

Sept / Oct 2014

Technical Tour to Poland, Germany, South Tyrol, Switzerland



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2/13/2015

Content:

1. Introduction
 2. Objective of the tour
 3. Germany - Bodensee
 4. Switzerland
 5. South Tyrol
 6. Poland
 7. Take home lessons and implications for the South African industry
- Appendices 1 – Contacts list
- Appendices 2 – Tour itinerary

1. Introduction and objectives of the tour

- Peter Dall coordinated and put together a technical tour of Europe and Eastern Europe with the primary objective of visiting apple orchards. The group of 7 was made up of the following people:
 - Peter Dall – Peter Dall Consultancy (tour leader)
 - Andries Erwee – Grower in Grabouw & Chairman of Kromco
 - Pieter de Wet – Grower / Packer in Vyeboom / Villiersdorp region
 - Christo de Wet – Grower in Vyeboom / Villiersdorp region
 - Larry Whitfield – Grower / Packer in Ceres region
 - Edward Makandwa – Manager of Claremont Estate in Zimbabwe
 - Hugh Campbell – HORTGRO Science
- A very big thanks to Peter for arranging a great tour and another big thanks to my tour colleagues for making it such a memorable experience. It was a privilege to share and learn from you all.



2. Objective of the visit:

- Visit orchards in different regions of Europe to review key issues of apple production which include the following:
 - Rootstocks
 - Training systems
 - Mechanisation
 - The use of shade / hail netting
 - Explore new varieties
 - Labour utilisation
- Visit research stations in the different regions and get an understanding of the type of support provided and the key issues being researched. Where possible identify possible research collaborations.
- Get an understanding of the technical support that is provided to growers.
- Poland is the 4th largest producer of apples in the world. South Africans have had very little exposure to this country. This tour provides the opportunity to get a better understanding of the production potential of this country.

3. Germany – Bodensee region.



Typical orchard in Bodensee area – note fruit size

- Summary of apple production in Bodensee region:

Rainfall - annual	800-1,000mm (Summer rain)
Annual production of apples	972 405 tons
Average farm size	20 – 40 ha Weekend Farmers 3-4ha
Trends in farm sizes	• Consolidation of farming units taking place • Maximum farm size seen at 50ha (attention to detail)
Average tree age	• 8-10 years
Orchard replacement	• Orchard replacement @ 15 years
Marketing system	• Cooperative system – farms generally too small for individual packaging. • 80% of production marketed through coops. • EU subsidies require collective packing / marketing • Packhouse 100,000 tons • 800 different packs • Programmes – buy in from N & S Hem to fill programmes • “Stupid city people” ▪ German Supermarket standards (1/3 of MRL) defies MRL principles and IPM.
Target market of Coop	• Handle 100,000 tons of apples • Local – Germany • Europe

	• Middle East • Programmes with supermarkets. • Currently over 800 different packaging types
Subsidies	• Packhouses – to be eligible need to be collective • Capital projects – new plantings / nets / machinery like platforms. • Required to initiate natural production / IPM • Subsidy capped at 4.5% of turnover of coop
Cultivars planting trend	• Elstar • Gala • Kanzi • Braeburn • Fuji
Rootstock	• All M9 (for the last 20 years) • Research on other rootstocks but growers reticent to move away from M9
Orchard design	• Planting distance: 3,2 X 1 = 3,125 trees / ha • Trend towards using nets for hail ○ V system that can open and close ○ Close nets after pollination ○ Open (cautiously) for colour if no hail predicted.
Yield	• 50-60 t/ha – Braeburn • 50 t/ha – Gala • 80 t/ha – GD • 85% on tree pack out (EU Class 1) • Fruit size @ 80mm + • Excellent fruit finish • Young tree development: ○ Y2 – 25 t/ha ○ Y3 – 40 t/ha ○ Y4 – 50 t/ha ○ Y5 – 60 t/ha ○ Y6 – 60 t/ha
Cultural practices	• Spindle tree • Soft tree – good fruit distribution ○ Top of trees very soft – allows light to penetrate between trees. • Tree height @ 100 – 120% of row width • Thinning - High attention to detail ○ Manage hormonal balance of tree ○ 20 point plan to thinning (check list) ○ BA / ATS ○ No NAA past 20 yrs ○ 1-2 hand thinnings ○ Thinning cost €1-2,000 / ha ○ Limited use of mechanical pruning – Darwin • Attention to detail • Growth of trees well managed – rootstock & Regalis

Pest and disease control	• Scab – 25 spays / season • Codling Moth – Mating disruption + 1st generation spray (Alter Call) • Major issue with spray drift – air pollution / neighbours
Mechanisation	• Crop Sprayers – tower sprayers ◦ Spraying speed @ 8 – 10 km /hr • Diesel cost @ €13-39 / l • Petrol cost @ €15.60 / l • Picking platforms used extensively ◦ Orchard floor management ensures a smooth surface which is a requirement for platforms and high spraying speeds • Mechanical Thinning done with Darwin - limited
Labour	• €6-7 / hour (Polish / Eastern European) • Excellent attention to detail – good quality of work.
Technical support (extension)	• Extension team connected to packhouse ◦ Central technical strategy • Attended Kanzi field day with 25 – 30 growers
Nursery and nursery trees	• Soft feathered trees • Nurseries plant GD on M9 rootstock and then bud over onto variety of demand • Knipboom
Contact person	Michael Wenzel – General Manager: _____



German growers in Bodensee area getting a briefing from technical team

4. Switzerland

Just across the Bodensee into Switzerland. The morning was spent at Güttingen Research Station and in the afternoon we visited 2 growers (Peter Vonderwahl and Peter Dickenmann).



