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Employment dynamics and the 'Agrarian Question of Labour' in the citrus sub-sector of South Africa

Amelia Genis

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Amelia Genis

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Abstract

During South Africa's transition to democracy one of the think tanks involved in negotiations campaigned for future policy that would encourage farmers to invest in "wage labour intensive, technologically dynamic and internationally competitive" farming. Recent research into accumulation in the large-scale farming sector found that commercial farmers in South Africa have indeed become more dynamic and internationally competitive, but they also invested in labour-saving practices and equipment. Two decades after that, South Africa's National Development Plan suggests that a million jobs can be created in agriculture, the bulk of it in high growth and labour intensive sub-sectors such as citrus, nuts, subtropical and deciduous fruit and vegetables. Ongoing research in the citrus sub-sector shows potential to create more jobs through the expansion of orchards, at nurseries, packhouses and in processing. However, the dynamics of more efficient commodity production and rising labour productivity in the sub-sector suggest that accumulation will be driven by practices that are capital intensive, rather than labour-intensive. This is in part because of state policies, which are pro-market and 'hands-off'. In a manifestation of Bernstein's Agrarian Question of Labour, these developments suggest a future of increased mechanisation, automatisation and casualisation, resulting in a small core of few, highly-skilled workers and ever-decreasing temporary employment on a seasonal basis. Minimum wages are likely to strengthen this trend. With the resolution of the Agrarian Question of Capital it is unlikely that the Agrarian Question of Labour can be resolved within this framework of capitalist farming that has to compete in the global market.

Keywords: labour, agrarian question, efficiency, productivity, accumulation, large-scale commercial farmers

1 Introduction

During South Africa's transition to democracy a think tank involved in negotiations about the country's future and aligned to trade union Cosatu, advocated policy that would encourage farmers to invest in farming that is "wage labour intensive, technologically dynamic and internationally competitive". This would be achieved through economic pressure on farmers and by expanding, eliminating, and redirecting the array of state expenditures and tariffs affecting their incentives (MERG, 1993:194). While state expenditure had been redirected away from commercial farmers and tariffs largely abolished, and recent research into accumulation in the large-scale commercial farming sector show that the sector has indeed commercial indeed become more dynamic and internationally competitive, Genis (2015) found that commercial farming has become less labour intensive and farmers employ a range of labour-saving production practices.

Employment in South African agriculture shows a downward trend from a high of 1,66 million in the 1960's to 1,39 million in the 1970's, 1,24 million in the 1980s, just over one million in the 1990's to 896 000 in the decade thereafter (Liebenberg, 2013). These numbers include family, regular (permanent) and casual (temporary or seasonal) labour. Despite seasonal spikes in employment, the trend is downward (QLFS Q4, 2016).

Rural unemployment is a key policy issue in South Africa, and the National Development Plan (NDP) of 2012 suggests that one million jobs can be created in agricultural production, processing and related activities by 2030. A pertinent question asked by the NDP is *how* more jobs can be created in agriculture. In chapter 6 ("an integrated and inclusive rural economy") of the NDP a matrix depicting 'agricultural growth and employment potential' shows that citrus, nuts, subtropical and deciduous fruit and vegetables demonstrate potential for both high growth and labour intensity.

The plan suggests that jobs can be created by increased investment in water and irrigation infrastructure, linking small scale farmers with markets, creating tenure security for farmers in communal areas, innovative financing and joint ventures (NPC, 2012:200). While the plan includes land reform, the expectation is that the majority of new jobs will be created in the large-scale commercial sector. As this paper will show, this sector had been shedding jobs and future prospects are not favourable either.

Despite the promise of land reform (Cousins, 2015, Hall and Kepe, 2017), only a small proportion of land had been redistributed and Cousins (2017) estimates that only a minority of 10% or 500 000 households of people in the communal areas earn cash from the regular sale of agricultural produce.

My paper draws on my PhD thesis on accumulation and differentiation in the large-scale commercial farming sector of South Africa (Genis, 2015), as well as a report on the citrus sub-sector written for a research project undertaken to estimate the potential for rural employment creation in the South Africa agricultural, forestry and fisheries sectors (Genis, 2017).

This paper will give a brief overview of the citrus sub-sector in South Africa and its environment and discuss the prospects for creating more jobs in the sub-sector and the factors affecting job creation in the sector as well as constraints to job creation. A discussion of the development of the Agrarian Question of Capital and the rationale for an Agrarian Question of Labour anchor the conceptual framework of this paper.

2 Background: the citrus sub-sector and its environment

Approximately 1 200 citrus growers produce more than 100 million boxes of export citrus per year. Four groups of citrus, i.e. oranges (navels and valencias), lemons and limes, grapefruit and soft citrus (Clementimes, Satsumas, etc.) are grown in all but Free State Province. In 2016 68 272 ha was planted to citrus, of which 17 859 ha is not bearing fruit yet (Edmonds, 2017). Almost 60% of the new plantings are soft citrus and lemons. Limpopo, with 28 834 ha of citrus orchards, the Eastern Cape (17

