Greenhouse in the sky: Inside Europe’s biggest urban farm

A disused office in The Hague has been revamped as a sprawling rooftop greenhouse. Are we entering a new age of urban agriculture?

At the top of an empty 1950s office block that once belonged to the Dutch telecommunications powerhouse Philips, above an abandoned reception desk and six floors of vacant office space, is a shock of green. Here, on a concrete building in The Hague, is a modern experiment: Europe’s largest urban farm.

Tomatoes, vegetables and trendy “microgreens” are sprouting in a sprawling 1,200 sq m rooftop greenhouse. Below, on the fishy-smelling sixth floor, is a huge fish farm.

The rather post-apocalyptically named UF002 De Schilde launches next month (the UF refers to UrbanFarmers, the company behind the farm). The eventual hope is to serve 900 local families, plus restaurants and a cooking school, with 500 tilapia a week and 50 tonnes of rooftop veg a year. They’ve just harvested their first cucumber.

Mark Durno, the 31-year-old Scot in charge of the operation, believes commercial urban farms serve a need: people want high-quality food from a transparent, local source. “In the next five or even 15 years, this will be a niche of the niche,” admits Durno. “But it links into the circular economy: we have empty rooftops and empty industrial buildings. In The Hague, 15% of buildings are empty. Let’s fill them with produce.”

There is some serious interest in rooftop farms as the future of commercial urban agriculture. In the US, advocates such as the Columbia University professor Dickson Despommier call it a way of “feeding the world in the 21st century”. There are urban farms in Berlin and London, where former air raid shelters grow food to supply markets and a home delivery service. The New York City project Five Borough Farm promotes urban agriculture, and the city is home to an estimated 900 urban farms and gardens on 50 acres – although the project is keener to discuss how it is “about much more than just growing food” than any rip-roaring profitable success.

De Schilde, a brick-and-glass flanked seven-storey building, was built in the 1950s. It has about 12,400 sq m of total floor space, largely abandoned but too solid and expensive to knock down.

Modern technology has helped make urban farming a viable prospect. At UrbanFarmers, the shimmery tilapia swim in 28 tanks. Baby fish, farmed in nearby Eindhoven, come in on one side, fed by an automated system; across the room are tanks for the bigger fish, which will be killed by electrical stunning. In another vat of water, bacteria convert waste ammonia from fish excrement into nitrates to fertilise the plants on the roof above. Meanwhile,
UrbanFarmers has to come up with products that you can’t buy in supermarkets, something special that has a higher nutritional value, otherwise I think they will have a hard time.

Van der Schans wonders, however, if urban farms can find commercial success. “UrbanFarmers has to come up with products that you can’t buy in supermarkets, something special that has a higher nutritional value, otherwise I think they will have a hard time,” he says. “They really have to pick those vegetables that have a special quality if you harvest them immediately, like soft tomatoes like coeur de boeuf that should fall apart if you carry them 10 metres. In New York, the growers on the rooftops came up with these varieties.”

One of the first customers is Patrick Buyze, chef and co-owner of Mochi restaurant in The Hague. “It was a bit of a fantasy to grow food in the city, on a skyscraper,” he says. Joris Wijsmuller, head of sustainability at The Hague city council, is another fan. In 2013, the council launched a competition for sustainable food companies to find new uses for the former Philips building. UrbanFarmers BV was the winner, getting free council support and a chance to rent the space, once it had raised private funding and a European loan via The Hague’s Fund for Location and Economy (FRED).

Durno points to UrbanFarmers’ first farm, in Basel, which the company says breaks even.
Plant pathogens such as late blight can evolve rapidly to overcome resistance genes, so scientists are constantly on the hunt for new resistance genes. Professor Jonathan Jones and colleagues from his lab at TSL pioneered the new technique, called “SMRT RenSeq”, and believe it will significantly reduce the time it takes to define new resistance genes.