Opal® apple

- Summary of apple production in Switzerland:

Rainfall - annual	800-1,000mm (Summer rain)
Annual production of apples	227,106 t (2012)
Average farm size	• 20 – 40 ha • Peter V has 30 ha – maximum one person can manage • Weekend Farmers 3-4ha • Similar to Germany
Property value	• €1,2 million / ha virgin land
Average tree age	• 8-10 years
Orchard replacement & Establishment cost	• Orchard replacement @ 12 -15 years • Establishment + Nets @ €25 – 30,000/ha
Marketing system	• Protected market in Switzerland • Peter Vonderwahl focus on club varieties (60% of plantings) • 2 retailers market 70 - 80% Swiss production of apples
Cultivars	• Saw a large selection of new cultivars at research station: ○ Opal® GD X Topaz cross (CZ) ○ Karneval® VANDA X CRIPPS PINK (CZ) ○ Junani (red / orange) ○ Novembra (Blush Pear) ○ Natura – scab resistant

	○ Galiwa ○ Lunar ○ Clone B GD (no russet) ○ Golden Parsi ○ Golden Kiss ○ ACM 385 ○
Rootstock	• All M9
Orchard design	• Planting distance: 3,2 X 1 = 3,125 trees / ha • Trend towards using nets for hail ○ V system that can open and close ○ Close nets after pollination ○ Open (cautiously) for colour if no hail predicted.
Yield	• 40 - 50 t/ha – Braeburn • 50 t/ha – Gala • 85% on tree pack out (EU Class 1) • Fruit size @ 80mm + • Good fruit finish • Young tree development: ○ Y2 – 10 t/ha ○ Y3 – 30 t/ha ○ Y4 – 35 - 40 t/ha ○ Y5 – 60 t/ha ○ Y6 – 60 t/ha
Cultural practices	• Spindle tree • Very similar to Germany • Harvesting ○ Generally use some form of platform ○ Generally do not use picking bags on the platform and ground picking' ▪ Appears less productive on ground and higher probability of bruising ○ €0.06/kg harvesting costs ▪ R70 / bin or R186 / ton
Pest and disease control	• Fruit fly – <i>Drosophila Suzuki</i> present for 2 years ○ Huge impact on stone fruit ○ Past season some plum growers had to stop picking because of damage ○ Control – bait traps & sanitation • Pear Psylla controlled by EPN's ○ Vector for Fire Blight
Mechanisation	• Picking platforms used extensively ○ Orchard floor management ensures a smooth surface which is a requirement for platforms and high spraying speeds • Mechanical pruning – 25% saving on labour ○ Prune @ budbreak with hand follow-up

Labour	• €8 / hour (Polish / Eastern European) • Excellent attention to detail – good quality of work.
Technical support (extension)	• Technical consultants
Nursery and nursery trees	• Soft feathered trees • Nurseries plant GD on M9 rootstock and then bud over onto variety of demand • Knipboom
Contact person	• Michael Weber– MD: Vari Com mweber@varicom.ch +41 (0) 58 460 61 96 • Grower Mr Dickermann www.dickemann-ag.ch
Göttingen Research Station	• Established in 1970 • 5 ha • Focus: Research / Consulting / Teaching – Agricultural School • Well run • Trial blocks for phase 2 & 3 cultivar evaluation • Contact: Patrick Stadler www.arenenberg.ch • Pome fruit breeder: Dr Markus Kellerhals, Agroscope www.agroscope.ch



Harvesting on Peter Vonderwahl farm

5. South Tyrol (Italy)

- Summary of apple production in South Tyrol region:

