

the FORUM

Since 1991

Vol 1.
2021



HYGROTECH
SUSTAINABLE SOLUTIONS

INSIDE: Vegetable cultivars | Agri-Chemicals and fertilizers | Forage and pasture | Miscellaneous



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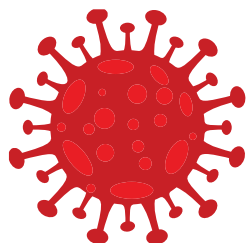
Stellenbosch 021 881 3830
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from the

EDITOR'S PEN



CONDITIONING



Unfortunately, the influence of the Corona virus pandemic is still of such an almost overwhelming nature, that it is difficult to not write about it.

News headlines are continuously informing us about this terrible pandemic and the enormous effect it has on everyday life, so much so that another world event i.e. the inauguration of a new American

President went by without much hoo-haa. Just as well, as political observers worldwide described both candidates during the run-up as 'probably not the best the USA has to offer'.

With the roll-out of vaccines against the virus now taking place all over, one can just hope and pray that the South African government has plans in place to secure a smooth and effective distribution once the promised (?) vaccines arrive here. Virologists are unanimous in their opinion that mass vaccination would be the only solution to stem the tide of infections and put a stop to the pandemic. What a marvelous prospect to think about!

Pavlov's dog experiments played a critical role in the discovery of one of the most important concepts in psychology. These famous experiments led to the discovery of classical conditioning. In short, the dog has learned that the sound of a bell precedes the arrival of food and at the sound of a bell the dog may begin to salivate, even if no food arrives. Humans are also susceptible to Pavlovian conditioning. When you are greeted with the familiar smell of pizza, fresh out of the oven, you might start salivating, even before you take your first bite. The aroma of the food serves the same role as Pavlov's ringing bell.

You also might get a nauseating feeling on your stomach by just looking at a schematic portrayal or diagram of the Covid-19 virus. The round little ball with its protruding spines is truly ingrained in our minds and everybody knows the danger. This type of conditioning is widely used with great success in the advertising industry.

In the meantime, it would be wise to fully adhere to health protocols. No doubt these rules are annoying, but as Warren Buffet said :

" When the tide goes out, one would see who swam naked "





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FORAGE & PASTURE



Lucerne HLS 9.2
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MISCELLANEOUS



Food for thought
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ON THE COVER:
The late Michael
Luttig at his
happiest... in the
field (see page 6)



This information is based on our observations and or information from other sources. As crop performance depends on the interaction between the genetic potential of the seed and variety, its physiological characteristics, the environment including climate, disease pressure, water quality and quantity, management etc., we cannot give any warranty expressed or implied, for the accuracy, performance or applicability for the information, recommendations or products supplied, nor for the performance of crops or products relative to the information given, nor do we accept any liability for any loss, direct or consequential that may arise from whatsoever cause. * These cultivars are not on the official cultivar list, but applications have been, or will be submitted.

IN MEMORIAM

Michael Luttig



This past year the world has been in turmoil and chaos, mainly due to the Covid 19 pandemic. This has affected the world economy, countries, companies and individual households alike.

In the midst of this pandemic the Hygrotech family lost one of its own stalwarts, Michael Luttig, to cancer. His untimely death on 11 October 2020 was a shock to colleagues and clients alike. To those in Hygrotech who worked closely with Michael, he was much more than just a colleague and fulfilled the role as a father figure, mentor, and dear friend. To the clients in the Nelspruit Area, where Michael was the Area Manager for 12 years, he was seen as a partner by many growers. His specialized knowledge of vegetables in general, which included all aspects of fertigation and spray programmes, ensured that Michael was the first person to call when a farmer needed advice.

Michael was an integral part of the Hygrotech Vegetable Technical Team, doing product development on all types of tomato and green pepper varieties in particular. He was meticulous in his attention to detail and would often be found picking fruit, weighing and cutting them at 6am on a Monday morning, that after driving more than a 100km to get to the trial! Due to his academic background, he was the only employee in Hygrotech to have a dual technical role in the company, also doing product development work with the company's chemical range, with which he was equally successful.

Michael always went beyond that what was expected of him, driving himself and those around him to be at service to all his clients at a level very few achieved. Client satisfaction was key to his method of operation and success in the Nelspruit region. The example Michael set won't easily be matched and we will miss and remember him fondly.....as a colleague, a friend and a close member of the Hygrotech family.

Michael is survived by his wife Annetjie and our continuous thoughts and prayers are with her and his parents and other family members.

Henry vd Voort



"Michael, what an honor to have known you, worked with you and learned from you. You will be sadly missed and fondly remembered.

Good bye my friend."

– Johann van der Vyver, Miller Chemical SA

UP DATE ON Tomato 1722 F1*

As 1722 got exposed to growers in different areas and climatic conditions throughout South Africa during the course of 2020, a lot of new information has been gathered that is worthwhile sharing with the industry. The results growers are experiencing, confirm the uniqueness of this truss type variety.

1722 consistently has a vigorous growth habit, out growing other varieties in similar growing conditions with the stand out features of a thick stem and a dense leaf canopy. These attributes contribute to a long cropping cycle, either as a stand alone plant, or on a rootstock. The fruit on the trusses are extremely firm, with diameters ranging from 60-72mm with a depth of around 48mm.

Growers who don't prune, have found that they harvest fruit with sizes ranging from 135g-180g, giving them flexibility in options to pack **1722** in many different pack sizes to satisfy many different markets. Growers who want a more uniform fruit size find that with pruning, weights averaging 150g can be obtained.

Trusses containing 6-8 fruits are easily managed, given the longer internodes of **1722**. The fact that **1722** forms trusses, does not imply that the trusses have to be harvested as such, although it is an option. Most growers prefer the standard method of single fruit harvesting.

The inherent vigour of the variety enables **1722** to have the capacity to handle heavy fruit loads without any apparent negative effect on the plant. Early season pruning is not a necessity either, but later pruning is advisable to maintain more consistent size if that is the requirement. **1722** yields good sized fruit during the winter, where temperatures of 12-15°C are realized and temperatures of 18-32°C are realized in the summer.



Green house and high humidity conditions are quite easily handled by **1722**. Obviously as this variety gets more exposure in the market, more data will become available which we will share via the Hygrotech technical and sales forces as well as in future Forums.

Just a recap on the disease package of **1722**: *Verticillium*, F1&2,N,TMV,Tomato Yellow Mosaic, *Fusarium* Crown Rot.

1722 is suitable to target the high quality pre-pack market as well as the bulk supply of individual fruit bins at supermarket level.

