

## 10. Grower notes

A lot of people don't know that timber farming is part of agriculture. Timber farming in South Africa is based on the "farming" of trees. i.e. Planting the trees in rows and then harvesting the crop in the future.

South Africa practices sustainable timber farming:

- Replacing the trees and sustaining the environment
- Not planting too close to a river edge
- Encouraging bird and animal life
- Independent certification by the Forest Stewardship Council as sustainable

There are probably three common-grown trees in commercial farming in South Africa:

- *Eucalyptus*: a fast grower, 6 to 10 years to harvest and grade as hard wood (for paper, rayon, compressed boards, mine props, telephone/electricity poles). No pruning is needed.
- *Wattle*, initially brought over from Australia for use in tanning leather
- *Pines*: a slow grower, 18 years to harvest and grade as a soft wood (mainly for building planks, house beams and paper). Pruning is necessary to ensure clean timber for the timber industry

### Farming with Timber: some considerations

- Entering timber farming is quite a complicated process largely because it is very **capital intensive**. One has to buy a farm and after adjusting timber, it will be a long waiting process before you have any income.
- Timber farming in South Africa is **regulated** and a permit is required to have plantations on your farm. A water permit is also required before you can start farming with timber.
- First you need to make sure your farm has sufficient **rainfall**, because trees need a lot of water. Secondly **sufficient soil depth** is required to support tall trees and lastly a market close by is a necessity, because the biggest cost in timber farming is transporting your timber to the mills or station.
- Timber farming is largely based on **contractors** doing the planting, harvesting and transporting for the farmer or for big companies like Sappi and Mondi. Your average timber farmer cannot afford to have his own transport business as this is extremely capital intensive and it is not cost effective.
- Harvesting timber is very labour intensive and involves many people in all aspects of the operation.

Stages in harvesting timber:

- Identify the plantation to be harvested.
- Harvesting starts from one side and is then worked through very efficiently.
- Chain saw operators cut the trees down.
- Strippers strip the bark off the felled tree.
- Chain saw operators then cut the felled tree into appropriate lengths. (Depending upon transporting methods)
- Stackers then stack the logs and
- A bell loader then lifts the logs and loads them for transporting.

A reasonable 7-year-old plantation has approximately 150 tons per hectare, but it can be lower depending on factors such as soil. If the trees are harvested at a later stage it can be higher. (10 years - 180/200 tons per hectare).

The benefit of timber farming is that the crops can be harvested at any stage. If the timber price is low, the timber can be left for another year or two. There is also no specific season that farmers need to harvest, you can harvest on demand.

The biggest risk in timber farming is fire! Large sums of money need to be spent on fire fighting equipment and firebreaks have to be burnt every year at the beginning of winter to prevent huge fires destroying the crops. Other risks in timber include disease and theft.

Paul Ross (Timber farmer) Tel: 083 789 1314 info@ardmore.co.za

Source: AgriTV

## Field crops and horticulture

### Fruit - general

#### 1. Overview

Refer also to the separate *Deciduous, Subtropical and Citrus* chapters in this directory. Also visit the websites mentioned under heading 5 for overviews and technical information. See [www.fpef.co.za](http://www.fpef.co.za) and [www.safuitfarms.com](http://www.safuitfarms.com) for example.

- Deciduous fruit is grown mainly in the Western Cape, as well as in the Langkloof Valley in the Eastern Cape. Significant table and dried grapes production areas are also along the Orange River and in the Free State, Mpumalanga and Gauteng.
- Citrus is mainly produced in the irrigation areas of the Limpopo, Mpumalanga, the Eastern and Western Cape and KwaZulu-Natal.
- Subtropical crops such as avocados, mangoes, bananas, litchis, guavas, pawpaws, and granadillas are produced mainly in Mpumalanga and Limpopo, as well as in the subtropical coastal areas of KwaZulu-Natal and the Eastern Cape. Pineapples are grown in the Eastern Cape and northern KwaZulu-Natal.