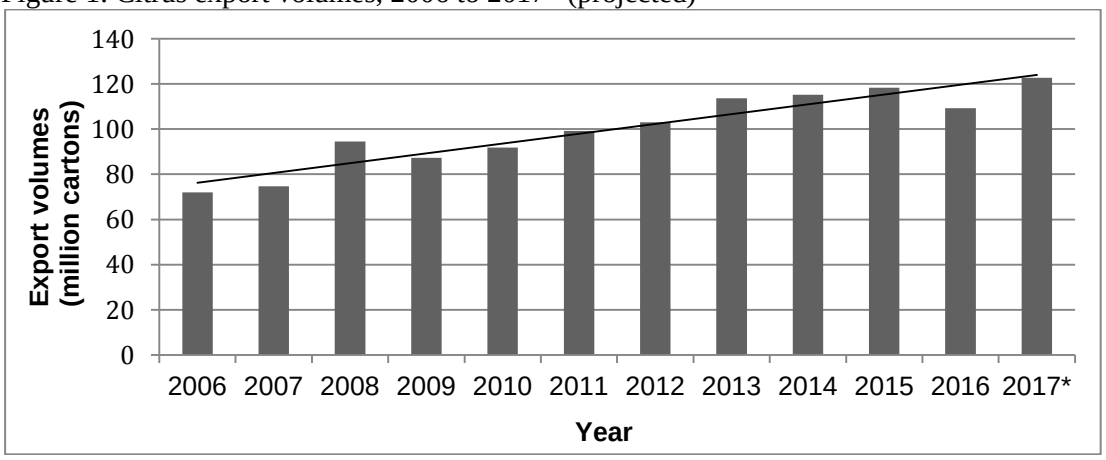
592 ha) and the Western Cape (11 124 ha) are the three largest citrus production areas of South Africa, comprising 88% of the total area under citrus in 2015.

The citrus sub-sector is experiencing relatively favourable economic conditions due to the depreciation of the Rand from about R7/$ at the end of 2010 to a band of R13/$ to R14/$; growth in established European Union markets and the development of new markets in the Middle East and Asia. However, ongoing expansion of orchards, especially in lemons (Botha, 2016:50-51) and soft citrus (Barry, 2017), leave farmers concerned about markets. Farmers are also concerned about the secondary effects of a country-wide drought and pressure on the supply of water (Raats, 2016:18, Van Wyk, 2016a, 2016b), as well as the unresolved phytosanitary matters of citrus black spot (CBS) disease in the northern parts of the country for exports to the European Union and false codling moth (FCM) in other export markets (Hattingh, 2017).

In general, citrus production is expanding where irrigation water is available or citrus can replace other irrigated crops, e.g. potatoes or wine grapes in the Western Cape. Well-founded optimism about the sub-sector has led to new areas being planted to citrus across the country, e.g. Burgersfort and Ohrigstad in Limpopo, Humansdorp in the Eastern Cape and the Sandveld, Swellendam/Heidelberg and Robertson/Ashton areas of the Western Cape.

The citrus industry has a stated aim of growing citrus exports by 6% per year. While a countrywide drought in 2015 and 2016 temporarily thwarted this aim in 2016, projections for the 2017 harvest show that the industry is back on its growth path with an expected 122,8 million (122 809 304) cartons of 15 kg each (Raats, 2017). **Figure 1** shows the steady increase in citrus exports since 2007.

Figure 1: Citrus export volumes, 2006 to 2017* (projected)



Source: Genis, 2017, and CGA annual reports, 2007 to 2016

While black farmers grow citrus on 10,7% of the total orchards (68 272 ha), only about 2,3 million cartons or 2,1% of the 109,2 million cartons of citrus that were exported in 2016 was grown by black farmers. Of a total of 123 black citrus growers, only 51 (approximately 42%) export citrus. Most of them sell fruit in the local market and for processing.

Markets

Markets for South African citrus by volume include export (67%), processing (27%) and the local market (6%). A high proportion (92%) of citrus *income* is earned in the export sector; with the remaining 8% evenly split between domestic consumption and processing (Chadwick, 2016). The traditional citrus exports markets of Britain and Europe are still important - they received 39% of the citrus exported in 2015 - after 1997 new markets opened for South African citrus. In 2015 the Middle

East received 21% of citrus exports from South Africa, Asia (11%), the Far East and Russia, 9% each (CGA, 2016a).

India, as well as countries in the Far East, e.g. China and Hong Kong are important "growth markets" where the CGA is trying to increase export opportunities for South African citrus (CGA, 2016a). In 2015 South Africa's combined exports of oranges to Indonesia, Japan, Korea, Vietnam, Thailand, China and Hong Kong were 103 802 tonnes, of which 85% went to China and Hong Kong. South Africa's average market share in these countries is 6% (Kapuya and Sihlobo, 2016).

Even though South Africa is only the 11th biggest *producer* of citrus in the world, it is the second biggest *exporter* of citrus, after Spain (Kapuya *et al*, 2014). Citrus fruit is South Africa's largest agricultural export product by value. In 2015 the sub-sector exported a record 118 million boxes of citrus and brought in R13,2 billion in export earnings.

The sub-sector's ability to export such large volumes of citrus can be attributed to the adoption of varieties that are in demand on global markets, improved management for fruit quality and efficient delivery to markets world-wide. The industry's ability to meet stringent health, safety and phytosanitary standards and requirements contributes to its success. In view of South Africa's global competitiveness in citrus production the sub-sector has an important place in the country's export-led growth strategy (Kapuya *et al* 2014:125).

Employment in the citrus sub-sector

The citrus sub-sector is believed to be one of the biggest employers in agriculture. Different employment numbers are quoted, e.g. a labour model applied by Meyer *et al* (2012:9) shows that the citrus industry is agriculture's largest employer, employing a total of 85 200 workers. This number excludes the "unspecified number of people employed throughout the citrus supply chain services such as transport, port handling and allied services" (Morokolo, 2011, in Kapuya *et al* 2014:125). Also, just over 10 000 of those workers are employed in permanent positions, a fact which highlights the extent of casualisation in the sub-sector.