The team plan to stack several resistance genes together in one plant, to make it much harder for pathogens to evolve to overcome the plant’s defences. It is hoped the deployment of this new technique will improve commercial crops and will lead to higher yields, significantly reduced environmental impact and lower costs for the producer and eventually the consumer.

Managing the disease requires frequent application of fungicides, which incurs not only a significant economic cost but also environmental costs. Genetic resistance can be introduced into crop species, which reduces the need for chemical spraying. However, using conventional breeding techniques, deploying genetic resistance is long and laborious.

Sources of new plant resistance genes are difficult to find. The TSL team investigated the wild potato relative, Solanum americanum, which carries several resistance genes, and by using the new technique, rapidly isolated a new resistance gene, Rpi-amr3.

SMRT RenSeq makes the process of finding, defining and introducing genetic resistance far quicker and easier by combining two sequencing techniques: ‘RenSeq’ (Resistance gene ENrichment SEQuencing) and ‘SMRT’ (Single-Molecule Real Time sequencing).

The technique consists of two main steps:
1. A sub-set of DNA sequences are "captured" using a method that selects for long DNA molecules that carry a sequence that is commonly associated with resistance genes.
2. These DNA molecules are sequenced multiple times to make sure the code is determined as accurately as possible using the novel long-read SMRT technology.

This results in a very reliable DNA sequence for each candidate resistance gene. Genetic analysis of the results enabled the team to define which of these candidate genes were linked to blight resistance. Following this, the SMRT RenSeq method also enabled the team to identify and define the parts of the genome which regulate the resistance genes. Several candidates were introduced into a model species, of which one (Rpi-amr3) successfully provided broad-spectrum blight resistance. The Platforms & Pipelines Group at TGAC performed the sequencing, led by David Baker.

Professor Jonathan Jones said: “Engineering disease resistance genes into crops is a continuous battle to stay one step ahead of new strains of disease, and scientists are constantly investigating how to speed up this process. This new technique significantly reduces the time and cost of isolating candidate resistance genes, and has great potential for application to other desirable traits in potato and in other crops.”

TGAC Project lead and Plant & Microbial Genomics Group Leader at TGAC, Dr Matt Clark, said: “Our cultivated potatoes and tomatoes are highly susceptible to potato blight, as thousands of years of selective breeding has brought with it a huge loss in genetic variation. However, within closely-related wild species, it is possible to find natural resistance to such pathogens. Finding and using disease resistance genes from closely related plants is critical in the arms race against crop pathogens. This technique accelerates the process and we hope will help reduce crop losses to disease.”

This work was funded by the Biotechnology and Biological Sciences Research Council (BBSRC) and the Gatsby Charitable Foundation.

Source: Geraldine Platten, Communications Manager at TSL.

Potato late blight remains a major threat to potato and tomato production, with world-wide crop losses estimated to be in excess of £3.5 billion. Prevention measures and crop losses cost UK potato farmers around £55 million a year, and on farm blight management can account for as much as half of the total cost of potato production.
Verslegtende ekonomiese vooruitsigte en swak landbou-toestande stu groeiende sakewantroue

Die vertrouensvlak is bykans 25 persent laer as ’n jaar tevore. Dit blyk uit syfers van die Nywerheidsontwikkelingskorporasie. Vertroue in die land se ekonomiese groei was in die vierde kwartaal 44 persent laer as in die derde kwartaal, en 82 persent laer as ’n jaar geleden. Vertroue in algemene landbou-toestande was op ’n kwartaalgrondslag 35 persent laer en op ’n jaargrondslag met 70 persent af. Landbouakleui se vertroue in netto bedryfsinkomste het verder vanaf die derde kwartaal met 14 persent geneem. Vertroue rakende volume wat uitgevoer kan word, het egter in die tydperk met 48 persent gestyg - moontlik weens die swakker rand wat Suid-Afrikaanse ondernemings meer mededingend in die wêreldmark maak.