HYGROTECH

SUSTAINABLE SOLUTIONS

Indeterminate Tomato – Growth Assistance Programme

Growth Stage: Root Stimulant

At transplant: - Kic Starter (Drip System) 5L/ha

Growth Stage: Vegetative Growth

Week 2-4 : - Nitrospray Plus (Foliar) 300ml/100L or 2L/ha Max

Growth Stage: Flowering & Fruit Development

Week 5: - Asco Gro (Drip System) 1-2L/ha

Week 6: - Calmabon Plus (Foliar) 3L/ha

Week 7: - Grotonic (Foliar) 500ml/ha

Week 8: - Calmabon Plus (Foliar) 3L/ha

Week 9: - Grotonic (Foliar) 500ml/ha

- Asco Gro (Drip System) 1-2L/ha

Week 10: - Calmabon Plus (Foliar) 3L/ha

Week 11: - Grotonic (Foliar) 500ml/ha

With All Foliar Sprays:

- Hygrobuff 4 (Buffer) 100ml/100L

- NuFilm P (Sticker/Spreaders) 38ml/100L or 150ml/ha

- Sporekill (Plant Sanitiser) 50ml-100ml/100L

Indeterminate Tomato – Growth Assistance Programme

Growth Stage: Harvesting

Week 12:	- Calmabon Plus (Foliar)	3L/ha
Week 13:	- Asco Gro (Foliar)	1.5L/ha
	- Asco Gro (Drip System)	1-2L/ha
Week 14:	- Calmabon Plus (Foliar)	3L/ha
Week 15:	- Millerplex (Foliar)	300ml/ha
Week 16:	- Calmabon Plus (Foliar)	3L/ha
Week 17:	- Asco Gro (Foliar)	1.5L/ha
	- Asco Gro (Drip System)	1-2L/ha
Week 18:	- Calmabon Plus (Foliar)	3L/ha
Week 19:	- Millerplex (Foliar)	300ml/ha
Week 20:	- Calmabon Plus (Foliar)	3L/ha
Week 21:	- Asco Gro (Foliar)	1.5L/ha
	- Asco Gro (Drip System)	1-2L/ha
Week 22:	- Calmabon Plus (Foliar)	3L/ha
Week 23:	- Grotonic (Foliar)	500ml/ha
Week 24:	Repeat Weeks 20-21 untill end of harvest.	



PUMPKIN SUCCESS

IN THE FREE STATE



Written by Dirk Moolman – Advisor : Western Free State / Northern Cape

F1 hybrid pumpkin
INVINCIBLE is telling stories of big success in the greater areas of the central Free State.

Despite 2020 being a challenging year, our **Invincible F1 pumpkin** lived up to its name.

For this article, Invincible was mainly planted in the Dealesville area on the 14th of September 2020 at a rate of 4500 plants per hectare with harvesting starting the 29th of December.

Unfortunately, the central Free State experienced abnormally late cold fronts which impacted the plant density, however with supervised irrigation and sufficient fertiliser programmes, it was a successful harvest. Yielding 650 bags per hectare with fruit size varying between 4-6kg as seen in the images.

Following the recent rainfall, **Invincible** is also doing well in the dry land areas making it a more diverse cultivar on the market. This is noticeable since the cultivar has been around for many years at Hygrotech.

The Bloemfontein fresh produce market is appealing to the surrounding farmers for supply of these pumpkins. Its excellent storing capability attributes to minimal loss of fruit. If not sold immediately, it can be stored awaiting better pricing.

It is evident that **Invincible F1 Hybrid** pumpkin has a solid future in the Free State area and is creeping into more areas.

Fertiliser applied 4:3:4 at 130 kg/ ha.





EIGHT BALL GOES EXTREME

Written by Hugo Burger, Technical Manager, Western Cape

Squash Eight Ball is known to everyone in the industry and can be seen in all baby vegetable packaging at super markets. Eight Ball has been with us for a couple of years and is still planted by producers today.

Hygrotech conducted trials for the past 3 seasons with an improved version called **EIGHT BALL EXTREME** which surpassed all expectations. The first semi commercial trial of Eight Ball EXTREME was done in 2020 at E & T Meyer in the Philippi area of the Western Cape.



Morne Holtzhausen (left) and Edgar Meyer (right) from E & T Meyer in the Philippi area, W/Cape.



According to Edgar Meyer and Morne Holtzhausen, the new **EXTREME** version demonstrated the following benefits:

- The plants have an open growth habit which simplifies the harvesting-process
- The fruit 'stem' is very long which also simplifies the harvesting-process
- The plant carries a fruit on every internode
- The fruit develops slower than in its predecessor and therefore do not need to be harvested every day
- The fruit can be harvested 5 – 7 days earlier than its predecessor
- The fruit has a harder skin / peel and is thus less damaged during the harvesting process
- The cultivar has resistance against WMV, ZYMV and PM

This is an opportunity for producers of baby vegetables to take production and quality to the next level. **Eight Ball EXTREME** is a new cultivar in the making, but there will be seed available by the end of January 2021 for planting against existing similar cultivars.

We are looking forward to good productions and quality fruit of this unique product on shop shelves.

EXCITING DEVELOPMENTS IN THE PIPELINE

Written / compiled by Christo le Grange – National Product Development Manager – Hygrotech

In the midst of Covid-19, hard work has been done in the background with development of new lines within Hygrotech. The search for the ideal cultivar is an ongoing process, but all worthwhile once standout products come to the fore. I would like to introduce some new semi-commercial lines as well as exciting new prospects for the near future.

CAULIFLOWER

Ottawa F1 *

Excellent leaf cover from the starting point makes this particular cultivar stand out from the rest. Well formed rapper leaves protect the heads well from sunburn. The protection from these leaves stays almost right till the end before opening due to head size increase. Main cropping season is recommended, with maturity of +- 85 – 100 days after transplant. Head sizes could reach 400 – 600 g in normal growing conditions.

This upright plant structure allows 30 000 – 40 000 plants/ha depending on the market segment supplied i.e: Fresh market or pre-pack. Semi-commercial seed available this season.





SWEET MELON

Emperador F1*

A highly adaptable and very productive Caribbean Gold/Harper type melon. This cultivar has an excellent yield potential with outstanding internal and external qualities. It has a very sweet flavour and has long storage ability and shelf life. Characteristics: Vigorous plant, high quality fruit and uniformity, Very high brix (12-14) and tolerance to Fusarium Race 1-2.