Deciduous	Citrus	Subtropical	Other
Apples, apricots, pears, grapes (fresh and droid), plums, nectarines, peaches, quinces, cherries, Persimmons, pomegranates and figs	Oranges, grapefruit, lemons, easy peelers and limes	Avocados, bananas, mangoes, litchis, papayas, papinos, granadillas, pineapples, guavas, loquats, melons and kiwi fruit	Sweet and water melons, sour figs, prickly pears, custard apples, jack fruit and medlars

*Note: Opinion is not unanimous regarding the category in which certain fruits are placed.*

#### 2. Associations involved

**Citrus Growers Association (CGA)**  
Tel: 031 765 2514  
[www.cga.co.za](http://www.cga.co.za)

**Deciduous Fruit Producers' Trust (DFPT)**  
Tel: 021 870 2900  
[www.dfpt.co.za](http://www.dfpt.co.za)

**Fresh Produce Exporters' Forum (FPEF)**  
Tel: 021 870 2900  
[www.fpef.co.za](http://www.fpef.co.za)

**Fruit SA**  
Tel: 021 914 3018  
[www.fruitsa.co.za](http://www.fruitsa.co.za)

Fruit South Africa is an export advisory council supported by the Citrus Growers Association, SA Subtropical Growers Association,

Fresh Produce Exporters' Forum, the Deciduous Fruit Producers' Trust and SA Table Grapes.

**SA Table Grapes (SAT)**  
Tel: 021 872 1438  
[www.satgi.co.za](http://www.satgi.co.za)

**SA Subtropical Growers' Association (Subtrop)**  
Tel: 015 307 3513

This association represents the SA Avocado Growers' Association ([www.avocado.co.za](http://www.avocado.co.za)), the SA Mango Grower's Association ([www.mango.co.za](http://www.mango.co.za)), the SA Macadamia Growers' Association ([www.samac.org.za](http://www.samac.org.za)) and the SA Litchi Growers' Association.

## OTHERS

**The South African Cherry Association (SACGA)**  
Tel: 021 870 2900  
www.cherries.co.za

SACGA falls under the structure of the Deciduous Fruit Producers' Trust (DFPT) – see the Deciduous Fruit chapter.

**The SA Olive Association (SA Olive)**  
Tel: 021 870 2900  
www.saolive.co.za

The Secretarial and financial services is also provided by the DFPT.

**Tomato Producer's Organisation (TPO)**  
c/o ZZ 2 Tomatoes  
Tel: 015 395 2040  
www.zz2.co.za

*Find details of other associations in the citrus, deciduous and subtropical fruit chapters.*

### 3. National strategy and relevant directorate within the Department of Agriculture

**Directorate: Food Safety and Quality Assurance**  
Tel: 012 319 7000  
DFSQA@nda.agric.za

**Directorate: Plant Health**  
Tel: 012 319 6529  
DPH@nda.agric.za

## OTHER

**Perishable Products Export Control Board (PPECB)**  
Tel: 021 930 1134  
www.ppecb.com

Regional offices	
Nelspruit	Tel: 013 755 2879 / 082 490 5996
Gauteng	Tel: 011 396 1393 / 082 786 3166
Tzaneen	Tel: 015 307 4236 / 082 466 5700
Durban	Tel: 031 467 2719 / 082 462 0472
Port Elizabeth	Tel: 041 364 3671-2 / 082 441 2797
Cape Town	Tel: 021 552 3408 / 082 951 8806
Analytical Services	Tel: 012 804 6825-6 / 082 416 2366

National Programme Managers	
Inspection – 082 465 0768 / 082 445 7615	Food Safety – 084 363 5535
Cold Chain – 082 465 0760 / 082 444 7980	Protocols – 082 827 8891
Grapes – 082 462 1006	Other Products – 082 786 3165
Citrus – 082 772 5000	Airport – 021 935 0819
Pome & Stone – 082 461 6314	Cape Town Harbour – 021 421 1370

## 4. Training and research

*Refer to the Citrus, Deciduous and Subtropical fruit chapters for details of other associations and institutions engaged in research for the various fruit categories.*

The two relevant institutes of the **ARC's Horticultural Business Division** are the following:

ARC – Institute of Tropical and Subtropical Crops Tel: 013 753 7000  
ARC Infruitec-Nietvoorbij Tel: 021 809 3100/3366

The ARC Institutes also do training.

**Cape Women's Forum**  
Tel: 021 883 2490  
estelle@cwf.co.za

**Citrus Academy**  
Tel: 031 313 3364  
jacomien@cga.co.za

**Elgin Community College**  
Tel: 021 848 9413  
mark@elf1.co.za

**Ethical & Leadership Institute (ELI)**  
Tel: 021 855 2848  
ijl@mweb.co.za

**FNB Training Centre**  
Tel: 021 401 9101

**Koue Bokkeveld Opleidingsentrum**  
Tel: 023 317 0983  
joy@xpoint.co.za

**Praktika**  
Tel: 022 913 2933  
khula@intekom.co.za

**SA AgriAcademy**  
Tel: 021 808 7618  
www.agriacademy.co.za

**Skills for Africa**  
Tel: 012 379 4920  
www.skillsafrica.co.za

Contacts in all provinces can be found on the website.