The NDP calculates employment in the citrus subs-sector on the basis of one worker per one hectare citrus, thus 60 000 workers in 2011 and a further 40 000 jobs created for six months of the year in packhouses (NPC, 2011). Two Department of Agriculture, Forestry and Fisheries (DAFF) reports on the citrus value chain (Morokolo, 2011 and Mogala, 2015) puts employment in the sub-sector at "over 100 000 workers", whereas the chairman of the CGA writes in the association's latest annual report that the number for the sub-sector is 125 000 (CGA, 2016a). He further states that the citrus sub-sector can, "on average, create a permanent job opportunity for every R400 000 capital development compared to a national figure of R2 million" (CGA, 2016a:3).

While the area under citrus orchards has increased from 56 623 ha in 2007 to 65 584 ha in 2015 and the industry's export output has grown from 72 million 15 kg-boxes in 2006 (CGA, 2007) to 118 million boxes in 2015 (CGA, 2016a), job creation has not necessarily grown to a similar extent in the sub-sector as a whole. Evidence from South Africa's two largest and fastest growing citrus regions, the Eastern Cape and Limpopo, shows diverse results. Firstly, Clarke (2014) found that the *overall number of workers* employed on all farms in her Sundays River Valley sample increased, "some by as much as 300%", mostly due to an increase in hectares planted to orchards, but that the number of jobs per hectare may have declined "slightly".

Genis's 2015 study about accumulation in large-scale commercial farming in the Letaba region of Limpopo found that since 1994 citrus producers reduced the number of both permanent and seasonal workers through mechanisation and re-organisation of production activities, e.g. applying fertilisation, weeding, irrigation and harvesting, in order to enhance cost effectiveness and labour productivity. Such strategies and processes aimed at reducing the number of workers and/or increasing their productivity are *ongoing activities* on the majority of the 141 farm enterprises in her study, of which 26 grow citrus for export (Genis, 2015).

While the former may constitute a form of low-level, but continuous job-shedding, developments such as the introduction of a minimum wage for agriculture and re-organisation of harvesting logistics has lead to drastic decreases in employment. For example, Minnaar (2008) found that farmers replaced permanent workers with temporary workers and that 1 270 permanent jobs were lost on 38 farms in the Letaba district of Limpopo after a minimum wage was introduced in 2003.

Ongoing research in the citrus sub-sector shows potential to create more jobs through the expansion of orchards, at nurseries, packhouses and in processing (Genis, 2017). However, dynamics of production efficiency and labour productivity in the sub-sector suggest that accumulation will be driven by practices that are capital intensive, rather than labour-intensive, in part because of state policies, which are pro-market and 'hands-off'.

3 Theoretical framework

The nature and trajectory of the transition to capitalist agriculture, and how it manifests in different countries, is investigated by scholars of the Agrarian Question (AQ). The AQ is a Marxist framework for analysing transitions to capitalist agriculture, and has captured the imagination of left-oriented academics and political economists for more than a century. In 1899 Karl Kautsky was the first to call it thus, but Marx already hinted at the development of capitalism in 1867 in the first print of volume 1 of *Capital*, where he describes primitive accumulation as accumulation that takes place "independently of the unpaid labour of other people" (Marx, 1976:714), often by means of violent dispossession or appropriation.

V.I. Lenin's contribution to the theorisation of the AQ was that class differentiation of the peasantry is another possible path of the formation of classes of agrarian capital and labour (Bernstein, 2006:450-1, Akram-Lodhi and Kay, 2010a:189). He developed a model of three basic peasant classes, namely rich, middle and poor peasants, which will eventually transform into classes of agrarian capital (rich peasants) and proletarian labour (poor peasants), "with a minority of middle peasants joining the ranks of the former and the majority joining the ranks of the latter" (Bernstein, 2009b:58). To Lenin's theory of the class differentiation of peasants, Engels contributed a political dimension, namely the "role of agrarian classes of labour – peasant classes, small farmers and agricultural workers – in struggles for democracy and socialism" (Bernstein, 2009a:240).

Kautsky (1899/1988:12) defines the Agrarian Question as "whether, and how, capital is seizing hold of agriculture, revolutionising it, making old forms of production and property untenable and creating the necessity for new ones". Bernstein (1996a) expands on this and defines the AQ as:

> ... historical processes through which capitalist social relations are established in agriculture, with resulting transformations of production and productivity; and the mechanisms through which increased agricultural production and productivity contribute to the formation and development of industry (Bernstein, 1996a:29-30).

This transition to capitalism, as described by the Agrarian Question, can proceed along different "paths": the English Path, the Prussian and American Paths, and East-Asian Paths. Marx's description of primitive accumulation was based on the "English path", where the feudal system based on class relations between landed property and peasant labour and the appropriation of the surplus produced by the peasants by the landlords through rent, developed into classes of landed property, agrarian capital (tenant farmers who rent land for commercial purposes) and landless labour (Bernstein, 2010b:27-8).

Lenin described the so-called Prussian and American paths (Bernstein, 2010b:29, 31). In the Prussian path, or "capitalism from above", feudal landed property transforms itself into capitalist commodity producers and converted their former labour force of peasants into wage workers, while in the American path of "capitalism from below" capitalist farming emerged from smallholders as they became subjected to commodity relations from the late 18th century. Byres (cited in Bernstein, 2010b) added the contribution of agriculture to capitalist industrialisation in Japan and South Korea, the so-

called Asian Path. Industrialisation was developed in these countries by taxing the peasantry and thus forcing them into commodity relations.

Bernstein (2003a:209, 2006) suggests that the "classic" Agrarian Question was the AQ of Capital, with its logic of "developing the productive forces in farming; releasing labour for industrial employment; reducing the cost of labour power through cheaper food staples; providing or facilitating the accumulation fund for industrialisation".