SWEET PEPPER

Boxer F1 *

For a couple of years, green to yellow Sweet Peppers have been a struggle in the South African market, but we believe there is some hope now in this department. Boxer F1* Sweet Pepper offers an excellent disease tolerance package: Tomato Spotted Wilt, Bacterial Leaf Spot XCV 1-5 & Pepper Mottle Potyvirus. This Box and Pre-pack market pepper turns from a medium green into a bright yellow, with uniform high-quality fruit. Maturity of +85 – 90 days harvesting after transplant (depending on temperatures). Cultivation practice includes open field, nett house as well as tunnel production. Medium to large fruit setting around 185 – 220g. Semi- commercial seed already available.



“The search for the ideal cultivar is an ongoing process, but all worthwhile once standout products come to the fore”

**HY 2077 F1* (ML-68 F1*)**

This sister line of Boxer F1* will provide larger fruit selection if needed in production. As with Boxer F1*, the new cultivar HY 2077 F1* has similar traits. Excellent disease tolerance package : Tomato Spotted Wilt, Bacterial Leaf Spot XCV 1-5 & Pepper Mottle Potyvirus. This Box and Pre-pack market pepper turns from a medium green into a bright yellow, with uniform high-quality fruit. Maturity of +85 – 90 days harvesting after transplant (depending on temperatures). Cultivation practice includes open field, nett house as well as tunnel production. Medium to large fruit setting around 200 – 250g. Currently in the last phases of trial work, we believe semi-commercial seed will be available next season.

**TOMATO****HY 1832 F1***

Indeterminate Saladette Tomatoes have been referred to as the tomato of the future. Plant disease/ tolerance is the focus with current cultivars not standing up against the continued onslaught of disease pressures. HY 1832 F1* has the full package and already shows signs of greatness. This excellent product boasts with a strong disease tolerance package of: (HR) Verticillium, Fusarium 1,2,3 (3), Tomato Mosaic Virus, Fusarium Crown, (IR) Nematodes, Tomato Yellow Leaf Virus & Tomato Spotted Wilt. Good disease packages normally come with a price, and smaller general fruit sizes are the outcome. Pruning or double stem cultivation is advisable to lift the fruit sizes from a 100 – 115g fruit to a possible 120 – 140g fruit. If pruning is not the general practice, removing of the crown fruit on the truss is always an option. Trusses set up to 6 fruits per hand and the uniformity and quality allow for this removal and will still ensure high quality pack out. Semi-commercial seed will be available next season.



**HY 1831 F1***

Like HY 1832 F1*, this cultivar is falling into the Indeterminate Saladette bracket. This cultivar will be for the less pruned TY areas where bigger fruit is required, because of the disease tolerance package on offer. (HR) Verticillium, Fusarium 1,2,3 (3), Tomato Mosaic, Fusarium Crown (IR) Nematodes & Tomato Spotted Wilt. Excellent quality fruit sizes of 125 – 140g. Semi-commercial seed available next season.



CABBAGE GREEN SUNRISE F1*

Written / compiled by Christo le Grange – National Product Development Manager – Hygrotech.

This cabbage cultivar has been on the market for a couple of years, but has finally found its right-full home at Hygrotech.

This large upright frame cabbage is suitable for “shoulder” growing conditions, where we suggest February – March sowings into winter, and July – August sowings out of winter. Mild winter regions will be different and the cultivar could be sown from February – August.

Medium to late maturity depending on the season and the conditions - will be +- 90 – 100 days. Warmer conditions could speed up the growth to around 85 – 90 days.

Suggested plant population is 25 000 – 28 000 plants per hectare, whilst 30 000 – 35 000 plants could decrease the head size for the bagging market.

Green Sunrise F1 has a firm semi-globe head shape, with upright large frame. It is an attractive option for the cabbage grower and an average head size of 4 – 5kg is achievable.

During these testing times food security is key to survival and **Cabbage Green Sunrise F1** could become one of the most important products in supporting food needs. Make cabbage plantings part of the solution to feed everyone during the Covid-19 pandemic.

Intermediate resistance to Black Rot has been seen under field conditions.





Tomato **Pamela F1** remains the **first choice** even after a decade!

Written by Lodewyk van Staden – Nelspruit

In 1971 Willie and his wife Magda Burgoffer started farming in Potgietersrus with tobacco, cotton, wheat and maize. After 18 years they moved to Marble Hall where they continued to farm for another 15 years.

At the age of 65 Willie decided to settle down in the small town of Ohrigstad, where he was planning to farm vegetables as his retirement plan. Here he started farming tomatoes, cabbage, butternuts and sweet potatoes with tomatoes as his main crop. Fortunately for Hygrotech, Willie is still going strong with Hygrotech varieties for over 16 years.

Willie Burgoffer's love for Pamela F1 started 12 years ago when he met Michael Luttig from Hygrotech Nelspruit who introduced the variety to him. Pamela F1 is an indeterminate saladette type tomato with large uniform fruits and exceptional long shelf life.

The last 3 years he also made Boudica F1 his first choice for his round indeterminate tomato plantings. Even at the age of 82 years old, Willie is still doing trials on new varieties every year to keep up with the new genetics.

Anyone that knows the Burgoffers will know that they are loving, caring and kind people. Willie and Magda are always friendly and open for a joke or two. Although getting older has challenges, Willie stays positive about life and always work on a plan to get through difficult times. Magda says that Willie always wanted to get 100 years old, but that time is moving so fast these days, that he is now aiming for 110.



Willie and Magda will be married for 60 years in April 2021.



Beautiful Boudica F1 tomatoes in hands full of experience.



Willie Burgoffer standing proud in his Pamela F1 tomato field.



He started planting apple trees in 2020 as his new retirement plan.

Pamela F1 – Indeterminate Saladette

- Strong tolerance against Blossom-end rot.
- Vigorous semi-open plants bearing extra large fruit for open field.
- Excellent quality fruits with long shelf-life.

Disease resistance: Tomato Mosaic Virus, *Verticillium*, *Fusarium* Race: 0-1, Tomato spotted wilt virus and Root knot nematodes (IR)



Boudica F1 – Indeterminate Round

- Medium to large fruited variety ideal for ranching open field.
- Excellent quality fruits with long shelf-life.

Disease resistance: Tomato Mosaic Virus, *Verticillium*, *Fusarium* race 2, *Alternaria* Leaf Spot, Tomato Yellow Leaf Curl Virus, Tomato Spotted Wilt Virus, Root-knot Nematodes.



Blind plants in tomato seedling development

Written by Luhan Swart – Technical Manager.