**Vineyard Academy**  
Tel: 021 809 3419  
henryh@infruit.co.za

Koue Bokkeveld Training Centre conduct their training mainly in the Koue Bokkeveld and Ceres areas, Praktika in the Piketberg area, and Elgin Community College in the Grabouw area. Cape Women's Forum works in all deciduous fruit areas but mainly on short skills training and social programmes, whilst ELI caters for business and more formal skills. Vineyard Academy concentrates on vines, mostly in the Stellenbosch area. The Citrus Academy focuses on skills development in the citrus industry.

Other **AgriSETA accredited training providers** also do training in fruit e.g. Skills for All include bananas, citrus, vines and more in their training programme. Find AgriSeta accredited companies in the Agricultural Education and Training chapter.

Fruit production is involved in the diplomas training at the **Agricultural Colleges**. Various short courses are also offered e.g. Cedara runs peach processing, tomato processing, vegetable and fruit drying, and jam manufacturing short courses, whilst Elsenburg conducts management and horticultural diploma courses over a 2-3 year period. Find the list of Agricultural Colleges in the Agricultural Education and Training chapter.

Find details of all **universities** in the Agricultural Education & Training chapter.

## 5. Publications and websites

*Visit the websites of the various associations and companies mentioned in this chapter.*

The **PPECB Export Directory** is the official guide to South African perishable export products and export service providers. It is issued by the Perishable Products Export Control Board (PPECB).

The purpose of the above-mentioned directory is to provide a comprehensive resource and reference work of a broad spectrum of industry role-players and relevant information to both national and international stakeholders involved in the export of perishable products from South Africa.

Call 021 930 1134 or visit [www.ppecb.com](http://www.ppecb.com)

**SA Fruit Journal**. The magazine consists of dedicated sections for the three fruit sectors – citrus, deciduous and subtropical – as well as market, industry and research news. To keep a balance, a section for woman and some general news are included. Regular features on specific topics such as logistics, packaging, and education are covered. Visit [www.safj.co.za](http://www.safj.co.za), call 021 870 2900 or write to [christa@safj.co.za](mailto:christa@safj.co.za) for more information.

**Statistics on fresh produce markets**. Annually this gives an exposition of the mass, value and unit value of the sales of fruit at each of the national fresh produce markets, month by month. Each product is dealt with separately.

These are available from the Department of Agriculture's Resource Centre, Tel: 012 319 7141. It may also be viewed on [www.nda.agric.za](http://www.nda.agric.za)

Also available from the Department of Agriculture (and from the website) are the *Trends, Economic Analysis* and *Statistical Information* reports. The latter gives detailed statistics on production, sales on markets, exports and purchases for processing.

*Information Guide of Deciduous Fruit of SA.* Contact Retha Louw at 021 870 2900 or [retha@dfpt.co.za](mailto:retha@dfpt.co.za)

[www.safuitfarms.com](http://www.safuitfarms.com) – includes overviews of all fruit.

Call 012 842 4000 or email [stoltze@arc.agric.za](mailto:stoltze@arc.agric.za) for the following leaflets, available from the ARC in Silverton:

- Processing of Citrus Fruit (Grapefruit, lemons, oranges)
- Processing of Deciduous fruit (Apples, apricots, grapes, pears, plums, peaches)
- Processing of Olives and Legumes (green peas)
- Processing of Field crops (Chilli, bell peppers, tomatoes)
- Processing of Subtropical Fruit (Avocado, bananas, figs, guava, kiwifruit, litchi, papaya, passion fruit, pineapple).

Find the list of industry magazines (e.g. America Fruit and Eurofruit) on [www.fpef.co.za](http://www.fpef.co.za). Take the "Publications" menu option.

*SA Groente en Vrugte.* A magazine, 6 issues a year. Contact 018 293 0622 for more information.

Easy to understand "Infotoons" can be viewed at [www.agis.agric.za](http://www.agis.agric.za) – take the "AGIS" and "Skills Development" menu options.