Climate	• 550mm (Summer rain) • Altitude 220m a.s.l in valley to 1,000m a.s.l. in hills and mountain area. • 300 days of sunlight / year • Good deep soils • Frost and hail are risks that need to be managed • Hail intensity has increased • Ideal climate for growing apples
Hectares planted in South Tyrol	• APPLES TOTAL HA = 18,325Ha ○ GD – 6,700 ha (36,7%) ○ Gala – 3,142 ha ○ Red Del – 2,791 ha ○ Fuji – 1,385 ha ○ G Smith – 1,352 ○ Braeburn – 1,136 ha • New Apple Plantings: ○ Gala – 33% ○ G Smith – 13% ○ Red Del – 12% ○ Golden Del – 11% ○ Fuji – 8,8% ○ Pink Lady – 6,3% • WINE – 5,000 ha ○ 70% on hillsides / 30% in plains ▪ 1993 @ 70% red ▪ 2009 @ 48% red • Strawberries – 170 ha • Cherries – 100 ha • Apricots – 80ha
Annual production of apples in South Tyrol	• 1 million tons in South Tyrol (50% of Italy production) • 2 million tons in Italy • Average of 55 t/ha • Region has long tradition of growing apples • Many generations involved in apple production
Average farm size & number of growers	• 2-3 ha • 2-3 growers that have > 80 – 100 ha • 8,000 growers
Property value	• €70 / m² or €700,000 / ha • Properties can no longer be split within the family so the eldest son generally inherits.
Average orchard age	• Average orchard age: 25 years • Replacement @ 4% pa
Organisation	• There are basically 2 major <u>marketing</u> groupings: • VOG (operates in the lower valley)

structure of South Tyrol	• <u>Packing</u> is done cooperatively under the auspices of one of the marketing groups listed above. • <u>Extension</u> is provided by Beratungsring – private company • <u>Research</u> conducted at Leimburgh and focuses on the regional research priorities • <u>Cultivar evaluation</u> is done by a private organisation: SK Vanely Innovation owned by VOG & VIP for the growers of South TyrolVIP (operates on Northern region Vinschgau region)
VOG (CEO: Gerhard Dichgans)	• Founded in 1945 • 10,800 ha • 610,000 tons • 5,000 growers • 16 cooperatives grouped into 4 pools • Organic production marketed through Bio Südtirol ○ 3% organic • Marketing brands: ○ Südtirol / Marlene ○ Club apples: Pink Lady; Rubens, Kanzi, Modi, Jazz • Varieties: ○ Golden Delicious – 27% ○ Gala – 20% ○ Braeburn - 12% ○ Red Del – 11% ○ G Smith – 9% ○ Fuji – 9% ○ Pink Lady – 5% ○ Kanzi, Jazz – 1% each ○ Modi, Rubens – 0,2% each • Market: ○ 38% Italy (large fruit market) ○ 25% Germany (large fruit market) ○ 5% UK ○ 40% retail and 60% wholesale market ○ Expanding into Malaysia / North Africa / USA / India
VIP (contact: Dr Wolfgang Graiss)	• Established 1950 • Higher region 500 – 1,100m a.s.l. • Good colour – cold nights / warm days • 1,750 growers • 358,738 tons (2013) • 6 cooperatives packing apples 1 doing berries • Structure of VIP: • President is a grower • Board made up of President of Cooperatives • All sales done through VIP (since 2007) • Varieties grown: • GD – 70% (215,043 tons) • RD – 15% (40,314 tons) • Gala – 8% (19,717 tons)

	• GD is highly suited to this region – “mountain Golden” • Pick GD in 18 days • Objective to reduce GD to 60% with 40% red varieties • Markets: • 50% Italy • 12% Germany • 33% other markets ▪ N Europe – 20% ▪ S Europe – 19% ▪ E Europe – 8% ▪ W Europe – 3% • IPM Brand: “Agrios”. Has a cost benefit
Packaging	• Packhouses highly mechanised • Access to EU subsidies • Scald control – Smartfresh and DCA but have a number of markets that do not accept Smartfresh (Scandinavian countries)
Laimburg Research Centre for Agricultural and Forestry (Contact: Dr Walter Guerra)	• Funded by Province • 190 people working at research station • 90 involved in apple / wine • Own and farm 150 ha of apples (largest apple producer by far) & 45 ha of wine grapes. Church and Govnt biggest growers • Budget €14million • 50% of budget from sale of fruit/wine/services. ▪ Soil analysis lab – 6,000 samples pa • Apple group – 25 people. • Research Groups: ▪ Pome & Breeding (Dr Guerra) ▪ Post Harvest (Dr Zanella – DCA) ▪ Organic Group • 50,000 tons organic apples in EU • 1,500 ha ▪ Physiology • Fruit thinning • Pruning etc ▪ Fertilisation & Irrigation • Adequate water ▪ Plant Protection • Scab • Powdery Mildew • Alternaria • Codling Moth ○ 70% MD ▪ Fruitfly: Medfly / Dros Suzuki ▪ Fireblight – 2003 first outbreak on apples • Cultivar evaluation: • Looking for 5 types of apples 1. Yellow (in addition to GD) - Shinano Gold vs Opal - Opal has a more intense flavour Shinano has blind