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RESH PRODUCE AGENTS
The aim of a new AgriLife Research project: Commercial tomato production

High-value vegetable production with a focus on tomatoes in the Texas High Plains will be the target of a new research program by Dr. Charlie Rush, Texas A&M AgriLife Research plant pathologist in Amarillo.

“This will be the first study for the Texas High Plains that will compare production from different tomato cultivars under center pivot irrigation and high tunnel drip irrigation in terms of yield and quality, disease and insect pressure, and crop water-use efficiency,” Rush said.

The multidisciplinary, multi-agency project will include AgriLife Research, the Texas A&M AgriLife Extension Service, U.S. Department of Agriculture Agricultural Research Service and West Texas A&M University personnel.

More than 32,000 acres of fresh market tomatoes were planted in Texas in the 1960s, but by 2009 this number was reduced to less than 1,000 acres, Rush said. The majority of this lost acreage went to Mexico and Florida, and at today’s yields and prices it represents approximately $250 million per year in lost revenue.

“There has been a major interest expressed by retailers in the state and other clientele to develop a more stable supply of high quality locally grown vegetables, specifically tomatoes,” Rush said.

He said in order for Texas vegetable growers to take advantage of this opportunity and be able to supply the high quality tomatoes that retail marketers and consumers want, they need production information that is regionally adapted.

The team comprised of irrigation and agricultural engineers, plant pathologists, vegetable production specialists, entomologists and an agricultural economist will determine how tomato production competes with row crops in terms of return on investment, especially when water may be a limiting condition, he said.

“We are looking at high-value vegetable crops on a smaller acreage, thus using less overall water for the potential of a huge return,” he said. “Not only are we trying to meet a need of the consumer for locally grown produce, but we are looking to help the producer maintain or increase their income with less water.”

“Everybody loves fresh tomatoes, but often when you buy them in the supermarket, the taste is not there.”

The research will take place on an allotted 2-acre tract of land at the USDA/AgriLife Research Conservation and Production Research Laboratory near Bushland. The study will examine the return for each acre-inch of irrigation water applied in crop production, and thereby the potential to conserve groundwater by reducing irrigation of comparatively lower-value crops.

“Currently, farmers in the High Plains apply from 19 to 25 inches of irrigation water to produce an average of 225 bushels of corn, with expected revenue of $792 per acre,” Rush said. “With the same amount of water, farmers could produce approximately 140 hundredweight of tomatoes, and at prices near $60 per hundredweight, they could dramatically improve their ‘revenue to irrigation ratio.’”

He said the project will start with six-week old tomato plants grown in a greenhouse and then transplanted to field areas where they will be irrigated. Mid- to large-size slicing cultivars, with demonstrated heat tolerance, will be selected for these studies.

The comparison of crop yield and quality, water-use efficiency, pest pressure and economic viability will be conducted in field trials under center pivots, drip irrigation and a new form of irrigation – root demand irrigation or RDI – similar to a soaker hose.

Additionally, four high tunnels will be built, beginning this fall, for a more protected environment, Rush said.

High tunnels are similar to greenhouses, although they do not have electricity. The plastic covering provides protection from the elements often experienced in the High Plains during the growing season, including high winds, hail and sun scald, he said.

“The plastic cover also allows earlier planting and a prolonged growing season, which will allow producers to meet different market windows,” Rush said.

The long-term goal of this project is to determine the feasibility of commercial tomato production in the Texas Panhandle and provide current and potential vegetable growers with the information needed to produce a high yielding, high quality crop, he said.

Rush said although tomatoes will be the focus of the initial study, the high tunnels can and will be used for growing winter vegetables and determining if double cropping is an alternative.

“We need to adapt this proven technology to the realities of production in the High Plains and see what opportunities it can provide for producers,” he said.

The two-year initial project could be expanded to include multiple crops over the next five years, Rush said.