The following *Info Paks* (booklets) are available free of charge from the Department of Agriculture. Call 012 319 7141. Fax 012 319 7260. View (and download) these publications at [www.nda.agric.za/publications](http://www.nda.agric.za/publications)

- Banana production (Tshivenda, isiZulu)
- Cultivating avocados
- Cultivating citrus
- Cultivating guavas (Afrikaans)
- Cultivating mangoes
- Cultivating pineapples
- Cactus pear: a plant with many uses
- Cactus pear: recipes
- Cultivating granadillas
- Cultivating litchis (Tshivenda)
- Cultivating papayas
- Cultivating avocados

## 6. Companies involved

Also see companies under the different fruit chapters e.g. those under avocados

**African Fruit Co**  
Tel: 011 660 5007

**AlternAFRUIT**  
Tel: 021 863 0661  
<http://alternafruit.co.za>

**Bethlehem Farmers' Trust**  
Tel: 058 303 0560  
[apples2@afgri.co.za](mailto:apples2@afgri.co.za)

**East London Tomato Packers**  
Tel: 043 737 4471

**Fruit Strategies International**  
Tel: 013 745 7303 / 021 762 7187  
[www.fruit-strategy.com](http://www.fruit-strategy.com)

**GPB Consulting**  
Tel: 021 852 7811  
[www.consultgpb.co.za](http://www.consultgpb.co.za)

**Goldpack (Pty) Ltd**  
Tel: 031 569 4199  
[www.goldpack.co.za](http://www.goldpack.co.za)

Multihead portion weighers for potatoes, onions, carrots and various types of fruit; bagging, labeling solutions and more.

**Industrial Development Corporation (IDC)**  
Food, Beverage and Agro-Industries SBU  
Tel: 0860 693 888  
[www.idc.co.za](http://www.idc.co.za)

As a business unit their role is to focus on investments biased towards job creation, SME development, export generation and regional development.

The largest portion of the Food, Beverage and Agro-Industries SBU's investment portfolio has been in fruit and nuts industries.

**Maluti Fruit**  
Tel: 058 304 3367

**Paltrack**  
Tel: 021 970 2850  
[www.agrihub.co.za](http://www.agrihub.co.za)

**PricewaterhouseCoopers – Agri Industry Group**  
Kobie Bekker (National Leader and Southern Region) – 023 347 0941  
KwaZulu-Natal – 033 347 7200  
Central Region – 051 503 4100  
Northern Region – 013 754 3300  
Eastern Region – 041 391 4400

As trusted business advisor the Agri Industry Group focuses on providing specialist services e.g. tax, accounting, entrepreneurial advice, internal audits etc.

**South African Bureau of Standards (SABS)**  
[www.sabs.co.za](http://www.sabs.co.za)

- Contact Elaine Smith for Food Safety Certification programmes: GlobalGAP, BRC, HACCP, ISO 22000. Call 012 428 6837 or write to [smithes@sabs.co.za](mailto:smithes@sabs.co.za).
- Contact Hein Garbers at 012 428 6648 and [garberhv@sabs.co.za](mailto:garberhv@sabs.co.za) for pesticide residue testing for quality control and R&D purposes
- For constituent or nutrient analysis of food and water, contact Chris Fouche at 012 428 6844; email: [fouchecm@sabs.co.za](mailto:fouchecm@sabs.co.za).

**ZZZ**  
Tel: 015 395 8206

Premier tomato producers

*Within the fruit industry there is a vast amount of technology to assist today's farmers, relating to spraying, irrigation, fertilisation, administration, market trends, block costings, tank control within the cellar, temperature/sugar readings with delivery of grapes to cellars etc. These companies are listed in the Technology and Irrigation chapters.*

The following companies are fruit exporters. Look for "Exporters lists" on [www.fpef.co.za](http://www.fpef.co.za).