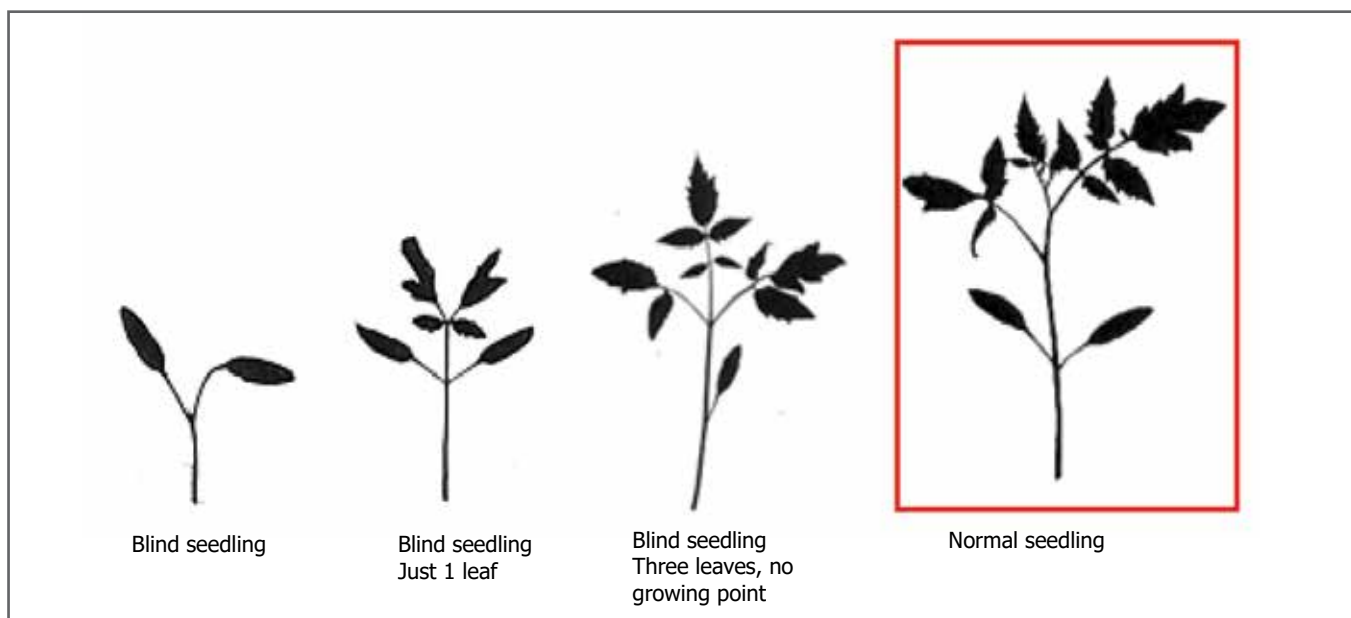
Blind plants in tomato is a disorder concerning the growing point. The tomato plant passes through several stages in course of a season's growth namely: seedling establishment, vegetative growth, flowering and fruiting stages. During the period of seedling growth several factors could influence the quality of a seedling such as:

- Seed quality
- Seed vigour
- Root system development

If anything happens negatively to the development of the seedling it directly influence the crop potential as the young leaves are essential as the source of energy to the seedling. Since there are a few leaves at this stage, anything that damages them may slow growth and reduces yields. (Strand *et al.*, 1998)

Blind plants may occur early in development, resulting in a seedling with no true leaves up to just one, two or three leaves. It can also occur later in the plant development, after the 5th or 6th node has developed, but at this stage, this is mainly an effect of growing conditions.

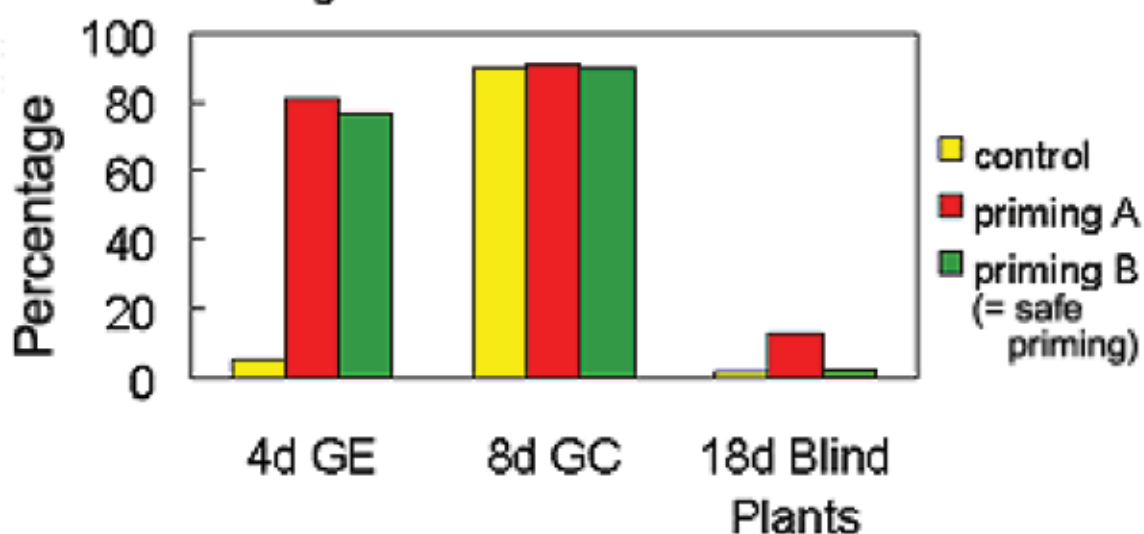
According to Incotec *et al.*, (2020) this sensitivity comes to expression and can depend on several factors. Conditions during seed production, as well as during post-harvest processing of the seed can increase the





Incotec: safe priming method available

Averaged results of 6 sensitive varieties



sensitivity, and may eventually, when a “threshold” is passed, lead to an increase in blind plants. Furthermore, germination and growing conditions can have an effect on the occurrence of blind plants.

- Tomato plants easily form side shoots, so after a while the plant may recover. When grown at a plant raiser, these plants are often too retarded to be useable, but when sown directly in the field, these plants may not be noticed.
- Priming can have a dramatic effect on the occurrence of blind plants. In sensitive cultivars increases of over 30% have been observed.
- There is certainly a genetic factor which determines whether a cultivar can be sensitive for developing blind plants, or not (it may be related to the “determinate” character).

A company by the name of Incotec regularly gets the question whether it is possible to “repair” tomato seed lots that have already 10-15% blind plants, probably caused by the genetic background and the conditions during seed production. INCOTEC continues to maintain research projects in this area to find a repair solution.

