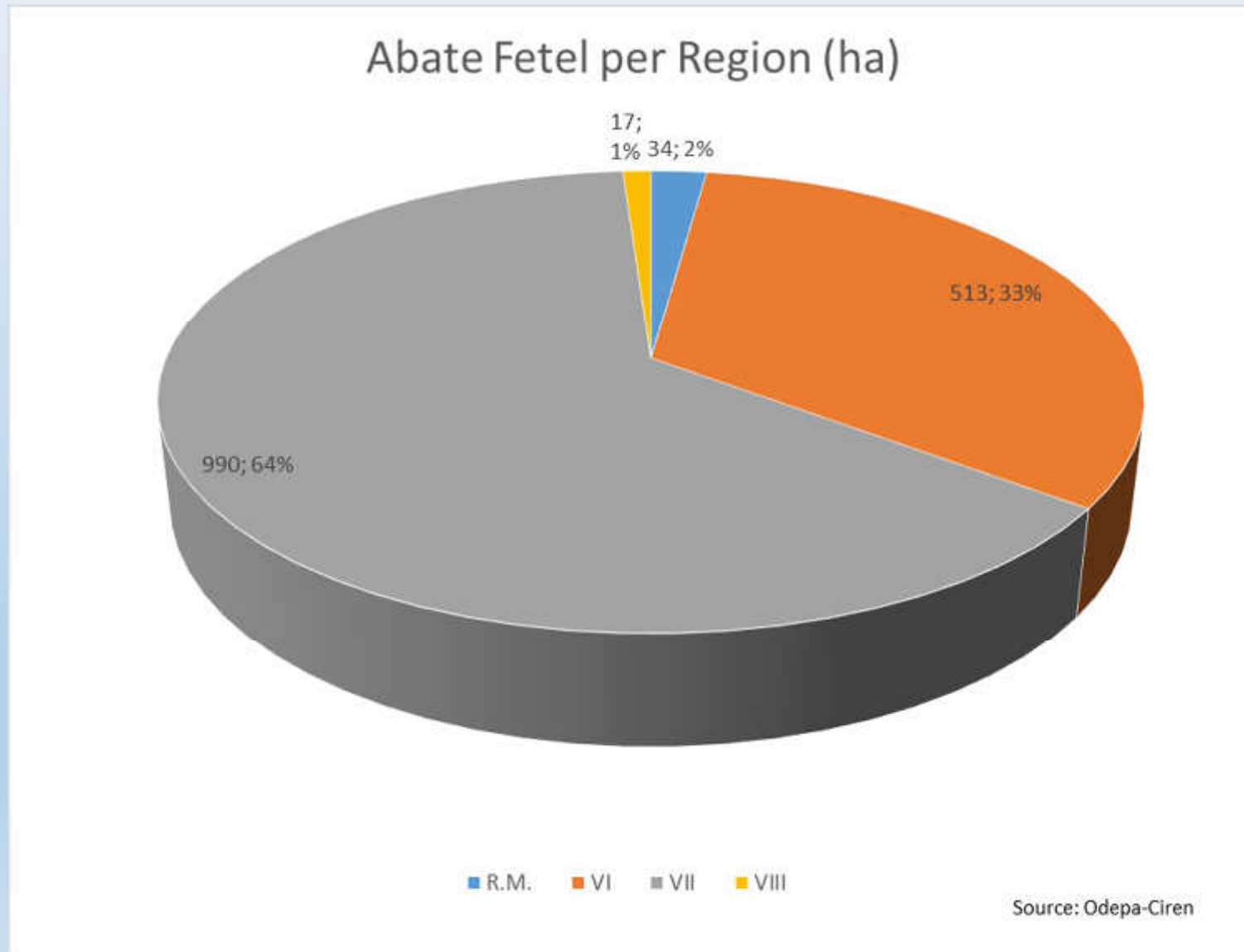


Pears Area per Variety

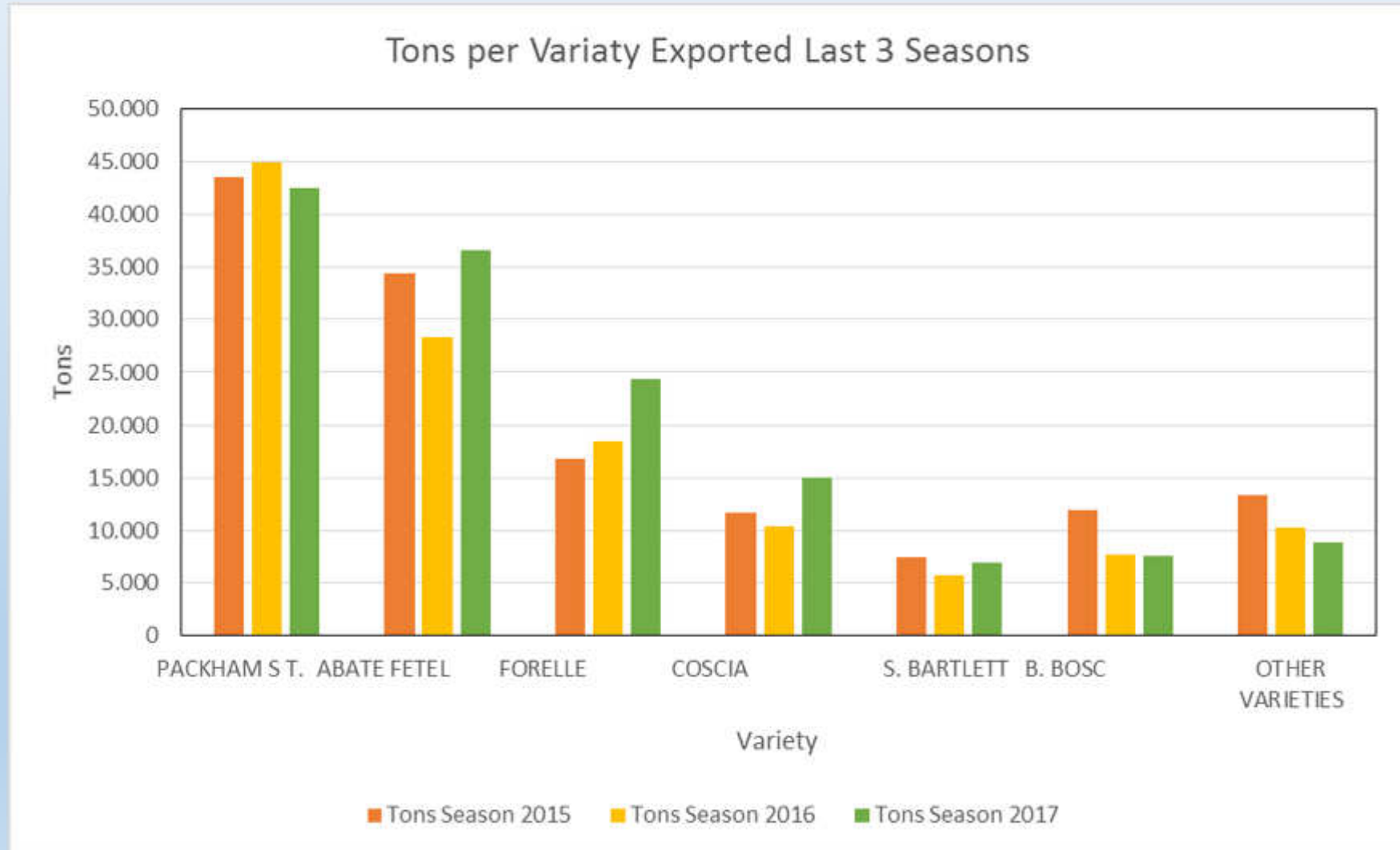
Distribution per Variety (ha-%)



Distribution of Abate Fetel per Region



Volume Total Tons Last 3 Seasons



Abate Fetel Development in Chile

- 10-12 years ago Returns of Abate Fetel US\$0,75-1,0/kg. After that prices went down.
- Last season returns have improved, but aren't enough. US\$0,28-0,40/kg

Grafting on low density orchards (5 x 3 m)



Grafting on Vigorous Rootstocks (Pyrus Calleryana)



- Low density, fruit of poor quality and low yield (boxes/ha) exported. Rechange of Orchards.