According to Bernstein (2006:8) capitalist agriculture is no longer reducible to farming, "nor is it constituted simply as a set of relations between agrarian classes (landed property, agrarian capital, labour), as in the 'classic' agrarian question" …

> Rather, agriculture is increasingly, if unevenly, integrated, organized and regulated by the relations between agrarian classes and types of farms, on one hand, and (often highly concentrated) capital upstream and downstream of farming, on the other hand. Moreover, such integration and regulation operates through global as well as national (and more local) social divisions of labour, circuits of capital, commodity chains, sources and types of technical change (including in transport and industrial processing as well as farming), and markets (Bernstein, 2006:8).

These changes within capitalism due to globalisation lead Bernstein (2004:221) to suggest that there is no longer an agrarian question of capital on a world scale, but rather that the "tendency of globalization" to fragment labour may indicate a possibility that "there might be a (new) agrarian question of labour now detached from that of capital". This fragmentation of labour "associated with and intensified by the global restructuring of capital" opens up the potential for new agrarian questions, especially an AQ of Labour. The AQ of Labour is contained in people's increasing inability to find employment at a living wage in contemporary capitalism (Bernstein, 2006:457). He also suggests that these people can no longer be referred to as "proletariats" or "semi-proletariats", but rather "classes of labour". In agrarian terms, these classes comprise "peasant classes, small farmers and agricultural workers" (Bernstein, 2006:455 and 2009a:241).

In contemporary capitalism the "structural source" of the agrarian question of labour is the increasing scarcity of employment that can provide a living wage, which can cover the most basic reproduction costs, and the extent to which this scarcity manifests in struggles for land to secure some part of its reproduction needs" (Bernstein, 2006:12, 2004:221).

Therefore, classes of labour comprise 'the growing numbers…who now depend - directly *and indirectly* - on the sale of their labour power for their own daily reproduction' (Panitch and Leys, 2001:ix). For Bernstein (2006:9) the term 'fragmentation' "encapsulates the effects of how classes of labour in global capitalism … pursue their reproduction … through insecure and oppressive … wage employment …". This is often combined with …

> … precarious small-scale farming and insecure 'informal sector' ('survival') activity, subject to its own forms of differentiation and oppression along intersecting lines of class, gender, generation, caste and ethnicity. In short, most have to pursue their means of livelihood/reproduction across different sites of the social division of labour: urban and rural, agricultural and non-agricultural, wage employment and self-employment (Bernstein, 2006:9).

In the following section I will discuss labour in the citrus sub-sector.

4 Discussion

A number of issues affect employment in the citrus sub-sector. They include the introduction of a minimum wage for agriculture, casualisation and externalisation, mechanisation and automatisation,

the skills level of workers, worker organisation, the uncertain state of the economy and the accumulation strategies of large-scale commercial farmers.

Expansion of citrus production seems to be a key factor for creating more permanent and seasonal or temporary jobs. Besides, an increase in the production of citrus has the potential to increase employment upstream and downstream from production, i.e. in packhouses, at plants manufacturing packing material, citrus tree nurseries, the breeding of beneficial insects and factories processing citrus fruit for juice, citrus oil and pectin. It can also lead to job creation in other parts of the citrus supply chain, e.g. cooling and refrigeration, transport, port handling and agricultural chemicals.
In order to increase production, farmers need access to affordable capital for establishing new orchards and bridging the time it takes before the trees begin to bear fruit, more water for irrigation through improved water infrastructure and regulation as well as certainty about policy and confidence in the economy.

Factors affecting job creation directly

Casualisation and externalisation

The casualisation[1] and externalisation[2] of work on farms are two of the most prominent developments in the restructuring of farm labour since 1994. Farm worker statistics shows that at some stage after 2000 the relationship between "regular" and "casual" workers became equal, after which the trend changed to proportionally more "casual" workers (Liebenberg, 2013). Roberts (2009:45, in Visser and Ferrer, 2015:59) estimated that between 1996 and 2007 the casual share of total farm labour increased from about one third to almost half.

Research by Simbi and Aliber (2000), Du Toit and Ally (2004), Theron (2012) and Visser and Ferrer (2015) also found an increase in the use of "temporary employment services" (popularly known as labour brokers). In fact, Du Toit and Ally (2004) found that externalisation is "rampant" in the Western Cape, as 55% of producers on the 77 fruit and wine farms in their survey in that province said that they used "intermediaries", who are either labour brokers or contractors.

Theron (2012) distinguishes between different forms of temporary employment services: "labour brokers", who provide seasonal workers, who "work under the direct or indirect supervision of the farmer"; and "contractors", who undertake specialist tasks such as trellising and pruning.

The trend away from employment of regular, permanent workers, and an increase in the use of casual workers impact on the job security and consistency for workers (Simbi and Aliber, 2000). The increase in casualisation and externalisation offers benefits to employers, because seasonal workers are usually paid less than permanent workers, but also have lower non-wage costs (Visser and Ferrer, 2015):

While permanent workers sometimes have access to a pension fund, seasonal workers do not; and whilst permanent workers are often employed in on-farm accommodation and enjoy access to free, or subsidized crèche facilities for their children, seasonal workers increasingly live off-farm in accommodation which they pay for themselves. Although the farmer usually pays for their transport to the workplace, this cost is minimal considering the costs of providing on-farm accommodation ...

[1] According to Visser and Ferrer (2016) casualisation refers to the process of re-employing workers who were previously employed on a permanent basis on part-time time or fixed term contracts (such as seasonal contracts).

[2] Externalisation refers to the process where employees are no longer employed directly by the primary employer, but instead employed via an intermediary (such as a labour broker) that is contracted by the primary employer (Theron (2012) in Visser and Ferrer, 2016).