	wood and production challenge and needs 3-4 picks – similar to Braeburn - Dalitron 2. Small size snack apples 3. Scab resistant 4. Warm climate with colour 5. Clear red flesh (50 being tested) - creating wow factor with consumers - continuous buying - need to push in order to keep up with competition • Very impressive evaluation programme ○ 36 different Gala mutations ▪ All about colour ▪ Recommend Simmons & De Franceschi • 95% true to type • Good overall colour • Good fruit size ▪ New generation of dark red 100% colour • Shinco Red or Devil Gala ▪ Delicia – fully yellow Gala • Breeding programme: ○ Started in 1997
Technical support (extension)	• An independent advisory group “South Tyrolean Extension Service for Fruit and Wine growing” provides comprehensive extension support. • Board of 12 growers elected for 4 years representing 7 growing areas. Founded in 1957 – “growers wanted and independent objective source of information that was both up-to-date and neutral” • Website: www.beratungsfing.org • Funded by growers @ €200 / ha and government of South Tyrol funding 25% of total cost of extension service. • Services include: interpretation of soil and foliar analysis and fertiliser recommendations, aid with sprayer calibrations, planning of new orchards, orchard management. • Communications vehicles: 100 local seminars, conferences, workshops, newsletters, printed field guides, email warnings on apple scab, web-based information on pesticides, irrigation management, fireblight infection risks and weather.
Cultivar evaluation (Markus Bradlwarter –Executive Director of Variety Innovation Consortium South Tyrol)	• Separate company funded by VOG and VIP – “Variety Innovation Consortium South Tyrol” sole focus is to evaluate varieties that are suitable for the region. • Funding 2/3 by VOG and 1/3 by VIP. • Markus Bradlwarter works very closely with Dr Walter Geurra from Laimburg Research Centre • VOG & VIP will have a major say in what to plant as they are involved in the packaging, storing and marketing of the fruit. • On average, South Tyrolean industry introduces a new variety about every 6 years

Rootstock	• All M9 (for the last 20 years) • Research on other rootstocks but growers reticent to move away from M9
Orchard design	• Planting distance: 3, X 1 = 3,330 trees / ha • Trend towards using nets for hail – 30% of area ○ Black hail net by law (white nets too visually obtrusive) ○ V system that can open and close ○ Close nets after pollination ○ Open (cautiously) for colour if no hail predicted.
Yield	• 50-60 t/ha – Braeburn • 50 t/ha – Gala • 80 t/ha – GD • 85% on tree pack out (EU Class 1) • Fruit size @ 80mm + • Excellent fruit finish
Cultural practices	• Slender Spindle tree • Soft tree – good fruit distribution ○ Top of trees very soft – allows light to penetrate between trees. • Tree height @ 100 – 120% of row width
Pest and disease control	• Scab – 25 spays / season • Codling Moth – Mating disruption + 1st generation spray (Alter Call) • Major issue with spray drift – air pollution / neighbours
Mechanisation	• Crop Sprayers – tower sprayers ○ Spraying speed @ 8 – 10 km /hr • Picking platforms used extensively ○ Orchard floor management ensures a smooth surface which is a requirement for platforms and high spraying speeds •
Labour	• €6-7 / hour (Polish / Eastern European) • Excellent attention to detail – good quality of work.
Nursery and nursery trees	• Soft feathered trees – 7 and greater feathers / tree • Average tree height of nursery trees in the order of 1,5 metre. • Consortium of nurseries KSB produce certified trees of high calibre • Focus is on tree diameter and number of feathers • Nurseries plant GD on M9 rootstock and then bud over onto variety of demand



Year 2 GD trees. Peter showing year 1 growth Clean, large GD!!



Fruiting wall – South Tyrol Upper Valley



Markus Bradlwarter – new variety evaluation

6. Poland

Population / size	• 38 million people • Member of EU but not a member of the Eurozone – have their own currency • Size of Poland: 313,000km² • 60% of land – poor soils • Skierniewice (population of 50,000) seen as the capital of the main horticultural region of Poland
Climate	• 500-600mm (Summer rain) • Mean yearly temperature 6.0 – 8.5°C • Warmest month – July with temp > 30 °C • Coldest month – January with Temp <30 °C • Freeze out in 2007 – industry lost 50% of production to frost • In the 1987 freeze, 33% of trees lost to freeze damage – this catalysed the shift to M9 rootstock.
Hectares planted in Poland & Varieties	• APPLES TOTAL HA = 100,000 ha ○ 30% farmed intensively ○ Speculation by some Polish Growers that >150,000 ha of apples planted • Main cultivars (as per nursery information) 1. Idared 2. Jonagold sports 3. Rubinstar Ligol Szampion (Czech variety) Golden Delicious (Rheindeers)