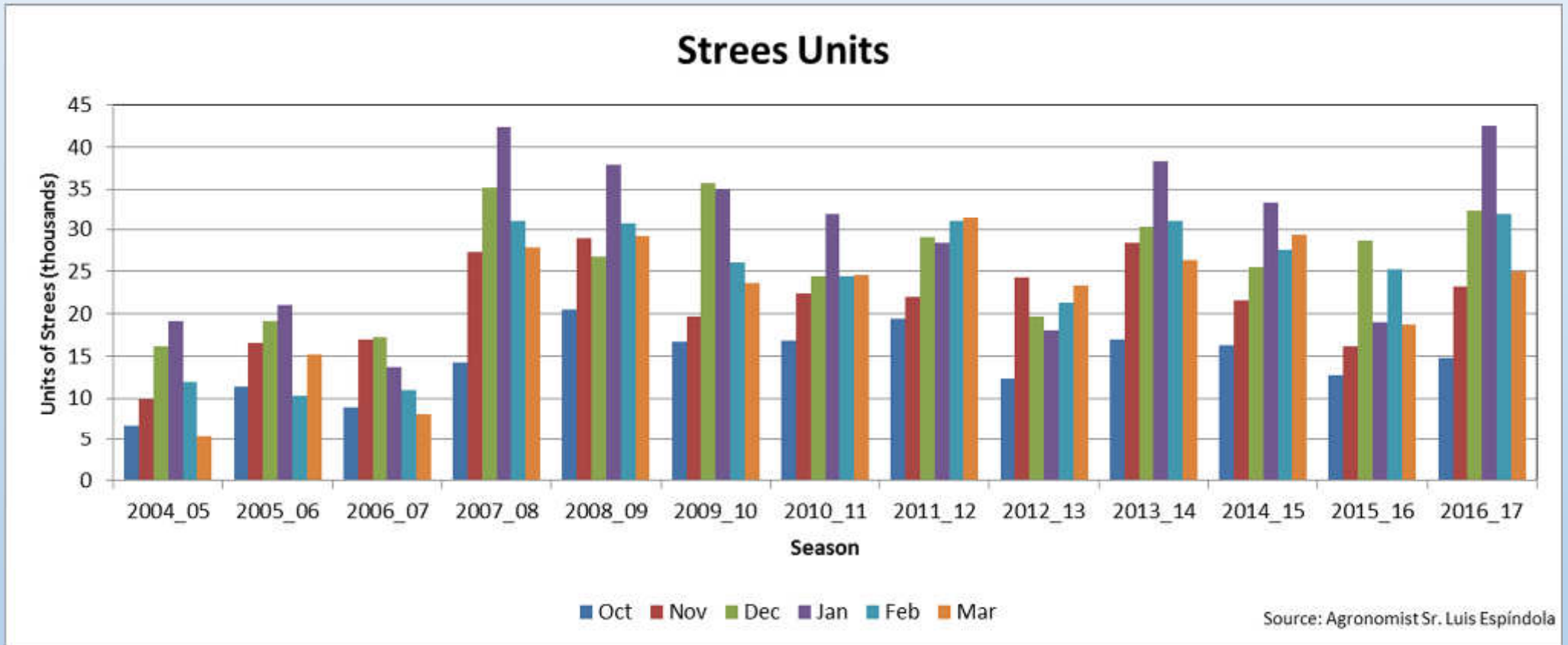
Changing Climate in last seasons (Frosts)

Frost < 0°C									
	AUGUST			SEPTEMBER			OCTOBER		
	Num.	Hrs bellow zero	Min T° (°C)	Num.	Hrs bellow zero	Min T° (°C)	Num.	Hrs bellow zero	Min T° (°C)
2010_11		3	-0,7		1	-0,1			
		9	-4,4						
		1	-0,6						
		7	-1,6						
		1	-0,1						
		3	-1,3						
		7	-1,9		1				
2011_12		5	-1,4						
		7	-2,4						
		9	-2,9						
		5	-1,9						
		2	-1						
		6	-1,4						
2012_13		1	1		2	-0,2			
		9	-4						
		4	-1,3						
2013_14		1	-0,1		6	-2,3			
		1	-0,1		1	-0,7			
		2	-0,3		4	-1,1			
		2	1,2		3	-1,6			
		9	-2,5		4	-1,6			
		6	-2,1		2	-0,7			
		1	-0,5						
		2	-0,4						
		3	-0,7						
		5	-1,5						
		6	-2,7						
2014_15		3	-0,5		1	-0,1			
		2	-0,4						
2015_16	1	3	-0,5						
2016_17		2	-1		2	-1,5			
					5	-1,6			
					1	-0,8			
					2	-0,6			
2017_18		4	-1,3		1	-0,1			
		3	-0,7						

Frost Damage Season 2013-2014



Changing Climate in last seasons (Summer Stress, high t°).