Seasonal contracts also provide farmers with a high degree of flexibility to cope with increasing commercial insecurity and competitive pressures (Visser and Ferrer, 2015:52).

Another development to watch in all horticultural export sub-sectors is the reorganisation of the way fruit is picked and its impact on temporary or seasonal worker numbers. By the time Genis (2015) had concluded her study of accumulation and differentiation in the large-scale commercial farming sector in Limpopo amongst other, one of the citrus farmers in her study had achieved a 40% reduction in the number of workers needed to pick citrus fruit.

Skills levels of workers

Despite rural unemployment, the agricultural sector experiences a shortage of skilled labour. Fruit producers and packhouse managers increasingly need workers that are better educated and skilled to manage the complex quality requirements of different supermarkets and improve efficiency. Even so, public and private training suppliers are not resourced well enough to train enough skilled workers (Barrientos and Visser, 2012).

Minimum wages

The South African government are pursuing the often conflicting goals of job creation and raising minimum wages (BFAP, 2015). Minimum wages for farm workers were introduced in March 2003, at R650 per month for workers in "rural" areas and at R800 per month in "urban" areas. When the minimum wage was introduced, only about 30% of farmer workers were earning more than the urban minimum, and 50% were earning less than the rural minimum (Stanwix, 2013).

Stanwix (2013) found that aggregate employment on farms may have decreased by "around 13%" in the four years after 2003. Despite fewer workers, output was maintained through "higher labour productivity, increased mechanization or a combination of these two forces". The minimum wage did serve to increase the wages of workers on the lowest level, but Minnaar (2008) also found that farmers replaced permanent workers with temporary workers and that 1 270 permanent jobs were lost on 38 farms in the Letaba district of Limpopo after a minimum wage was introduced in 2003. Workers that kept their jobs were expected to do more, as expressed in increased hectares per worker.

Following violent farm worker strikes in the table grape and wine growing areas of the Western Cape at the end of 2012 and the beginning of 2013, the minimum wage for farm workers was increased by 51,2%. When BFAP (2015) assessed the impact of this increase, they found that the average self-reported wage of these workers increased by 29,2%:

The shortfall between the legislated and the reported increases can be attributed to some workers already earning more than the minimum wage before the increase; possible under-reporting of wages and increased use of non-wage benefits by employers; or decreased compliance levels by employers. The data also indicated that the number of hours worked declined by 1,2 hours, on average, with the hours of permanent workers showing the greatest decline (BFAP, 2015).
Most of the decline was for higher level permanent workers, while BFAP (2015) found that the wage increase of 2013 had a statistically insignificant impact on the employment of both permanent and seasonal entry-level workers.

After years of research and debates, a national minimum wage was announced in November 2016 (National Minimum Wage Panel, 2016).The National Minimum Wage panel of experts has recommended a minimum wage (NMW) of R3 500 per month or R20 per hour. According to calculations by the panel 47% of wage earners currently earn below this level. The NMW has taken effect on 1 July 2017, but fines for non-compliance will only begin to be implemented after 1 July 2019 (*Mail & Guardian*, 2017). Initially, farmworkers would get 90% of the minimum, or R3 150 a month (*The Real Economy Bulletin*, 2016).

While the Nedlac partners have reached consensus on the introduction of a national minimum wage as a way to restore the dignity of the majority of South Africans, and "address the triple challenges of poverty, under-development and inequality, and reduce pay differentials while maximising job creation", there are concerns that the introduction of the wage at R372 higher than the current minimum wage for agriculture of R14,25 per hour and R2 778 per month for the period of 1 March 2016 to 28 February 2017 may lead to job losses because 80% of farmworkers earn less than the NMW (*The Real Economy Bulletin*, 2016). On 1 March 2017 the minimum wage for agriculture was increased to R3 001,13 per month and R15,39 per hour.

Worker organisation

Farm workers are notoriously weakly organised, often due to isolation on remote farms in the arid areas (Atkinson, 2007) and, in labour-intensive sub-sectors due to the fact that a larger proportion of workers are seasonal workers with high job insecurity (Barrientos & Visser, 2012). In their report for the International Labour Organisation (ILO) Visser and Ferrer (2015:30) found that membership of trade unions was "very rare amongst workers in the formal sector of the agricultural industry who have employment of a limited or unspecified duration":

Within the category of workers with employment of a permanent nature, the incidence of trade union membership was low for farmhands and labourers (11,4%), motorized farm and forestry plant operators (13,4%) and hand-packers and other manufacturing labourers (19,3%) ... (Visser and Ferrer, 2015:30). They also found geographical variation in membership of trade unions, e.g. at 10,9% the highest in Mpumalanga, the Eastern Cape (9,7%) and KwaZulu-Natal (7,5%). In addition, women are on average more likely to be members of trade unions than men.

As for possible reasons for the relatively low membership of trade unions, Barrientos and Visser (2012) reckon that, given the high turnover and low job security of the majority of seasonal farm workers, it is more difficult for trade unions and civil society organisations to represent or support them. For this reason they also have little bargaining power. Du Toit and Ally (2004) support the notion that it is difficult to organise farm workers, especially outside the "core of 'insiders' who increasingly constitute a privileged minority within the agricultural labour force". Even though they admit that it can be a daunting task to organise workers without permanent employment rights, history shows that seasonal and temporary workers in rural towns are not powerless.