	Gala ○ 20% of production from Polish bred varieties ▪ Alwa, Logil, Ligol Red Spur, Logoline
Annual production of fruit in Poland	• Apples – 3 million tons ○ More than 2X any other EU country ○ Potential to grow to 4 million tons very quickly • Pears – 78,000t • Plums – 108,000t • Sour cherries – 186,000t • Sweet cherries – 51,000t • Currants – 199,000t • Strawberries – 166,000t • Raspberries – 120,000
Average farm size	• Average farm size < 10ha • Mostly < 10ha • Few farms have 30 – 40 ha • Perspective of Mr Pietrzycki (40ha): ○ < 10ha – grower would need an additional job ○ 10ha – Breakeven ○ 20ha ideal farm size – can live well
Property value	• €25,000 / ha – unplanted land • €80,000 / ha – fully planted to apples • Properties can no longer be split within the family so the eldest son generally inherits.
Organisation structure of Poland	• in order to access EU and Polish subsidies it is necessary to organise into cooperatives. Average size of coops is around 350 ha with around 30 farmers • <u>Packing</u> is therefore done cooperatively although it was very evident that bigger grower also had their own facilities that were often integrated into the coop. Larger growers seem to have rallied smaller growers in the region together in order to access EU funds and build a packhouse but are often very much in control as the president or vice president of the coop. • <u>Extension</u> – no formal extension service seems to exist. Growers access private consultants • <u>Research</u> conducted at Research Institute of Horticulture in Skierniewiece.
Packing / marketing	• Brand new packhouses with extensive CA facilities (DCA) litter the countryside. Each packhouse that we visited appeared to be totally over-specified. Huge paved areas surrounded the packhouse. Stacks of new plastic bins stood un-used at the tail end of the season. • Subsidy @ 75% of total cost from EU and Poland govt. • Highly sophisticated packing lines and fully automated systems have been installed, Marketing: • 50% processed • 70 – 90% sold to Russia • 3rd difficult marketing year in a row – one projection is that 30% of growers will not make it

	• 2013/14 sold @ €0.25 / kg ◦ Production cost @€0.20 / kg
Rootstock	• All M9 (for the last 20 years). “Why fix something that is not broken” • Some Polish bred Apple Rootstocks (winter chill resistant): ◦ P14 (M9), P16, P22, P59 (very dwarf), P60 (> M9), P66, P67.
Orchard design	• Planting distance: 3, X 1 = 3,330 trees / ha • Trend towards using nets for hail ◦ Black hail net by law (white nets too visually obtrusive) ◦ V system that can open and close ◦ Close nets after pollination ◦ Open (cautiously) for colour if no hail predicted.
Establishment cost	• Establishment cost: €50 – 60,000 / ha • Hail netting: €15,000 / ha • Trees @ €4 – 5,5 each
Yield	• Average of 55 t/ha on top third • Fruit size @ 75mm + • Fruit finish marginal
Cultural practices	• Slender Spindle tree • Tree height @ 100 – 120% of row width
Mechanisation	• Crop Sprayers – tower sprayers ◦ Spraying speed @ 6 – 10 km /hr ◦ 1 spray rig / 15 ha • Picking platforms used extensively ◦ Orchard floor management ensures a smooth surface which is a requirement for platforms and high spraying speeds ◦ Platforms increases the use of woman for harvesting ◦ Larger farms use 6-8 platforms
Labour	• Labour from Lithuania and countries east of Poland • Paid less than in other regions visited: €5.50/ Hour (not confirmed)
Technical support (extension)	• Not clear in terms of extension system provided by state or cooperatives. • Growers indicated that they contract expertise in on a consultancy basis. European consultants from Holland, Germany etc are used.
Nursery and nursery trees: Nowakowscy Nursery	• Largest nursery in Poland – produces 1 million trees / year • 2 million rootstocks produced ◦ 60% of apples rooted on M9. ◦ Rest: M26, M7, P14. • Mostly a speculation market (90%) with few pre-orders • Sales dependent on subsidies in EU and Ukraine! • Demand for different varieties reported above in
Research station: Research Institute of Horticulture (Skierniewice) (Contact: Prof	• Research funding: ◦ 40% Government ◦ 60% other funds • 2 Experimental farms servicing research centre • Breeding programme: ◦ Plant Breeders Rights recognised ◦ 100 cultivars released from the research station. ◦ Apples:

Edward Zurawicz)	▪ Alwa, Ligol (large red), Ligol Redspur, Ligol Red, Ligol Spur, Ligolina (red, disease resistant), Gold Milenium (pink blush), Melfree, Free Redstar. ○ Apple Rootstocks (winter chill resistant): ▪ P14 (M9), P16, P22, P59 (very dwarf), P60 (> M9), P66, P67.
University training	• 4 universities in Poland teach horticulture
Grower 1: Mr Pietrzychki (President) – TWÓJ OWOC Grower Coop	Farm: • Young progressive grower • 40ha farm – maximum he can manage effectively • 2,500 tons @ 62,5 t/ha average. GD @ 80 t/ha ○ Y2 – 0 t/ha ○ Y3 – 30 t/ha • Fruit size > 75mm • 33% under net. Poor colour on reds under net • All irrigated (drip) + frost control • Has own nursery – produces 90% of trees • Rootstock M9 • 3 X 1 planting distance • Tree height: 3m (100% of row width) • Mechanical prune 3X per season • Varieties: ○ Golden Delicious (12ha) / Gala / Jonagold sports • Workforce: 5 permanent / 50 contractors for harvest (Ukraine) ○ 150kg/hour harvesting Coop Packhouse: • 29 members / 350 ha • Market: ○ 38% Italy (large fruit market) ○ 25% Germany (large fruit market) ○ 5% UK ○ 40% retail and 60% wholesale market ○ Expanding into Malaysia / North Africa / USA / India
Grower 2: Mr Biedryzcki - Bastion Fruit	• 3rd generation farm • 35 ha apples, 6 ha pears • Apples: Jonagold, Gala, Golden Delicious • Pears: Conference • 95% on M9
Grower 3: Mr Adam Lajitjé. Vice-President of Coop / sister is president	• Cooperation: ○ 20 members ○ 350 ha – 95% apples ○ Storage capacity @ 20,000 tons (12,000t @ coop and 8,000t on members farms) ○ €13million (R200 million) invested in packing facilities and storage. ○ 75% EU subsidy • Marketing: ○ Selling fruit at < breakeven.