- Recharge of Orchards



Far Markets (Higher cost)

Productive Cost Estructure Abate Fetel

	A.Fetel/Sydo 4 x 1,5 m	A.Fetel/P.Callery 4 x 2 m
Area (has)	14,38	18,98
Total Kg/ha	54.211	49.770
Kg Procces/ha	51.419	47.968
% Packing house	94,9%	96,4%
% Orchard Discard	5,2%	3,6%
Kg Packed/ha	41.486	40.746
% Packaged	80,7%	84,9%
% Pack. from Orchard	76,5%	81,9%
Boxes (18 Kg)/ha	2.305	2.264
Cost US\$/ha	15.259	14.587
Cost Kg Produced	0,28	0,29
Cost Kg Packaged	0,37	0,36

Cost Comercial Fruit	-\$ 1.489,87	-\$ 1.083,30
Profitability/ha	-\$ 975,60	-\$ 178,67

JH/ha	150,18	140,30
Cost US\$/JH	40,26	45,27
Cost US\$/hr	5,03	5,66

Packing House and Commercialization

Costs and Incomes/box 18 Kg	USD
FOB Season 2016-2017	\$ 18,00
Comisión (8,88%)	\$ 1,60
Packing Materials	\$ 3,31
Freight cost	\$ 0,76
Packing Process	\$ 2,75
Cold Storage	\$ 1,35
Materials Adm.	\$ 0,26
Use Harvest Material	\$ 0,08
Shipping Administration	\$ 0,20
Inspection SAG	\$ 0,30
Quality control	\$ 0,37
Asoex	\$ 0,17
(Total Mat + Service)	\$ 9,56
Total Cost/Kg	\$ 0,53
Net Result/Box	\$ 6,84
Net Result/Kg	\$ 0,38



Species Higher Profitability (Cherries, Blueberries)



Species Higher Profitability (Cherries, Blueberries)



Species with Less Use of Labor (Walnut, Hazelnut).





HOW WE BUILD THE ORCHARD AND FRUIT

Planting Density and Pollinator

Distances and density of plants (from 666-5.000 trees/ha)

- 5 x 3 m. (Grafted Orchards and Old Orchards). Every time less frequent.
- 4 x 2 m. (P. Calleryana and mainly on BA29 rootstock)
- 4 x 1,5 m. (Sydo, Quince A/interstem Old home).
- 4 x 0,5 m., 3,5 x 0,8 m. (Sydo) last plantings.

Pollinator (8-11%)

- Coscia, Forelle, D'anjou, Packham's T.

Orchard Formation (First years bending branches)



MEDIUM DENSITY (1.666 trees/ha)



HIGH DENSITY (3.571 trees/ha)



HIGH DENSITY (5.000 trees/ha)





Training System

- Central Leader. Most Used.
- Solaxe
- Bibaum o two leaders
- “V” System or V-Trellis

Central Leader (3,8 x 1,2 m)



Solaxe (4 x 2 m; Rootstock Pyrus Calleryana)



Bibaum o two leaders (4 x 1,5 m)



“V” System (4 x 0,5 m)



Use of Growth Regulators

- Promalin on Blossom Period: 0,8-1,0 L/ha divided twice (50% flowering and Full Bloom). Improve Fruit Set.
- Regalis on Petal Fall: 1,0-1,2 kg/ha, on Vigorous Rootstocks like BA29 and Pirus Calleryana. More fruit set, less drop.

Prunning

- Remove Complete Branches (more than 1/3 thickness).
- Take out Strong Lateral Branches.
- Cut back on vegetative growth branches on the bottom (3 or 4 vegetative buds). Dominance and vigor.
- Cut and reduce long and thin branches whith too much fruit. Top of the tree. No estimate annual growth on top.
- Cut and reduce Productive Structures Overloaded.
- Remove Suckers.
- Leave only growth of medium vigor to replace fruit wood.

No Pruning



Pruning



Orchards with Soft Pruning less Fruit Set



Strong Pruning more fruit Set



More Fruit Set



Thinning

Quemical Thinning

- Cylex o Exilis at 12 L/ha, whith 12 mm fruit diameter.

Just on low vigor rootstocks and on Normal Springs like this one (No Frost and little rain on blossom period).

Hand Thinning (after natural fruit drop period)

- 1 fruit per fruit center. Mainly.
- 2 fruits with space and good growth and thickness of the branch.