“Blind plants may occur early in development, resulting in a seedling with no true leaves up to just one, two or three leaves”

INCOTEC began looking into the Blind Plants problem in tomatoes in 1995. The goal was to develop a priming that would not increase the incidence of Blind Plants but still allow for increased uniformity and speed of germination. Since that time a safe priming has

been developed and is now used for most of the tomato seed lots being grown in many different countries (e.g. the Netherlands, Brazil, Italy, Spain, Israel).

It is still not known exactly what causes blindness

According to Flood et al., (1997) seed germination of tomatoes is the most sensitive stage of plant life that is greatly influenced by various environmental stresses including temperature and water loss.

These stresses may delay the onset, rate and uniformity of germination. Nevertheless, the impact of the environment depends to a large extent on the interaction between the genetic makeup of the plant and the environment and it is believed that the plant's response to environmental stresses is controlled by many genes.

Completion of germination is defined as the protrusion of the radicle through the endosperm and seed coat (Bewley et al., 2012). During inhibition the embryonic axis elongates and breaks through the testa.

Although seed size and/or weight is beneficial for seedling establishment and vigour related traits, there appears to be no consistent association between seed mass and seed germination performance (Fenner, 2006; Kazmi et al., 2012; Khan et al., 2012). Seed germination rather depends on the composition of seed reserves and the balance among different hormones and particularly

abscisic acid (ABA)- and gibberellic acid (GA)-signalling that underpins germination potential, rather than one or the other alone (Penfield and King, 2009).

It was noted during the 2020 season that tomato seedlings in a nursery had an abnormal growth habit with an absent growing point during the seedling development stage and that the seedlings forces the plant to form secondary side stems on the main stem forming a new dominant growing point. Speculations at that time were coming back to the seed company that there was a problem with the seed quality and that it only happened on a variety in a specific nursery.

After obtaining all available information from other nurseries which used the same variety with similar problems, it is speculated that climatic growing conditions were not favouring the seedling germination stage which had an effect on the dominant growth point. According to Paulo et al., from a well known seed company, the norm in the US is between 4% and 5% abnormal seedlings, but which will later also develop in to a fruit yielding plant.

Above information confirmed the speculation that in this specific incident the sensitivity of the tomato variety towards an imbalanced ratio between hormones accumulated, could be created by an application of a growth stimulant at a very young stage allowing the development of seedlings without a dominant growing point.



Floyd F1*



Disease Resistance

Tomato spotted wilt / Tobacco Mosaic Virus (L4) / Bacterial spot 1-3

TSWV = Tomato spotted wilt virus
TYLCV=Tomato yellow leaf curl virus

Features

- Open field or Protected conditions.
- Excellent disease package.
- Good strong plant.

SPECIFICATIONS

Suitability:	Fresh Market
Maturity:	Mid season
Type:	Deep blocky
Fruit Mass:	11 x 11 cm (180 - 250g)
Colour:	Green to red

* This variety is not on the official varieties list, but an application has been or will be submitted

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MAJESTIC F1*



Features

- Autumn/Winter/Spring slot
- Ideal for processing / Pre-packing
- Solid stems
- Sowing 15 January - mid August
- Moderate resistant to white rust
- Majestic has a high yield potential

SPECIFICATIONS

Days to maturity: 75-80 days

Colour: Dark green

Shape: Dome

Weight: 900 - 1050g

Plant type: Large

Bead Size: Medium Fine

Florette Length: 5-7cm

* This variety is not on the official varieties list, but an application has been or will be submitted



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Ottawa F1*



Features

- Excellent leave cover.
- Well formed rapper leaves.
- Fresh market or Pre-pack.
- Suitable for autumn harvest.
- Dense and solid curds tolerant to knocks.
- Excellent foliage quality. Really good. covering of the curd with solid inner leaves.
- Good behaviour against Tip Burn.

SPECIFICATIONS

SUITABILITY: Fresh market

DAYS TO MATURITY: 85 - 100

HEAD SHAPE: Round white heavy head

HEAD SHAPE: 400 - 600g

* This variety is not on the official varieties list, but an application has been or will be submitted

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BONDIE BROWN ONIONS

Written by Fanie Verwey

TESTED AND TRUSTED

Hygrotech has secured an agreement to distribute and sell Bondie Brown seed.

FEATURES

- Late short day brown onion
- **Planting slots:**
 - o **Western Cape:** Sow – Mid April
 - o **Northern Cape:** Direct seeding – End April to middle May
- **Disease resistance:** It has an extraordinarily strong root system and has a tolerance to pink root disease.
- **Maturity:** 190 – 205 days
- **Bulb:** Deep round and brown.
- **Firmness:** Firm
- **Plant:** Medium to thin neck
- **Yield:** Potentially between 70 and 100 tons per hectare.



Message from the breeder

The key to the success of this variety has been the extremely strict bulb selection criteria for Bondie Brown. Only the best bulbs are selected for seed production. In this way the variety will improve every year and farmers can be assured that seed will always be available.

Bondie Brown competes with many hybrid varieties at a fraction of the cost.

The ideal planting stand is 800 000 plants per hectare. When mature pull the onions into wind rows or heaps and let them cure for about two weeks to obtain a nice brown skin.



Effects of plant population and spacing on the yield potential of sweet corn

Written by Luhan Swart – Technical Manager

The sweet corn farmer is always seeking for ways and solutions to optimize and maximize production in tons/ha or marketable cobs per hectare.

Current agricultural planting practices use either 91cm or 76 cm row spacing between the sweet corn rows or under drip irrigation two double rows spaced alongside the dripper line with the line spacing between the lines as 1.5meter on a single dripper line.

The answer in the seeking for higher profits, yields or cobs per hectare lie in a combination of good agricultural practices by understanding the cultivation of sweet corn to capture and utilize the available sunlight during the vegetative growing stage.

The lower the row competition is between plants and the higher the percentage sunlight captured per individual plants is due to spacing practices and the increased leaf surface area will allow higher photosynthesis potential which will increase chlorophyll production. This higher potential energy in the plant allows for better pollination and cob development increasing the yield potential dramatically.

Just by altering the in row spacing and between row spacing of sweet corn with the same amount of planned plant population, the change will “kick start” the energy potential in the plants enabling higher metabolism rates which are directly linked to higher yields and marketable cobs per hectare.

Inputs:

- Plant population 65000 plants per hectare
- Moisture at harvesting 74%



Results and summary:

- It's very clear that by allowing plants to have more space to grow, the higher the yield potential will be.
- The increased leaf surface allows for high metabolism rates, but needs to be supported with adaptation on irrigation management and fertility levels.
- In practice, by using an almost square configuration of 38cm x 40cm, makes it very difficult to do management on weed control. The row spacing will also increase harvest difficulties. The decision on the row spacing to be used by the farmer, is therefore critical.