	○ 90% of fruit traditionally went to Russia / Kazakhstan / Eastern Europe ● Adam's farm: ○ 60 ha ○ 30 labourers / 8 permanent ○ 4 tower sprayers ▪ Sprays @ 6 km/hour ▪ Takes 2 days to spray farm ○ Replant: green bean cover crop planted and worked in. no fumigation
Grower 4: Mr Ryzard Woziak. President of Rajpol Packhouse	● Coop / packhouse ○ 130 growers – 1,400ha ● History of coop: ○ >1989 – great changes took place in Poland when borders were opened and private enterprise came in. Many (almost all) public companies went bankrupt. ○ With little help organised growers into a coop. Little capital available. ○ Post 2004 when Poland joined EU things changed. ○ Got access to EU funding for investments that had been planned and dreamt about! ○ During early 1990's small group of growers could service Warsaw and local market. ○ 2002 Rajpol was founded with 9 members ● Storage: ○ 15,000t – coop ○ 4,000t – currently being developed (built) at coop ○ 15,000t on growers farms ● Fruit profile: ○ 80% apples ● Marketing: ○ 50 – 60% sold on local market ○ 20-30% to EU / Western Europe ○ Rest to Russia ● General comments on state of apples in Poland: ○ Poland is a big apple market > 75mm ○ Because of subsidies the have grown too quickly ○ Potential is up to 4 million tons ○ The future: ▪ Average farm is too small to react to changes in demand. ▪ Will see more progressive farmers growing ▪ Greater support of marketing programmes and accessing new markets ▪ Increase attention on new varieties – sports of Red Delicious to service Asian market ▪ Russian market not seen as a low quality market. ▪ Poland will have to raise their quality standards. ▪ Processing market – 50% of production.



New cooperative packing facilities – 75% EU & Poland subsidies



: Mr Adam Lajitjé in his 2nd leaf orchard



Farm designed picking platform



Farm yard and house of large grower (50 Ha)

7. Take home lessons

Lessons learnt	Recommendation and action
1. <u>Access to markets.</u> - Poland losing their Russian market overnight highlighted the high risk associated with focusing an entire industries production on one market. - The need for a diversified spectrum of markets is critical to off-set risk.	- The industry needs to maintain their capacity in the area of market access. - Pursue developing new markets in conjunction with DAFF. - Nurture and develop relationship with government as without them new markets cannot be opened or maintained.
2. <u>Orchard design</u> - Virtually all plantings seen were high density with dwarfing rootstocks and planting densities of 3,000 trees or more per hectare. - Tree structure very simple with no strong side branches. - Trees people and machinery friendly. - All trees supported by a strong trellis system which is used for support and not just tree training. - Tree height tended to be between 100 – 120% of row width with no signs of over-shading in lower areas of the trees. - Full fruiting wall concept very evident	- Orchard design is a factor of many different variables. - SA climate is its most challenging variable for apples and one constantly needs to factor this in when one travels overseas. - However, the over-riding impression is that we are dropping behind. - Rootstocks play a greater role than we have given them credit for and in SA one has the feeling that we have not used rootstock as a tool to manage our trees as we could have. - The Orchard of the Future (OoF) programme has made progress in demonstrating new concepts along with many grower trials and innovations. Action: Expedite the collective planning process initiated by the OoF Committee to design the ideal OoF and get this planted asap. This,

	plus the additional OoF blocks that we intend to pull in must help drive the shift to new and innovative orchards that improve the bottom line.
3. <u>Rootstocks.</u> • M9 is the primary rootstock - everywhere. ◦ Vigour control, precocity, and excellent fruit size benefits are substantial. • If most of the tree orders are on one rootstock – M9, then it is much easier for nursery management and longer term planning.	• SAPO to sort out the issue around the propagation agreement of Stargrow for Geneva Rootstocks (in process) • Plant more semi-commercial blocks of M9 and CG 222 and other CG dwarfing rootstocks • SA through Rootstock Advisory Committee to decide on the most appropriate rootstock in the different categories and decide on 3 rootstocks and standardise • More growers in more regions need to plant more dwarfing rootstock so that the learning required to manage a dwarfing rootstock in SA conditions takes place.
4. <u>Nursery tree quality</u> • Say no more! • In the European climate feather trees (7 or more feathers) – soft tree, seems to be the objectives	• Technical advisors and growers have a picture of what nursery tree is required in SA. • Educate growers re what the right profile of a nursery tree should be. Use Prof K Theron to focus on nursery tree quality and all stages of the process. Start with Technical Symposium
5. <u>Nets.</u> • In areas where hail is a risk it is a no-brainer in	• Not enough is known about net structures in the SA context.