Quemical and Hand Thinning



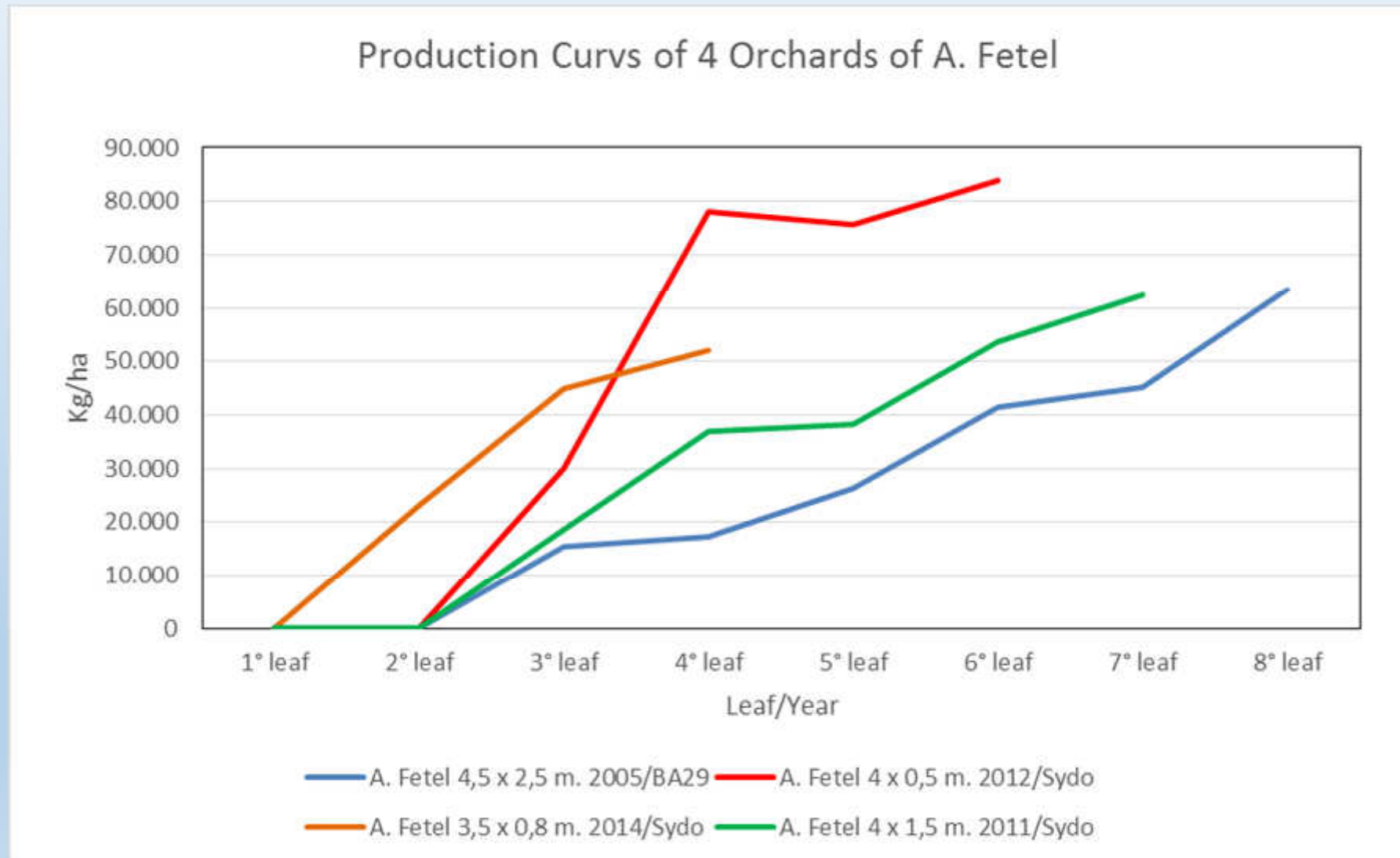
Fruit Distribution on the Branch



Fruit Distribution

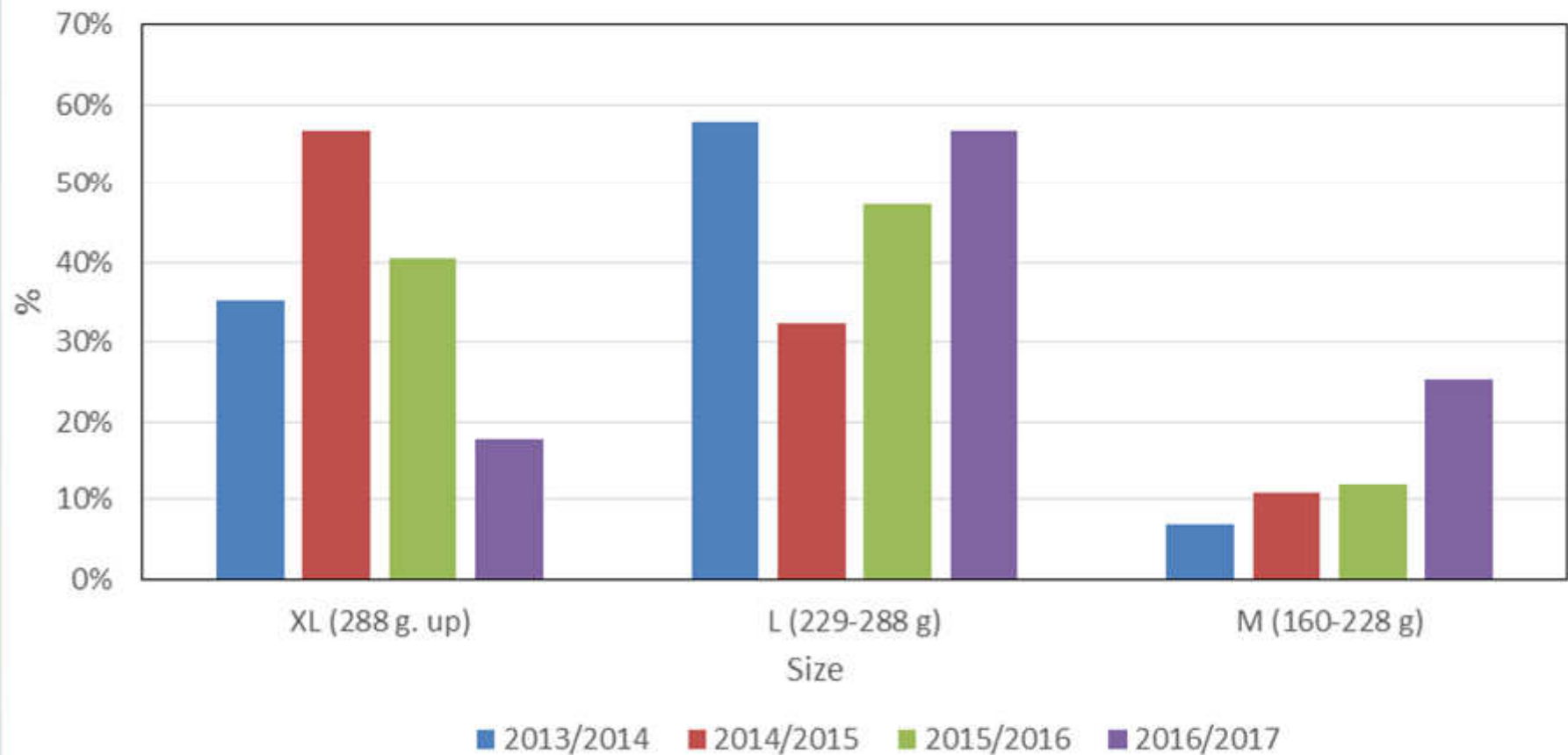


Production Comparison of 4 orchards of Abate Fetel

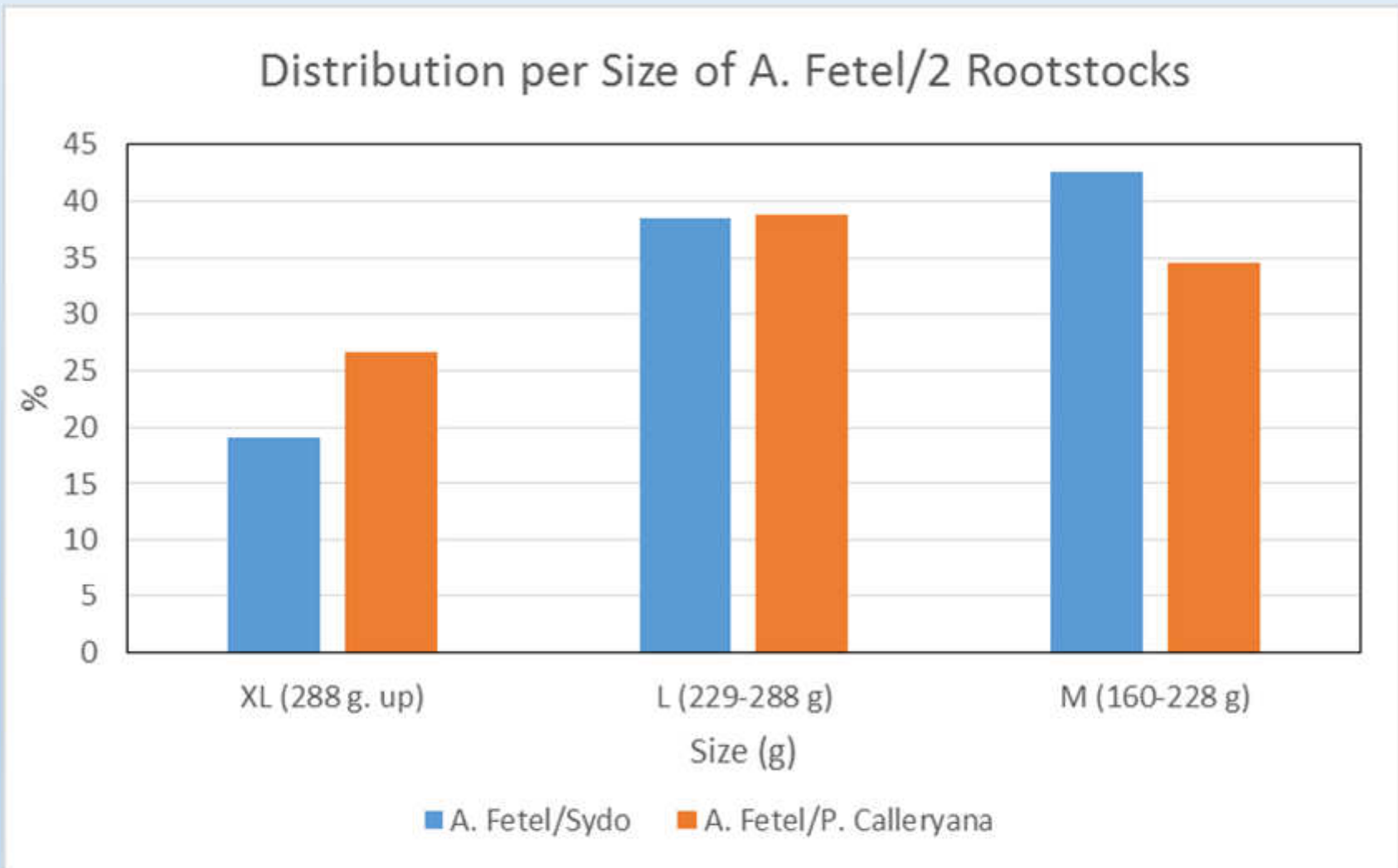


Size Distribution

% Size Distribution of A. Fetel 4 x 1,5 m. 2011/Sydo



Size Distribution



Harvest

Traditional Harvest (Chilean way)

- Use of Ladder and Picking Bags. (wounds)

Direct Harvest (Italian Way)

- Spreafico in Chile (No Ladder and No Picking Bags)

Harvest Maturity Parameters

- Firmness: Average 12-14 lbs (5,5-6,4 kg). Minimum 11 lbs (5,0 kg)
- Change Background color (Less used).

Harvest



Harvest



Harvest



Harvest (Spreafico)



Harvest (Spreafico)



Fruit on “V” System



Fruit on “Central Lider”



Harvest Defects



Damage at Harvest season 2013-2014



Frost Control System



CONCLUSIONS

- Pears in Chile have High Productive Potential.
- Chile has Phytosanitary health. No Complex Diseases (like Fireblight)
- Production of good quality fruit.
- There is to Increase Boxes/ha Packed and Produce larger fruit (XL, L).
- 60 Ton/ha and 75% minimum packed from the orchard.
- Improve Harvest (care of fruit to increase % exported).
- We have to develop other new market including local market.
- There is not much interest of Increase Area of Abate Fetel because:
 - Single-market Variety (just Europe, something Russia and North of Africa.
 - Competition in profitability with other species (cherries, blueberries, some apple varieties)



Grazie mille per la tua attenzione

Thank you for your attention