Source: Kay Ledbetter, AgriLife Research
More crop per drop

GRAND ISLAND, Nebraska. — To satisfy the world’s growing demand for food, scientists are trying to pull off a genetic trick that nature itself has had trouble accomplishing in millions of years of evolution. They want to create varieties of corn, wheat and other crops that can thrive with little water.

“We pump water like there’s no end, and that’s not going to last forever.”

As the world’s population expands and global warming alters weather patterns, water shortages are expected to hold back efforts to grow more food. People drink only a quart or two of water every day, but the food they eat in a typical day, including plants and meat, requires 2,000 to 3,000 quarts to produce.

For companies that manage to get “more crop per drop,” the payoff could be huge, and scientists at many of the biggest agricultural companies are busy tweaking plant genes in search of the winning formula.

Monsanto, the biggest crop biotechnology company, says its first drought-tolerant corn will reach farmers in only four years and will provide a 10 percent increase in yields in states like Nebraska and Kansas that tend to get less rainfall than eastern parts of the Corn Belt.

At a recent farm show here called Husker Harvest Days, a few thousand farmers were guided past a small plot on which Monsanto had grown its drought-tolerant corn next to a similar variety without the “drought gene.” A transparent tent had shielded the plants from any rain through the hot Nebraska summer.

The results were, to be sure, less than miraculous. Both the drought-tolerant and the comparison plants were turning brown and shriveling, and they were about three feet shorter than the lush green irrigated corn growing nearby. But the drought-tolerant plants, which also contained a second gene to protect their roots from a pest, were a little greener and a few inches taller than the comparison plants, and their cobs were missing fewer kernels.

Monsanto said the improvement was significant. And the Nebraska and Kansas farmers who toured Monsanto’s plot, many of them facing water-use restrictions and soaring pumping costs for irrigation, said any improvement would be welcome. “We pump water like there’s no end, and that’s not going to last forever,” said Tom Schuele, a farmer in Cedar Rapids, Neb. Monsanto’s competitors, including DuPont’s Pioneer Hi-Bred unit and Syngenta, say they also plan to introduce water-efficient corn in a few years. Companies are working on plants that can stand up to heat, cold, salty soils and other tough environments.

A small California company called Arcadia Biosciences is trying to develop crops that need only half as much nitrogen fertilizer as a conventional plant. Fertilizer is crucial to modern food production, but the large quantities used today damage the environment. And because fertilizer is made from natural gas, its costs have soared along with other energy costs.

Public sector scientists are also on the hunt. Researchers at the University of California and the International Rice Research Institute in the Philippines are developing rice that can survive flooding, which causes major crop losses for poor farmers in the lowlands of India and other countries. While rice is typically grown in standing water, the plants will die if submerged for more than a few days.

Many of these advanced crops are being developed using genetic engineering. The technology, already used to make crops that can resist weeds and insects, has spurred worldwide controversy. But in an era in which people are marching in the streets of many countries to demand more food at lower prices, low-water crops might win over areas that now shun biotech crops, such as most of Africa.

“Drought tolerance to me is the most critical entry point,” said Calestous Juma, a professor of international development at Harvard who has advised African governments on biotechnology. “This is kind of reopening the window for genetic modification.”

Critics accuse the biotechnology industry and its backers of exploiting the recent global food crisis to push a technology that has been oversold and that could have unanticipated health and environmental effects.

Indeed, many past predictions of how biotechnology would create novel crops have not come to fruition. And some experts say Monsanto and its peers have not published enough information to prove they can make drought-tolerant crops.

“I want to see more, I guess, from the Monsanto work before I’d be convinced they’ve got it,” said John S. Boyer, an emeritus professor at the University of Delaware.

Safety questions must also be answered. Changing the water needs of a plant requires a more fundamental alteration of its metabolism than adding a gene to make the plant resistant to insects. “The potential for unintended side effects is greater, so the testing has to be greater,” said David A. Lightfoot, a professor of genetics and genomics at Southern Illinois University.