Accumulation strategies of large-scale commercial farmers

Genis's (2015) study of the dynamics of change in the large-scale farming sector in three agro-ecological regions of South Africa, in which 26 citrus farmers from Limpopo participated, reveals that farmers exhibited a variety of responses to the pressures mentioned in the previous sectioned. A pattern was found and farmers can be said to employ the following four broad accumulation strategies:

a) expanding the scale or scope of production, in other words, to increase the capital intensity of production and/or geographic size, and/or the number of products,

b) expanding the scale or scope of the business by expanding into new enterprises either up or down the value chain,

c) increasing economic efficiency, which can be achieved by means of (i) lowering the cost of commodity production, (ii) increasing productivity in terms of yield per hectare or per animal through technical and biological efficiency, or (iii) by organising workers and tasks to make workers as productive as possible, and

d) taking part in political action in order to reduce uncertainties and/or establish preferential access to and control over key resources, markets or policy processes.

She found that the third strategy, increasing economic efficiency, was often the one most commonly employed, and that citrus farmers in Limpopo are "continuously organising both permanent and

seasonal and temporary workers and tasks in order to make workers as productive as possible, thus reducing labour costs while increasing output":

As orchards and harvests grow larger, one would expect the seasonal labour requirements for picking and packing to increase, yet Genis (2015, 2017) found it not to be the case. Farmers employ various mechanisms to limit the number of seasonal workers they employ, for example by mechanising certain processes in the packhouse or increasing worker productivity by changing the logistics of harvesting, e.g. by shortening the distance that workers have to walk between trees and picking bins, by using mobile and automatic ladders to speed up movement between trees and different tree heights, or by paying workers in accordance with the weight of fruit they have picked, rather than per bag (Genis, 2015).

Policymakers and strategists often place much confidence in the ability of the so-called labour intensive agriculture industries to create jobs because some tasks, e.g. harvesting, are difficult to mechanise or automate due to "stringent technical requirements" for export fruit. The challenge is supposedly to design a (robotic) system that can "detect fruits inside a complex canopy" whilst the robotic arms needs to "rapidly, economically and gently, pick the fruit" (Ghaffarzadeh, Harrop and Zervos, 2017).

It needs to be mentioned that a citrus harvester, the OXBO 3220, with a "continuous travel canopy shake and catch harvesting system" exists. It can harvest at a rate of eight seconds per tree, and with a removal rate of up to 95%. According to the website **www.hasmak.com.tr** a pair of these harvesters can harvest a million pounds (453,6 tonnes) of fruit per day and can replace 120 workers (www.hasmak.com.tr). Citrus farmers in South Africa know about this machine, but say they cannot use it because the shaking action damages the tree on the long run and the action is too severe to harvest blemish-free citrus fruit for export.

However, more gentle fruit harvesting machines no longer seems to be such a far-fetched idea. Energid, an American company that develops software and robotics systems for the aerospace, agriculture, manufacturing and medical industries has tested a robotic citrus-harvesting system in a Valencia orange grove in Florida. The system has a picking speed of two to three seconds per orange, a picking rate of approximately 50% and a picking thoroughness of approximately 80%. The cost of the machine is reported to be comparable to that of human labour (Energid, not dated). In addition, Ghaffarzadeh, Harrop and Zervos (2017) report that experiments with fresh apple robotic harvesting are at the point of "late stage prototyping" and that market adoption will start from 2022/2023 onwards, while a machine is being tested to harvest strawberries (Brat, 2015).

Even if South African citrus producers are not employing mechanical harvesting of fruit, Genis (2015) found that citrus farmers in Limpopo have mechanised other tasks and functions, e.g. they changed from hand-weeding to chemical control of weeds and sprinkler or drip irrigation or "fertigation" (applying fertiliser through the irrigation system) systems that require less labour.

In citrus packhouses optic sizers that sorts fruit into colours and sizes with a very high degree of accuracy (Mather, 2008:98; https://citrusacademy.org.za) and sorting machines are quite common. A recent development is automatic packing machines that pick up fruit and pack them in boxes. A South African company manufactures automatic packing machines that can replace four to six workers (Gossamer Structures, not dated).

Genis (2015) further found that labour productivity is monitored meticulously and the area of land per worker has, for example, increased from 1,8 ha to 4,5 ha per worker during the past 20 years in at least one enterprise, while another farmer managed to decrease the number of citrus pickers by 40% after he changed the harvest logistics in the orchards.

Processes aimed at employing fewer permanent and temporary workers are ongoing. Farmers say their aim is to increase the hectares per permanent worker:

> We want to get to 4,5 ha per worker. That is without temporary workers. We shall try to improve on it to a point that we do not know at this stage. I think we shall have another 10%

> improvement. Maybe we shall be on 5 ha per worker within the next two years for the citrus hectares (Farmer Lim2).
> We'll definitely be looking at an average of 4,75 ha per worker. On some of our production units it is already 6 ha per worker. When I started to work 20 years ago it was 1 ha per worker. We employ fewer workers to do more (Farmer Lim1).
>
> Worker numbers have decreased a lot. During the past five years we have reduced permanent and temporary workers by at least a thousand. We did that by means of improved labour practices and mechanisation. We farm more sophisticatedly and scientifically (Farmer Lim3).