Table 1: Results of trials conducted on row spacing on sweet corn using Dorado (Crisp&Sweet 710A) LJ SWART, Langeberg Voedsel, 1991.

Row spacing	In row spacing	Yield / ha	Cobb weight	Average cobs per hectare	% increase in yield	Notes
91cm	16.9cm	18.5tons	336g	55000	0	Increasing cob weight
76cm	20.2cm	21.3tons	349g	61000	13.2%	Increasing cob weight
58cm	26.5cm	24.4tons	387g	63000	12.7%	Increasing cob weight
38cm	40.5cm	28.9tons	431g	67000	15.57%	More than one cob per plant

A 9-hectare field of ENCLAVE seed production in Washington State during July 2020 showing a good stand of healthy plants. The white seeds with a strong seed hull are sized graded and usually have minimum of 90% germination

Bean ENCLAVE

Bean ENCLAVE is a very unique fresh market green bean variety for multiple use and applications.

The variety was developed and released by the Hygrotech breeding team in 2018 and the first trial results and data showed tremendous potential for multipurpose use i.e. fresh market, processing-, freezing-, and export from central Africa to speciality super markets in the United Kingdom. The breeding background with strong natural vigour and disease resistance allow the variety to stand up against viruses and rust.

The refined 14 – 15 cm pods of **ENCLAVE** could easily be used as an export fine bean with a little extra length with its classy straight green shiny pods and uniform length's.

The medium green plants with its upright growth habit have uniform height and the concentrated pod set make hand harvesting an easy feat resulting in a very high percentage pack out. It also has good leaf cover and heat tolerance.

Seed production in the Southern and Northern hemisphere provides risk management to have seed available 12 months of the year. Most of the Southern hemisphere seed production is used in South Africa, COMESA and SADC countries with particular success in Zambia for the subsistence and small-scale farmers.

Northern hemisphere seed production is done in Idaho and Washington, well known states in the USA for high quality and disease free bean seed production. **ENCLAVE** has found markets in the central and northern states of the USA and is also being grown in Guatemala as hand picked fresh market beans.



ENCLAVE*



Disease Resistance

Bcmv = Bean Common
Mosaic Virus, Ua = Rust
(Uromyces Appendiculatus)
(Ir = Intermediate Resistance)

Features

- Attractive straight, dark green pods
- Concentrated pod set
- Upright growth habit
- Good leaf cover and heat tolerance
- Medium to dark green plant
- Smooth, shiny pods

SPECIFICATIONS

Suitability: Fresh market

Days to maturity: 62 days

Plant height: 40 - 50 cm

Pod length: 14 - 15 cm

Pod diameter: 7-8 mm

HYGROTECH
SUSTAINABLE SOLUTIONS

1 Gerard Braak Street, PYRAMID, 0120
PO Box 17220, PRETORIA NORTH, 0116, South Africa
| Tel: +27 12 545 8000 | Fax: +27 12 545 8088

* This variety is not on the official varieties list, but an application has been or will be submitted



A healthy seed production pod set of ENCLAVE showing the thin, uniform shiny green pods



Do's

- ✓ Always follow the label instructions and pay special attention to pollinator warnings or precautions.
- ✓ Interrogate Agri-Intel (www.agri-intel.com) for pesticides that are registered for the purposes required; the labels are, however, the final port of call for safety and use instructions.
- ✓ Apply directly to the target plant and ensure minimal spray drift.
- ✓ Apply early evening when bees have returned to their hives.
- ✓ Communicate with all beekeepers in the area and inform them of planned spray programmes.
- ✓ Scout the area for pollinators before applying.
- ✓ Be aware of spray residues and the amount of time they may still be toxic to bees.
- ✓ Remember that systemic insecticides have long periods of residual activity.
- ✓ Ensure that flowering plants or weeds that are attractive to bees are not in the area of application.
- ✓ Familiarise yourself with the product. Insecticides are the most hazardous to bees while fungicides and plant growth regulators have less impact.
- ✓ Ensure that equipment has been correctly calibrated for the application.
- ✓ Ensure to practise integrated pest management and only apply pesticides when absolutely necessary.

Don'ts

- ✗ Apply directly onto flowers. If no other option exists but to apply pesticides in bloom, do not apply directly onto the flowers.
- ✗ Apply while pollinators are active in the area that needs to be treated.
- ✗ Apply at night because inversion can prevent successful deposition of pesticides onto the target and cause serious drift.
- ✗ Apply any product that is not registered for the specific crop or application method.
- ✗ Apply during windy conditions, especially if foliar application is the only available option.
- ✗ Mix pesticides with substances that could be a lure for pollinators.
- ✗ Apply pesticides to standing water bodies.

Recommended

Plant bee attractive indigenous flora like aloes and fynbos to lure bees away from crop areas where they may be at risk.

Triple-rinse your used pesticide containers! Spoel jou leë plaagdoderhouers drie keer!

Follow these steps
Volg hierdie stappe

x3



Empty all pesticides from the container by placing it upside down over the spray tank and holding it there for at least 30 seconds

Giet laaste plaagdoder uit die houer oor die spuittenk en hou dit daar vir ten minste 30 sekondes

1
Fill with one quarter clean water

Vul met 'n kwart skoon water



2
Shake for 30 seconds

Skud vir 30 sekondes



3
Decant into spray tank for 30 seconds

Giet in spuittenk oor vir 30 sekondes



Repeat 1 to 3
Herhaal 1 tot 3



Always wear protective clothing

Dra altyd beskermende kleres



Remember! Onthou!

Puncture the rinsed container to render it useless and send to a CropLife SA approved recycler

Kap gate in die gespoelde houer om dit onbruikbaar te maak en stuur na 'n CropLife SA goedgekeurde verwerker



FEEDBACK

Commercial trials with ColourUp on Apples

Written by Herman Walters – Hygrotech Technical Manager: Southern Region

Farming with apples is one thing, but farming with apple varieties of colour increases the challenge to produce apples of a higher percentage superior class (with the accompanying higher remuneration) based on primarily colour development. It is not uncommon for fruit from the same variety to differ 2 to 3 times in price, based upon increased colour development.



Photo 1:
Example of different remuneration levels of the same apple variety, based upon the amount of colour development during the 2020 season.

During the 2019/ 2020 apple season in the Western Cape Province of South Africa commercial investigations were conducted with ColourUp to determine whether the product could contribute towards improved colour development of various apple varieties of colour.