How much could be gained by use of these new crops is not yet clear. A report in 2007 by the International Water Management Institute, which is part of a network of agricultural research centers, concluded that genetic improvements would have only a “moderate” impact over the next 15 to 20 years in making crops more efficient in using water.

“Greater, easier and less contentious gains,” it said, could come from better managing water supplies, rather than trying to develop crops that can flourish with less water.

But many experts say the situation is grave enough that all approaches must be tried simultaneously.

Poor growing conditions can reduce crop yields by 70 percent or more below their potential.

American farmers, for instance, average about 150 bushels of corn an acre. But David K. Hula of Charles City, Va., won a competition last year by achieving nearly 386 bushels an acre, a measure of what modern crop varieties can achieve under optimal conditions.

In many areas, lack of water is the biggest limiting factor, and supplies of water for irrigation could be reduced further in coming years in order to supply more water to growing cities and proliferating factories.

Global warming is also expected to lead to drier conditions and more frequent droughts in some parts of the world. Scientists at Stanford, for instance, have projected that corn yields in southern Africa could drop 25 percent by 2030 because of warmer, drier weather.

Breeding water-efficient crops would seem to be straightforward. Just grow crops under dry conditions and choose the ones that do best for the next round of breeding.

It does not quite work that way, however. After several generations, the crops are indeed more resistant to drought.

But there is a downside in that they often turn out to have lower yields when there is plenty of rain.
So scientists are harnessing the same genetic techniques that have yielded insights into human health to decipher how plants control water use and adapt to stress. “We’ve probably made more progress in the last 15 years than we have in the last 5,000 years,” said Ray A. Bressan, a professor at Purdue. In particular, he said, studies have overturned the conventional wisdom that water use is so complex that no single gene could have a big impact on it. “Single genes are having effects in the field that we never thought would be possible,” he said.

That has opened the door for genetic engineering, which allows scientists to add a gene from another species to a plant, or even an extra copy of one of the plant’s own genes.

Critics say that biotech seeds, which are patented and tend to be costly, might not be suitable for poor farmers in developing countries. The Alliance for a Green Revolution in Africa, a group working for improved farm productivity on that continent, has said that for now it would avoid genetic engineering because greater gains for small farmers can be made at lower cost using conventional breeding.

Indeed, there has been progress developing drought-tolerant crops using conventional breeding, despite the obstacles.

Syngenta, a big Swiss seed and agricultural chemical company, says it will introduce drought-tolerant corn developed by conventional breeding in 2011, followed by a genetically engineered version in 2014.

The International Maize and Wheat Improvement Center in Mexico, the institute that sparked the output improvements of the Green Revolution decades ago, has bred drought-tolerant corn that is already being grown in Africa. Marianne Bänziger, director of the global corn program for the center, said the yields are 20 to 50 percent higher than local varieties during droughts, with no loss of yield in wetter years.

Still, her institute, with financing from foundations, is working with Monsanto to develop genetically engineered corn that would be even more water-efficient.

Monsanto has said it would not charge royalties for using its technology in the African corn, to keep the seed affordable. It says that corn customized for Africa could be ready by 2017, only five years after it starts selling drought-tolerant corn to American farmers.

Various other approaches are being tried to make less thirsty crops.

Performance Plants, a Canadian company, adds a gene that causes the plant to start preserving its water more quickly as a drought begins. In one field test, the yield of its genetically engineered canola barely fell when irrigation was cut in half. The yield of a comparison crop fell 14 percent.

Monsanto is going in the opposite direction — trying to keep the plant producing seed when a drought starts, even when its natural response would be to slow down in order to preserve water.

“You don’t want a cactus,” said Jacqueline Heard, who directs Monsanto’s program for drought-tolerant crops. “You want something that keeps a plant very active.”

Monsanto will not say exactly what genes it is using, or in which species they originated. But one approach involves transcription factors, which are like master regulators, able to turn on dozens of other genes to orchestrate a plant’s response to lack of water.