Farmers consider the productivity of labour one of the key contributing factors to the profitability of their enterprise. While Farmer Lim2 said the productivity of workers is something that a manager or supervisor determines, not the worker, Farmer Lim1 said worker productivity would improve and farmers would be willing to pay higher wages if increases in the minimum wage could be linked to higher productivity. All farmers said more is now expected of workers than in the past:

> We now need more skilled workers because the production processes had become so complicated. The scope for illiterate workers is small ... we still need foot soldiers who can work with a spade, but there is no time to slash grass with a hand-slasher. We have a growing need for workers that understand what they do and what the consequences of their actions are (Farmer Lim3).
> We don't want to mechanise completely because it is negative for job creation, but workers need more skills. We spend a lot of time and energy on training workers (Farmer Lim1).
> We employ more artisans ... electricians and mechanics. In the past we used contractors for that work, but now we employ them full-time because we need them (Farmer Lim3).
> Farmers said the requirements of export markets increases every year, so more skilled and educated labour is required (Farmer Lim1):
> I support productivity remuneration. We can employ more people that earn more if we can pay according to productivity. The norm for picking fruit is 80 bags per day. We've had to work it back to an hourly wage that everybody receive. When we paid per bag we had workers who picked 250 to 300 bags per day and were paid more. Now we are not allowed to do it. That is why I say we should have remuneration linked to productivity (Farmer Lim1).
> We can afford to pay the minimum wage because we export and get the benefit of the exchange rate. I do not have a problem with an increase in the minimum wage as long as we can get a concurrent increase in productivity. I want to pay a worker for what he does. The money that a worker earns is not the problem, the problem is that I have to guarantee the wage, but workers are not expected to work more (Farmer Cape2).
> The skills requirements are higher and we expect more of workers. In the packhouse we have more lines and the work of supervisors, operators and tractor drivers are becoming more complicated. Every farm has a worker that mixes agricultural chemicals who needs to be trained. We have a worker that does maintenance and welding. We employ a boiler maker in the juice factory. We can no longer work with unskilled people (Farmer Cape4).

Farmer Lim3 also said that employment has become too expensive to carry "spare tyres". Training plays an important role to empower workers and teach them to understand their work. Farmers are also bound by health and safety requirements.

Factors affecting job creation by placing constraints on production

Even though it should be possible to create more jobs in the citrus sub-sector by expanding citrus orchards, a number of serious constraints may diminish this potential. Constraints include access to water for irrigation and the capacity of government to help develop new markets by negotiating with the governments of receiving countries in order to get access to new markets for South African citrus

and to facilitate the removal of trade and phytosanitary barriers, as well as make policies that create an environment in which it is easy to produce citrus and develop and maintain infrastructure.

Further constraints include the introduction of a national minimum wage at a level that is much higher than the present sectoral determination for agriculture and the difficulty to find a suitable model(s) of support to new farmers. It is difficult to rank the constraints in terms of importance because they are so interlinked, but I would say there is a sequence, i.e. water and capital first, then markets, etc. The constraints will be discussed in the following sections.

Access to water

Increased access to water for irrigation purposes is considered key to the expansion of citrus production and job creation. According to chapter 6 of the NDP the 1,5 million hectares currently under irrigation can be "expanded by at least 500 000 hectares", through the improved use of existing water resources and developing new water schemes (NPC, 2011).

However, citrus farmers who were interviewed indicated that a lack of access to water is already limiting their capacity to expand. Every farmer reported that they only use half the land that they own because they do not have water to plant the rest to citrus. Furthermore, the National Water Resource Strategy version 2 (DWS, 2013:52) does not envisage an increase in the amount of water allocated for agriculture, but suggests that all sectors must improve their water-use efficiency and conserve water:

> … all land reform projects and revitalisation of smallholder irrigation schemes will use the same amount of water as before. An increase in irrigation will be effected through water-use efficiency, and selected new developments, such as in the Mzimvubu (DWS, 2013:10).

New water infrastructure will only be developed or authorised if effective water conservation and water demand management interventions have been put in place in the affected area (DWS, 2013:28).

Farmers are concerned about the prospects for irrigation and water supply, but have attained water savings of 20 to 30% through better management of irrigation and monitoring of water losses during the drought of 2015 and 2016. A farmer said:

> There is no more water in the valley. That is why we are planting in the Sandveld. We cannot do more here, yet it is also true that we are still wasting water. This past year (2016) I have seen how much water we can save. The drought has taught us a lot about water management. Because we were forced to save water, we managed to cut water use by 25% by improving our irrigation scheduling and monitoring of water use (Farmer Cape4).

Demand for citrus fruit and access to (new) markets

For the past ten years the citrus sub-sector managed to increase export volumes in different markets. While there is still potential in markets in Asia, and exporters managed to increase exports to the important European market by 5% in 2016 (Joubert, 2016), there is also concern about overproduction, especially with regards to lemons (Botha, 2016a). In addition, access to a growing number of markets is becoming more difficult because of increases in technical barriers (sanitary and phyto-sanitary) and other non-tariff measures (Kapuya, 2015:2).

South Africa has, for instance, not yet been able to convince the EU health authorities that the virus that causes citrus black spot disease cannot be transferred by fruit to infect citrus orchards in member countries, while longer cold treatment for South African citrus exports to the United States of America have been imposed to control false codling moth (Joubert, 2016).

A modelling exercise by Kapuya *et al* (2014:125) found 17 countries (out of 51) that can be considered "strategic" and high potential markets. These countries represent the most attractive markets that present opportunities for export expansion. They concluded that more aggressive trade

policy efforts should be directed towards nine countries which are "high potential markets", but exhibit trade-inhibiting features discouraging South Africa's citrus exports.

Government's role and capacity

Job creation is possible where conditions exist to expand citrus production, such as access to water for irrigation, continuous development of new markets, maintenance of current export markets, and upgrading of road, rail and port facilities and infrastructure, in other words, where the state shoulders its responsibilities.