Europe. It appears as if 30% of new plantings are done under net. • All nets that we observed were able to be opened and closed very simply and quickly. • All net structures were based on the V structure to accommodate the weight of hail. The recommendation is to over-design rather than under-design • Nets were opened in winter and spring which facilitates pollination. Nets were opened straight after harvest. • Colour under nets is an issue on red and pink varieties.	Freestate growers have most experience. • Consolidate known facts re nets. This is not new technology. • Continue research trials that will provide growers with clear guidelines for growing apples under nets.
6. <u>New varieties</u> • In Poland it is very evident that the Polish production is focused on the Russian market and Eastern European market. Their lack of varieties has restricted their opportunity of moving their fruit into alternative markets. • We saw many new apple varieties – not many that really excited one. However, it is evident that we need to be at the cutting edge of new varieties as they have the potential to dramatically change your profitability. • Gala strains – there are a package of them out there. At Laimburg we saw 36 different Gala mutations. Many of them appeared to be better than what is available in South Africa. • Disease resistance (tolerance). It is evident that there is a substantial growth in disease resistant varieties that are good to eat! • In South Tyrol we witnessed an extremely well-coordinated variety evaluation programme that is	• An industry decision needs to be made relating to the future of the SA Apple breeding programme. • If the SA Apple Breeding programme is to continue then it should continue under the following conditions: ○ Focused on the development of low chill climate adapted cultivars for SA. There are some winners coming through the system now. ○ Facilities and experimental farms to be sorted out or else moved to a new model. • Evaluation of cultivars. Investigate viability of an industry based evaluation programme.

coordinated and focused on delivering new varieties that are suited to the regions that have been well evaluated by experts in the region. New varieties that are released are well supported along the supply chain – from planting to the market.	
7. <u>Mechanisation</u> • All the orchards that we visited were designed to accommodate mechanisation and platforms. • <u>Platforms</u> were being used for harvesting activities at all the operations that we visited in all countries. ○ Many farm patents observed • Orchard floor management is conducive to mechanisation. Inter-rows are level with no rocks or holes. This is important as most of the platforms are self-propelled. • <u>Tree spraying</u> and weed control can be done at higher speeds as the trees are spray-friendly and the orchard floor is speed friendly. ○ Most spray rigs observed were <u>tower sprayers</u>. • Size of tree and type of sprayer has reduced the Kw requirement of tractors and ATV's.	• The research study on platforms clearly indicated that orchard design was a key success factor that determined the effectivity of platforms. This translates into the tree design, row width, tree height and orchard floor. • The new OoF orchard must incorporate all these aspect to facilitate optimal mechanisation. • The current project on measuring spray efficiency needs to be scaled up to explore the opportunity of effectively spraying at higher speeds. • The predominate spray unit in SA is the rondegat sprayer. Quantum changes are required in the area of spray technology on farms
8. <u>Attention to detail.</u> • Given the cost and availability of labour it is evident that growers pay a lot of attention to detail. • In the Bodensee area thinning is evaluated according to the 20 point plan. • Labour costs are 6 – 8 times more expensive than SA and yet intensive orchard work still takes place.	
9. <u>Fruit quality and on-tree pack-out.</u> • Fruit size is focused on the European requirement for large fruit.	• One of the objective of the OoF is a > 90% on tree pack-out. With nets we anticipate that this is possible

• Other than in Poland the fruit finish was excellent which is a factor of climate, rootstock and nets. • On-tree pack-out is high @ > 85%	
10. <u>Extension service in S Tyrol</u> • Private / public extension service in S Tyrol provides a grower-driven service that is coordinated and supportive and seems to have created a high degree of consistency across the region. • Good integration between research station, cultivar evaluation and marketing requirement. • Many of the technical advisors are also growers.	• Within the industry there are various mechanisms to calibrate the message going out to growers via technical consultant and technical advisors in the field (IPM meetings, Fieldsmen, TAC's, Workgroups, Field days. OoF, etc). Hortgro Science has a mandate to transfer research results back to the end users. It does not have a mandate for extension. The expectation from growers is extension and the delivery is tech transfer! • A clear strategy and mandate is required from the Grower associations to address this issue.
11. <u>Regional research focused on area needs</u> • In South Tyrol the research station is based in the region (decentralised) and funded by the local province and is an independent legal entity that is entirely focused on regional research needs. • The facility is well funded – generating a large portion of own funds and is well staffed with some leading researchers.	• ARC has centralised control with a programme and cross industry focus.
12. <u>Innovation</u> • Successful fruit farming is based on doing the basics right. However, the uptake of new technologies is critical to the sustainability the business. • It is evident that the growers in the S Tyrol have adopted new technologies – new varieties, new frost	• Historically SA was a leader in a number of fields – CA, shipping, post-harvest storage, etc. Strategically we need to decide if we want to be leader, adaptors or followers of technology.