Assessing the diversity and challenges of pathways

What are the existing, emerging, potential or possible pathways for sustainable intensification? PROIntensAfrica’s WP2 organized a workshop in which the project’s stakeholders brainstormed on the identification and the defining criteria for these pathways.

In a recent workshop organized in Montpellier, France, about 25 participants, mostly stakeholders for PROIntensAfrica, project, provided invaluable input in finding a consensus on identification and defining new criteria for sustainable intensification pathways.

The workshop aimed at identifying and characterizing what are the existing, emerging, potential or possible pathways for sustainable intensification. The four typologies of pathways, defined at the moment for PROIntensAfrica are: high input, organic agriculture, agro-ecology and sustainable intensive agriculture.

THREE DIMENSIONS CONSIDERED

Participants brainstormed on defining the biophysical or technological, socioeconomic and politics dimensions of intensifications pathways. On the biophysical or technological dimension of intensification pathways, participants looked at the type of seeds and inputs used, the type of energy, and the combination of crops, trees or animals.

The socioeconomic dimension of intensification pathways was considered through emphasizing the intensity and form of labour mobilized, the relationships within agri-food chains, and the norms and standards applied to production.

They also explored the configuration of actor’s networks that engage in, support and promote the different pathways.

The built-in “political” content of intensification pathways in terms of the set of values and interest held by actors on the ground, within civil society, up and downstream private sectors, and governmental spheres were considered as well.

The workshop came up with the following measures that can be used in defining intensification pathways: pilot studies, policy studies, scenarios for long term project or programme, participatory system modelling, indicators, territorial life cycle assessment, basket of functions, building capacity approach, scale, co-production of research with farmers and farmer’ organizations, crowd sourcing, and citizen science.

ALWAYS CHALLENGES IN INTENSIFICATION

As a consensus, most participants agreed that intensification pathways always face challenges. The challenge is to foster more inclusive development, dealing with inequality and power. One challenge is to understand the plurality of values, to model logics, to lower our own expectations by measure and achievements, and to define scope and boundaries more tightly and working for changing donors’ views.

The main activity under WP2 is the assessment of a wide spectrum of intensification pathways that will enhance the sustainable food and nutrition security in Africa, based on results of a literature review and selected case studies. This will be done by exploiting the experience and knowledge of a large array of European and African stakeholders involved in research and innovation for Sustainable Intensification.

The farmers, and the drivers for change to which they respond, will be the entry point of analysis.
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Read how biodiversity feeds the world

• **Chemical-intensive monocultures produce less food per acre than biodiverse, ecological farms.**

The following excerpt is from Vandana Shiva’s new book, *Who Really Feeds the World?: The Failures of Agribusiness and the Promise of Agroecology* (North Atlantic Books, 2016)

More than seven thousand species have fed humanity throughout history: a remarkable indication of the biodiversity on our planet. In a biodiverse farming system, thousands of insects pollinate our crops and give us food. Friendly insects control pests by maintaining a natural pest-predator balance. Millions of soil organisms work to create life and fertility in the soil. Fertile and healthy soils give us abundant and healthy food. On a biodiverse farm, ecosystem, or planet, the food web is the web of life.

But today, just thirty crops provide 90 percent of the calories in the human diet, and only three species—rice, wheat, and maize—account for more than 50 percent of our calorie intake. According to the State of the World’s Plant Genetic Resources for Food and Agriculture, of the 7,098 apple varieties documented in the United States in the beginning of the twentieth century, 96 percent have been lost. Additionally, 95 percent of the cabbage, 91 percent of the field maize, 94 percent of the pea, and 81 percent of the tomato varieties have also been lost. In Mexico, of all the varieties of corn reported in 1930, only 20 percent exist today.

The loss of biodiversity in our food and on our land is because industrial agriculture systems promote monocultures. Monocultures are based on the cultivation of only one variety of one crop, which is bred to respond to externally applied chemicals or toxins.