COLOURUP

ColourUp is a proprietary translaminar liquid Calcium Complex which works with the plant's natural ripening and colouring stages on various fruit and vegetable types. The product is manufactured by Miller® Chemical & Fertilizer, LLC in Hanover, Pennsylvania, 17331, United States of America. ColourUp is imported to South Africa by Hygrotech South Africa (Pty) Ltd. The name ColourUp is used only in South Africa and is registered as a Group 2 Fertilizer (Reg. No. B3386 of Act 36 of 1947). Internationally the product is known, marketed, and sold as Calxin® in countries such as the USA, Peru, Chile, Costa Rica

and Australia, and CalXpress in New Zealand. ColourUp is applied as a foliar spray and is totally systemic. Being part of the Miller® patented Nutrient Express® technology products, ColourUp focuses mainly on plant energy production and contains no hormonal substances. During periods of rapid growth, fruit development and ripening, plants require energy for proper physiological development and high levels of calcium for fruit quality. Physiological and environmental crop stress slows down plant metabolism and the movement of calcium within plant tissue. Consequently, plants may suffer, crop development may weaken, and fruit may lack necessary nutrients (including calcium) required for optimum harvest quality. International documented benefits from ColourUp applications include calcium mobilization to fruit and supporting natural colour development. Known commercial crop uses of ColourUp in South Africa include table grapes, mangoes, and citrus.

TRIALS

Locations and apple varieties

- Trials were conducted in 5 different areas (Koue Bokkeveld, Elgin, Helderstroom, Greyton and Riviersonderend). As many as possible bicolor apple varieties were evaluated. These were Gala, Pink Lady, Sundowner, Rosy Glo and Fuji.

ColourUp rate and application timings:

- ColourUp was applied 3 times at 10 – 14-day intervals at 2 L/ ha by means of tractor mounted commercial spray apparatus. Applications commenced when at least 80% of the apples in the orchard had developed or started developing colour.

Commercial harvesting practices

The general commercial harvesting practices in the Western Cape may be as follow:

- **First pick:** Quick process during which fruit that are mature (adequate colour development) ahead of the bulk fruit load are harvested and placed in cool storage. This fruit are packed after two weeks in cool storage.
- **Second pick:** This is the main harvesting stage. Harvested apples are kept "fresh" in controlled-atmosphere storage often for months. During these months of storage, the objective is to sort, pack and deliver these apples during pristine marketing (economical) opportunities.
- **Third pick:** This process is similar to the first pick, but in this case, it is late maturing fruit or fruit from a later fruit set.

These practices do however vary among growers and apple varieties. While some varieties go through all 3 harvesting

stages, other varieties are only harvested once (attempting to have as many pristine colour developed fruit present at such time). These various harvesting procedures had an obvious effect on the assessments of these commercial trials.

Assessments

Randomly tagged apples from randomly chosen trees within ColourUp treated and untreated orchards were frequently monitored for colour development during the trial period. The tagged fruit were sampled as close to commercial harvest as possible. This depended however whether the commercial practice of the grower was to harvest over three harvests or to harvest only once. Certain sampled fruit from orchards that were harvested three times had less colour development when compared to fruit harvested once only. As mentioned, the objective of the latter is to have as many pristine colour developed fruit present at harvest. In comparison fruit from trees destined to be harvested three times had to be sampled earlier to avoid the loss of tagged fruit and thus harvest data.

RESULTS

In most of the trial locations the increase in fruit colour development from ColourUp treated trees compared to untreated trees were visible in the orchard (example Photo 2) and also in the commercial picking bins (Photo 3). The extend of the ColourUp treatments are however better visually illustrated by comparing the sampled fruit next to each other (Pictures 4 to 8).

Should you require more information regarding the use of ColourUp on apples, contact your nearest Hygrotech branch or Herman Walters (hermanw@hygrotech.co.za).

Photo 2: Tagged apples (Fuji var.) in Helderstroom district from ColourUp treated trees (left) and untreated trees (right). Note the increased colour development of fruit from the ColourUp treated trees.



Photo 3: Commercially harvested apples (Rosy Glow var.) in Greyton district from ColourUp treated trees (left) and untreated trees (right). Note the increased colour development of fruit from the ColourUp treated trees.



1 TREATED 2 UNTREATED



Photo 4: Top Red



Photo 5: Fuji



Photo 6: Pink Lady



Photo 7: Rosy Glow



Photo 8: Sundowner

Photos 4 – 8:

Sampled apples of various varieties (as indicated) from ColourUp treated (left) and untreated trees (right) from various trial locations.

Nu-Film® P

Spreader Sticker

Certified by various international institutions* to be used during ORGANIC crop production



* Contact Hygrotech South Africa, should you require a copy of the Nu-Film® P certification by any of the above institutes.

Nu-Film® P benefits for agricultural remedies approved for organic production:

Improves deposition on crop

Improves coverage of crop

Improves rain fastness

Reduces UV degradation

Reduces heat degradation



Nu-Film® P is non-toxic to honeybees



ALWAYS REFER AND ADHERE TO PRODUCT LABEL INFORMATION AND RATES WHEN USING THE PRODUCT

Nu-Film® is a trademark of Miller Chemical & Fertilizer, LLC in Hanover, Pennsylvania.

Nu-Film® P contains 875 g/L Poly-1-p-Menthene. Reg. No. L2980, Act 36 of 1947

Hygrotech South Africa (Pty) Ltd is the principal supplier and registration holder of Nu-Film® P in South Africa.

Hygrotech SA contact number: +27 12 545 8000



A HUBER COMPANY





Citrus and Nu-Film 17

by Charl Kotze

Globally, South Africa is responsible for exporting more than 2 million tons of citrus annually. Most thereof is sent to markets with very strict regulatory guidelines. These include restrictions on the use of certain agrochemical remedies, permitted maximum residue levels of agrochemicals used, the internal and external quality of fruit as well as regulated pests.

Over the years certain diseases and pests such as Citrus black spot (*Phyllosticta citricarpa*) = CBS, Mealybug (*Planococcus citri*), False codling moth (*Cryptophlebia leucotreta*), Fruit fly (*Bactrocera dorsalis*, *Ceratitis capitata*, *Ceratitis rosa* etc.) and Californian red scale (*Aonidiella aurantia*) have become a serious impediment to market access and require serious managing and regulation. In most cases management will rely on applying registered agrochemical remedies using high-volume oscillating tower sprayers. However, spray equipment, calibration thereof and agrochemical products used play an integral part in the effectiveness of these applications. Moreover, once all these aspects are

optimal a further increase in efficacy may be achieved by the addition of spray adjuvants. Certain agricultural spray adjuvants are used to increase the effectiveness of fungicides, herbicides, and insecticides by modifying certain properties of the spray solution to increase deposition, spreading and tenacity on the plant surface or penetration into the plant surface. They can therefore be grouped according to their molecular make-up (source) and modifying characteristics as either mineral spray oils, sticker-spreaders, wetter-spreaders, or penetrators. One such product from Miller™ Chemical & Fertilizer, LLC and registered by Hygrotech South Africa, Nu-Film 17 (active ingredient: 905 g/L Di-1-p-Menthene; Reg. No. L2981 of Act 36 of 1947), with extender sticker-spreader properties has shown through global and local research of more than 40 years to benefit agricultural sprays during the application, as well as thereafter for a certain period of time.