control technologies. They are the world leaders in DCA which was developed and driven by their own researchers at their local research station.	•
13. <u>Subsidies can catalyse change</u> • If well managed, subsidies provide the opportunity for a grower / industry to quickly step-up. New technologies can be adopted very quickly of subsidies are available. The evidence is clear – new orchards, new nets, new and latest machinery, new packhouses with state-of-the-art technology pack lines and CA / DCA stores. • The mere process of applying one's mind in the application process leads one to search out the latest technology. • Uncontrolled subsidies can and have led to over-capitalisation	• Land reform contributions from government are a form of subsidy! • Government does have a number of vehicles that catalyse development. DST, DTI, DAFF all have funding mechanisms that can be accessed.
14. <u>Land reform and the small holder challenge in SA</u> • The South Tyrol model poses an opportunity to SA. As quoted by Kurt Werth in the Goodfruit Grower Magazine: "It is a highly sophisticated and adaptive network involving producers, their cooperatives and associations, a research station, agricultural advisory service, and other public and private actors, all collaborating in a network of linkages that function because of the high level of understanding and cooperation amongst all the stakeholders.	• The Bethlehem project of 110ha tried to emulate a similar type of concept. Differences are huge: Generational experience with apples, economies of scale in one contiguous region, strong technical support, coordinated marketing strategy etc • It is, however worthwhile to explore a model or use S Tyrol as a reference.

Appendices 1**Contacts:****POLAND.**

1. Michael Elkner

Tour Guide www.elkner.pl

2. Prof Makosz'
3. Edvard Zurawicz

Research Institute of Horticulture www.inhort.pl/en

4. Dominik Wozniak

Grupa Producentow Owocow. Producer Group RAJPOL

5. Michal Biedrzycki
6. Pawel Soska

Other contacts:

- **Germany**, Michael Winstel
- **Switzerland**, Michael Weber
- **South Tyrol**, Markus Bradlwarter
- **South Tyrol**, Walter Guerra

Appendices 2

The final tour itinerary is as follows:

Friday 19 September Dep: CT Emirates EK771 AT 17H55 AND Arr: Dubai 05H30 **Saturday 20 December**

Saturday 20 September Dep : Dubai Emirates EK49 at 08h25 and Arr: Munich 13h00 (Peter to meet everyone at the airport having checked out the vehicle already)

Sunday 21 September Dep: after breakfast for Friedrichshafen, leisurely drive through the Bodensee area.

Monday 22 September Spend the day with Michael Winstel, tour guide for the day in the Bodensee area.

Tuesday 23 September, host Michael Weber, visit Guttingen Research Station, some growers and nurserymen in Switzerland. Take ferry at 08h40 to Switzerland.

Wednesday 24 September, travel by car to Bolzano.

Thursday 25 September, visit South Tyrol, Markus Bradlwarter and Walter Guerra are our hosts.

Friday 26 September, visit South Tyrol, Bolzano, hosts Markus Bradlwarter and Walter Guerra.

Saturday 27 September, depart for Vienna by road.

Sunday 28 September, day of leisure in Vienna. Dep: 19h20 Vienna for Berlin. Flight AB 8753, need to then take a flight from Berlin to Warsaw. Arriving Warsaw 22h55.

Sunday 28 September Transfer from the Airport.

Arrival AB8070 from Berlin

Monday 29 September City tour in Warsaw (09h00- 12h00)

14h00 Visit to Fruit Producer Group "Twoj Owoc" & Mr Pietrzycki's Private Orchard

16h00 Drive through the biggest orchards region in Europe

Tuesday 30 September 08h30 Visit to the Research Institute of Horticulture in Skierniewice & meeting with Prof. E. Zurawicz

11-12h00 Lunch in Skierniewice (own account)

12-13h00 Visit to "Bastion Fruit" & Mr Biedrzycki Farm

15-16h00 Another visit (final arrangements still to be confirmed by Mr Elkner)

18h00 come back to Skierniewice

Wednesday 1st October After breakfast check-out approx. 08h00

09h00 Visit to Grupa Producentka "Rajpol"

10h30-11h00 Visit to nursery "Nowakowscy"

13h00 Lunch in Karczma u Jakuba near Grojec (own account)

15h00 Arrive to Warsaw/hotel Gromada

Thursday 2nd October, transfer to the airport. Pick up at 12h00 from the hotel. Morning at leisure, to catch flight EK180 at 14h45 for Dubai and arrive Dubai International at 10h15

Friday 3rd October at 03h50am depart Emirates EK772 from Dubai for Cape Town and arrive Cape Town 11h40 on **Friday 3rd October 2014**.