The rapid erosion of biodiversity has taken place under a food system that sees farms as factories for commodities rather than webs of food production and life. These factories run on chemicals that were once designed for warfare, and are destroying the diverse species that have flourished on our planet for millennia. Biodiversity increases the stability of ecosystems and their ecological functions, whereas a reduction in the number of genetic species, and groups of organisms reduces the efficiency and resilience of whole communities.

Three forces have driven the disappearance of biodiversity across the world, and all three are connected to the corporate control over seed. The first is the entry of big business into the seed market, which has diversified varietal composition and reduced the resilience of crops to disease and herbicide pressure. The second is the globalization of seed and agricultural technologies, which have spread a uniformity of crops and seedling practices. The third is the commodification of seeds and the knowledge systems that come with it. Today, seed is commercialized and commodified for profits, and knowledge of women and workers, and of farmers and peasants. These knowledge systems are multiple and diverse. But as ecological biodiversity is replaced by monocultures of food and crops that can be commodified and patented for profits, and as the rich diversity of food cultures is being replaced by monocultures of junk food, the human mind is also being reduced to a monoculture. Monocultures of the Mind, rooted in a reductionist, mechanistic paradigm, create a blindness to the diversity of the world. Based on mechanistic thought, these monocultures are blind to the evolutionary potential and intelligence of cells, organisms, ecosystems, and communities. They are blind to the ecological functions arising from the relationships and cooperation between diverse living components of an agroecosystem. And in a vicious cycle of uniformity, these Monocultures of the Mind once again perpetuate monocultures of the land.

A mechanistic paradigm of industrial agriculture converts diversity to monocultures by focusing on external inputs of chemicals as well as on uniform monoculture commodities as outputs. We have been falsely led to believe that chemical-intensive monocultures produce more food and are therefore the answer to hunger and food insecurity. The same mechanized thinking promotes the idea that by intensifying monocultures through inputs of toxic chemicals, fossil fuels, and capital, biodiversity will be conserved because less land will be used. This is false.

Chemical-intensive monocultures produce less food per acre than biodiverse, ecological farms when all outputs are taken into account.
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FRESHNESS FOR THE ZULU KINGDOM
Beste meer aan landbou navorsing

Verhoogde besteding aan landbou-navorsing en tegnologie-ontwikkeling is die beste manier om te verseker dat Suid-Afrika ‘n netto uitvoerder van vras vrugte, wol, melies en wyn bly en basiese voedsel op mededingende wyse produseer.

So het mnr. Jan Greyling, ‘n navorsersby die Universiteit Stellenbosch en die finansiële dienstemaatskappy KPMG gereël het, gesê. Volgens mnr. Greyling is te steun aan die landbou deur subsidies, soos wat voorheen die geval was, hedendaags onbekostigbaar. Hy meen navorsing is ‘n slimmer manier om toe te sien dat Suid-Afrika van die voorste uitvoerders van sitrusvrugte, sagtevrugte, wyn, melies en wol bly, maar ook die produktiwiteit van basiese voedsel- en veevoerproduksie, soos soja-oilie, palmolie, soja-oileikooi, hoendervlei, koring en rys bevorder. Suid-Afrika is in die stadium ‘n netto invoerder van laasgenoemde kommoditeite.

Daar is volgens hom baie maniere om oor die kwessies te dink: Suid-Afrika kan kwalitiek bekostig om sy positiewe handelbalans met betrekking tot landbouprodukte te verloor. Maniere moet gesoek word om plaaslike primêre voedsel en voer meer doeltreffend te produseer. Greyling dink nie die land sal maklik selfvoorsienendheid in basiese voedsel- en veevoersoorte bereik nie, maar dit beteken nie dat produksie daarvan afgekeer moet word nie. Dit bly om verskillende redes belangrik om basiese voedsel plaaslik te produseer. “Arm gesinne moet 40 persent van hul inkomste aan voedsel, terwyl meer welvarendes slegs 10 persent aan voedsel bestee. Daarom is arm gesinne meer kwaasbaar vir stytings in internasionale voedselprysen en bewegings in die wisselkoers.”