Company	Telephone	Email and website
<b>Afrifresh Export</b>	021 763 7600	<a href="http://www.afrifresh.co.za">www.afrifresh.co.za</a>
<b>AgriLink</b>	011 390 2366	<a href="mailto:wouter@agrilink.co.za">wouter@agrilink.co.za</a>
<b>Cape Citrus</b>	021 979 4800	<a href="http://www.capecitrus.com">www.capecitrus.com</a>
<b>Cape Five Export</b>	021 850 4640	<a href="http://www.capefive.com">www.capefive.com</a>
<b>Capespan</b>	021 917 2600	<a href="http://www.capespan.co.za">www.capespan.co.za</a>
<b>Colors Fruit SA</b>	021 807 5000	<a href="http://www.colorsfruit.com">www.colorsfruit.com</a>
<b>Delecta Fruit</b>	021 930 1181	<a href="http://www.delecta.co.za">www.delecta.co.za</a>
<b>Dole SA</b>	021 914 0600	<a href="http://www.dole.co.za">www.dole.co.za</a>
<b>Du Toit</b>	023 312 1071	<a href="http://www.dutoit.com">www.dutoit.com</a>
<b>EXSA</b>	021 883 8280	<a href="http://www.exsa-exp.co.za">www.exsa-exp.co.za</a>
<b>FEDFA</b>	021 917 2882	<a href="http://www.fedfa.co.za">www.fedfa.co.za</a>
<b>Franschoek Marketing</b>	021 876 3140/1/2	<a href="mailto:janhoon@freshnessfirst.co.za">janhoon@freshnessfirst.co.za</a> <a href="http://www.freshnessfirst.co.za">www.freshnessfirst.co.za</a>
<b>Freshworld</b>	021 808 7100	<a href="http://www.freshworld.co.za">www.freshworld.co.za</a>
<b>Fruits Unlimited</b>	021 860 1800	<a href="http://www.fruitsunltd.co.za">www.fruitsunltd.co.za</a>
<b>Fruitways</b>	021 851 9742	<a href="http://www.fruitways.com">www.fruitways.com</a>
<b>In Season Marketing</b>	021 943 5960	<a href="mailto:info@inseason.co.za">info@inseason.co.za</a>
<b>Katope Cape</b>	021 880 1707	<a href="http://www.katopecape.co.za">www.katopecape.co.za</a>
<b>Katope Citrus</b>	015 307 6977	<a href="mailto:Cecilla@katope.co.za">Cecilla@katope.co.za</a>
<b>Le Roux Group</b>	021 864 1967	<a href="http://www.lerouxgroup.co.za">www.lerouxgroup.co.za</a>
<b>LGS Exports</b>	021 880 0394	<a href="mailto:pietvrensburg@worldonline.co.za">pietvrensburg@worldonline.co.za</a>
<b>Lona Trading</b>	021 464 3020	<a href="http://www.lona.co.za">www.lona.co.za</a>

<b>Louterwater Landgoed</b>	042 272 1724	louterwater@eastcape.net
<b>M &amp; W Mack Ltd</b>	021 872 1123	Bossie@telkomsa.net
<b>Mouton Citrus</b>	022 921 3405	atman@moutoncitrus.co.za
<b>Patmark Marketing Limited</b>	042 283 0303	
<b>SAFE</b>	021 657 4000	www.safe-export.com
<b>SAFPRO</b>	041 582 4706	Safpro@iafrica.com
<b>SAPEX</b>	021 883 8280	geoff@sapex.co.za
<b>Saratoga Fruit Estate</b>	023 615 1315	admin@sunnytoga.co.za www.sunnytoga.co.za
<b>Seaboard International Trading</b>	021 419 9929	pnewton@seaboard.co.za www.seaboard.co.za
<b>Snofrut Exports (Pty) Ltd</b>	023 313 3533	pietbell@mweb.co.za
<b>Suiderland Plase</b>	021 421 5320	smarketing@mweb.co.za
<b>Sunday River Citrus</b>	042 233 0320	srcc@srcc.co.za www.srcc.co.za
<b>Sunpride Cape</b>	021 763 7600	www.sunpride.co.za
<b>The Fruitman</b>	012 460 2971/ 8606	lynette@thefruitman.co.za www.thefruitman.co.za
<b>Tru-Cape</b>	021 919 4696	www.cape.co.za
<b>Unifruitti SA</b>	021 852 8494	unirsp@iafrica.com
<b>WP Fresh Distributors</b>	021 851 3788	Infor@wpfresh.co.za www.wpfresh.co.za
<b>XL International</b>	028 514 1455	Annie@xlinter.co.za www.xlinter.co.za

## 7. International business environment

Find details on the PPECB Export Directory under heading 5. Also visit the association websites and those mentioned under heading 5 for updated information and news.