In its latest annual report the CGA (2016a) writes that their mission to "gain, retain and optimise market access" has been challenged by the growth of the industry, new market protectionism risks and the fact that DAFF finds it difficult to cope with the growth and demands of international trade. While government does and should play an important role in this context, there is concern about its long-term commitment to fostering the expertise needed to successfully conclude (Cramer and Sender, 2015; Lemmer, 2016). Cramer and Sender (2015:33) suggest an expansion of South Africa's commercial diplomatic capabilities because of a shortage of "experienced, well-trained trade negotiators":

> ... embassy staff do not appear to have appropriate training to support strategic exporting interests. Not only is there a need for more staff who understand agribusiness; but also, they need to be clear about the priorities in negotiations, rather than turning up for trade talks pitching broad shopping lists against the acumen and resources of US or Chinese or EU trade negotiators.

Absa economist Wessel Lemmer (2016:26) warns that government should "wake up about citrus" and find the expertise and good negotiators to ensure that South Africa's competitors do not make inroads in export destinations of South African citrus. Lemmer said that government officials were doing good work, but that the state's investment in expertise is not keeping up with investments made by the country's competitors.

The CEO of the CGA said while government is putting all of its capacity into concluding a continental free trade agreement for market access to other African countries, that initiative puts the citrus sub-sector at a disadvantage because the country's competitors are "signing free trade agreements with Asian countries left right and centre". He said in an interview:

Our biggest concern is around market access and government's capacity to ensure that we can unlock those obstacles, i.e. all the phytosanitary issues we have with China, etc. The only way can get a better protocol or better arrangement is when our Department of Agriculture talk to the plant health people in China or Europe. We cannot do it, although we do it through our special envoy. We do it because DAFF's plant health division is under-capacitated. That is probably our biggest limiting factor. If the plant health division had more officials working just on fruit issues we could solve a lot of phytosanitary issues and send more fruit to those areas (Chadwick, 2016).

The citrus industry has taken steps to support government in this task. In 2014 the CGA appointed Deon Joubert, an experienced fruit exporter as special envoy to the European Union in order to strengthen its negotiation team to avoid a continuation of the ban on South African citrus which was introduced by the European Union in 2013 amid fears that Citrus Black Spot (CBS) may pose a threat to EU citrus producers (Meintjies, 2014). In order to improve the capacity at the Department of Agriculture, Forestry and Fisheries (DAFF) the CGA seconded Mike Holtzhausen, a retired scientist at DAFF, to work there again (Chadwick, 2016).

Support for new citrus farmers

The NDP (NPC, 2011) envisages agricultural development based on successful land reform, employment creation and strong environmental safeguards achieved through the expansion of both irrigated and dry-land agricultural production, especially by smallholder farmers. To achieve this goal,

the established section of agriculture should act as "enabling partners" in collaboration between existing farmers and the beneficiaries of land reform.

Despite government's stated aim to expand the smallholder sector in order to promote job creation, Aliber and Hall (2012:548) found that government attempts to support smallholder farmers have generally been "costly and ineffective". In other words, while budgetary allocations to the sector have "increased impressively" in the 15 years before 2012, few farmers benefitted and the overall impact was small because of the way that the resources were distributed and used.

The CGA launched a Citrus Grower Development Company (GDC) on 18 March 2016 with a mission to "support the establishment and growth of sustainable and profitable black citrus growers with market linkage to ensure food security, job and wealth creation" and a vision to become a leading commodity development company that transforms the agricultural landscape by empowering black citrus growers. The development company is funded by the statutory requirement that 20% of the 68c levy paid on each 15 kg carton of citrus exported is used for "transformation" (CGA, 2016a:28).

Chadwick (2016) believes that financing is going to be the biggest inhibiting factor in terms of expansion:

> It costs you R100 000 to R150 000 to establish a hectare of citrus, then it takes five years before you begin to get any sort of money back and ten years before you break even. That massive capital intensity inhibits citrus to be a big developmental project. The only way it will work is in some sort of joint venture with a citrus farming concern. For them to add on another 20 ha next door is fairly easy.

The pitfalls of joint ventures in high value agriculture are numerous. Partnerships may help new farmers gain access to value chains, but not necessarily to become independent entrepreneurs (Bitzer and Bijman, 2014). Furthermore, Lahiff, Davis and Manenzhe (2014) found that joint ventures "struggled to get off the ground" or "collapsed with major losses", creating only limited employment opportunities and few benefits for ordinary community members. They ascribe it to overly complex deals and ineffective support from state agencies and lack of capacity on the part of commercial partners.

6 Conclusion

The citrus sub-sector in South Africa has the potential to create more jobs if resources can be mustered to expand production and new markets can be developed. However, due to the labour-saving accumulation strategies of large-scale commercial farmers, processes of casualisation and externalisation and weak worker organisation, the majority of new jobs will be temporary or seasonal employment for a few months at the minimum wage.

Incidentally, the country's efforts at land reform and agrarian transformation had thus far failed to secure livelihoods for large numbers of rural dwellers, partly as a result of government policies, and a growing problem of elite capture (Hall and Kepe, 2017). The support that land reform beneficiaries receive from the state had benefitted few. That has left a gap that the commercial Citrus Growers' Association has set to fill and thus perpetuating the capitalist farming model.

It is unlikely that the Agrarian Question of Labour can be resolved within this framework of capitalist farming that has to compete in the global market. In a manifestation of Bernstein's Agrarian Question of Labour, these developments suggest a future of increased labour consolidation resulting in a small core of few, highly-skilled workers and ever-decreasing temporary employment on a seasonal basis.

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About the Author(s)

Amelia Genis is a journalist at an agricultural magazine in South Africa, and holds a PhD in Land and Agrarian Studies from the University of the Western Cape. She recently participated in a research project that investigated the prospects for job creation in the agriculture, forestry and fisheries sectors of South Africa. Her focus was on the citrus sub-sector.

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