Is labour law reasonable?

One of the most unfathomable words used in labour legislation is the word ‘reasonable’ because the statutes do not define this word and it has a highly subjective component. The term ‘reasonable’ comes up when the following questions are asked:

- Can the employer prove that the employee, accused of in-subordination, refused to obey a ‘reasonable’ instruction?
- Was the trade union’s decision to embark on an unprocedural strike reasonable?
- Can the Labour Court, in considering the review application of a CCMA arbitration award, decide whether the arbitrator’s decision to disallow certain evidence was a reasonable one?
- Was it reasonable for the employee involved in retrenchment consultations to refuse the employer’s offer of a transfer to another branch?
- In the case of Scholtz and Others vs Dynamic Labour Brokers, the CCMA held that the employer’s decision not to renew the fixed-term contracts of some of its employees was an unfair dismissal. This was because the arbitrator believed that the employees had a reasonable expectation that their contracts would be renewed.
- The arbitrator’s view was based on the facts that: The employer did renew the contracts of some employees doing the same work as the applicants in the case. This showed that there was work available after the expiry of the contracts and that it was therefore reasonable to expect a renewal.
- Those employees whose employment was terminated were chosen at random. In the case of Auf der Heyde vs University of Cape Town (2000, 8 BLLR 877), the Labour Court advanced a definition of the concept of ‘reasonable expectation’. The Court defined it as, ‘an equity criterion, ensuring relief to a party on the basis of fairness in circumstances where the strict principles of the law would not foresee a remedy’.
- I interpret this judicial definition to mean that a reasonable expectation is one which entitles the holder to win an award based not on a piece of legislation but on the fairness of the circumstances surrounding the expectation. While this definition may act as a useful guideline to legislators it is not useful to the average employer because it is circular in nature.
- I prefer to define the concept of ‘reasonableness’ as, ‘a situation, decision or viewpoint based on objective thinking, the facts of each case and a balance between the rights and legitimate needs of the parties concerned.’ The decision is based on rational thought and on the facts presented rather than on subjective needs or problems.
- Due to the endless interpretations that can be placed on this concept, employers need to obtain sound labour law advice on the reasonableness of their plans before taking actions relating to employees.
- The term ‘reasonable’ comes up when the following questions are asked:

Alternative solutions for soil fertility

How do you overcome the challenges of Mediterranean organic agriculture? The actual regulation on organic farming allows the use of a limited range of fertilizers and soil amendments in order to meet nutritional needs of the plants. Before advocating alternative strategies for fertility management their performance should be evaluated so, an open field experiment was conducted in order to study the effects of different fertilization scenarios on tomato (Solanum lycopersicum Mill, cv. San Marzano) production and soil chemical properties. The fertilization scenarios were based on the combinations of amendments (composts and biochar) with organic and/or mineral fertilizers in order to balance plant nutrient requirements. Most of the soil parameters remained variable at the end of experiment, only available phosphorus slightly increased in the treatments where organic fertilizers were applied. All treatments significantly increased the yields over control and biochar alone. Different compost types showed promising results in terms of tomato production and quality, whereas biochar did not. Our study demonstrated that recycling of nutrients from on-farm or food-industry wastes might be a good strategy to increase productivity and sustainability of Mediterranean organic agriculture, when integrated fertility management is adapted. However, more studies are needed to evaluate their effect in long-term experiments. Research was done by Ivana Cavoski, Ziad Al Chami, Mohammad Jarrar, Donato Mondelli at the Australian Academy of Science.
SAKATA
Novelty Tomatoes

Tinker  Lyric*  Pinto*  Kimi*

*Experimental: This variety does not appear on the current South African Variety list, but has been submitted for registration.

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