- The Perishable Products Export Control Board (PPECB) is the official certification agency that ensures quality in the supply chain. The services they offer are inspection services, logistical services, food safety auditing and certification and information services which are updated annually in their directory.
- Both the local and export marketing of fruit are free from government intervention. The exporting of fruit is subject to compliance with certain quality requirements and obtaining a PPECB (Perishable Products Export Control Board) export certificate.
- When the industry was deregulated in the late nineties, the single marketing channel for export was abolished. At present there are a few hundred exporters selling South African fruit abroad. As a result, South African products thus compete against international role players, and in some cases against each other. The various industries, i.e. citrus, grapes etc. have however organised themselves by establishing industry representative bodies which look after the interest of producers and exporters, in order to optimise and co-ordinate export volumes to specific markets.

## 8. Emerging farmer news

- The creation of the **Deciduous Fruit Development Chamber (DFDC)** was facilitated by the DFPT to integrate emerging producers into mainstream commercial structures, whilst technical, financial and management support is also co-ordinated via the DFDC secretariat (kevin@dfpt.co.za) provided by the DFPT. Characterised by a concerted focus on developing the people, a holistic and participatory approach, sustainability, strong partnership building and building on people's strengths, the systems-approach that is followed by DFPT

is an epitome of the sustainable livelihoods approach to developing people. In addition economic development programmes and social skills support are provided to communities. Some of the other industry groups have similar focus areas.

- Read about the **Capespan Foundation** and the **Thandi Fruit** initiative at [www.thandi.com](http://www.thandi.com). Alternatively, call 021 917 2600.
- In response to a range of rural needs an increasing number of programmes and projects are located under the umbrella of the **Goedgedacht Trust**. Find out more at [www.goedgedachttrust.org.za](http://www.goedgedachttrust.org.za)

Refer to the *Projects and New Farmer Information* heading in the *Citrus Fruit* chapter.

- **Skills For Africa** is a focused skills training company dedicated to the upliftment of previously disadvantaged rural communities and the improvement of task level productivity in chosen industries. Find their details – as well as those of other providers – under the Training and Research heading.
- Find out about the Top of the Class programme from either Michelle Kruger at the FPEF - 021 914 3018; [michelle@fpf.co.za](mailto:michelle@fpf.co.za) - or from Bronwyn Palmer - 082 802 5301; [bmpalmer@mweb.co.za](mailto:bmpalmer@mweb.co.za)

Exporting fruit from the Western Cape Province of South Africa to markets in Europe, North America and Asia contributes significantly to the province's Gross Domestic Product. The main export producers are large-scale farmers. Even with the change in discriminatory legislation and practices in South Africa after 1994, few emerging farmers have entered this market. This is due to:

- The historical political inequalities faced by the predominantly coloured and black emerging farmers, in particular the lack of access to agricultural resources and inputs, because legislation used to exclude them from mainstream commercial farming;
- The subsequent inability of emerging farmers to produce the volumes and, at times, the quality required for export;
- The significant influence of economies of scale, making it almost impossible for emerging farmers to achieve a significant profit. Input pricing and transport cost eventually impact on the final price of the products grown.
- Commercial farming is a highly technical operation, and but it in fact also a financial and managerial exercise. Most emerging farmers need to be brought up to speed on all three these skills.

The few smallholders who manage to export their fruit do so through collective or individual arrangements with large-scale commercial operations. In the paper *Across The Divide: The Impact of Farmer-to-Farmer Linkages in the Absence of Extension Services*, Tim Hart and Roberta Burgess look at how one such farmer, in the absence of agricultural extension and research services, but through linkage with a large-scale producer, started exporting apples in the 1970s. During the ensuing decades, this producer developed his own knowledge and innovations in both fruit production and socio-economic arrangements and could thus continue to export most of his annual apple crop.

This case provides three clear conclusions that must be noted by those involved in agricultural development:

- Farmers' linkages are vital for their success and survival; providing them with access to various inputs and markets that are typically unattainable.
- Such linkages can also provide the necessary catalyst and opportunity for farmers to innovate, thereby maximising the potential of these linkages and subsequently optimising production within the constraints of their circumstances.

In light of this, effective agricultural extension and research requires officials and agents to not only work with farmers but to go beyond individuals and village groupings to look at the significance of broader linkages and the role these play in agricultural production and development. Where appropriate they should seriously consider strengthening farmers' networks and innovations, rather than ignoring or replacing these. Contact Tim Hart at [thart@hsr.ac.za](mailto:thart@hsr.ac.za)