Benefits during application are: reducing spray volatility and drift, and improving deposition and coverage of the spray on the plant surface (see Object 1 as example). **Benefits after application (on the plant surface) are:** improving rain fastness and uptake availability of the applied remedy, and reducing UV and heat degradation.

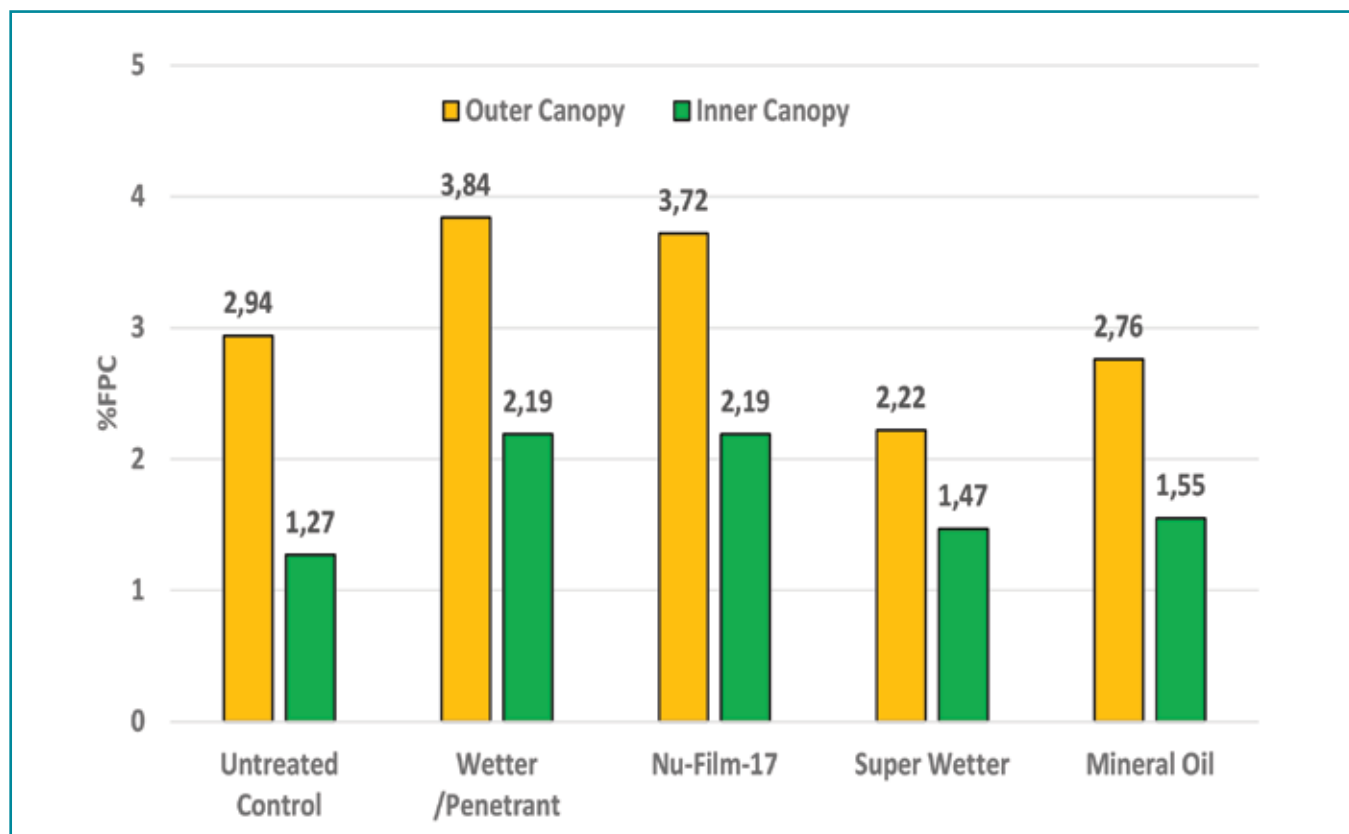


Figure 1: Mean deposition quantity achieved by different adjuvant treatments and a water control of leaves sampled from the inner and outer canopy of 'Eureka' lemon trees following a 4321L/ha spray.

The use and advantages of Nu-Film 17 within foliar citrus sprays are locally and globally well researched and documented. Some results and comments have been published in previous Hygrotech Forum editions. In this edition results from a recently published PhD Thesis (deposition and retention) and local independent studies (insect and disease control) involving Nu-Film 17 will be reported upon.

MATERIALS AND METHODS: DEPOSITION AND RETENTION

Research conducted by Dr Gideon van Zyl in receiving his PhD included the field evaluation of spray adjuvants in South African citrus orchards. Results from these studies indicated that Nu-Film 17 had the ability to increase the deposition quantity and retention of foliar sprays. The following materials and methods and results are extracts from some of his studies.

Deposition quantity

The reported-on trials were conducted in Hoedspruit, Limpopo on 'Star Ruby' grapefruit and 'Eureka' lemons, while another occurred on 'Cara Cara' navels in Schoemanskloof near Nelspruit in the Mpumalanga. In Hoedspruit, the grapefruit and lemon orchards were sprayed with a fluorescent pigment at a rate of 0.1% using a tractor-drawn multi-fan airblast sprayer calibrated to 4231 L/ha. Each treatment consisted of one row, sprayed from both sides with two buffer rows between each treated row. Although a similar trial layout was used at the Schoemanskloof-trial site, each of the different adjuvants were evaluated at two different spray volumes by calibrating an Ultima air blast tower sprayer to respectively 5411 and 10389 L/ha. All the evaluated adjuvants were applied along with the same 0.1% rate of fluorescent pigment at both spraying volumes. Ten



Object 1: Spray droplet deposition and the resulting deposit after Nu-Film 17 was applied at a rate of 1200ml/ha along with kaolin during a spray demonstration at Riverside estate in Malalane, Mpumalanga November 2018.

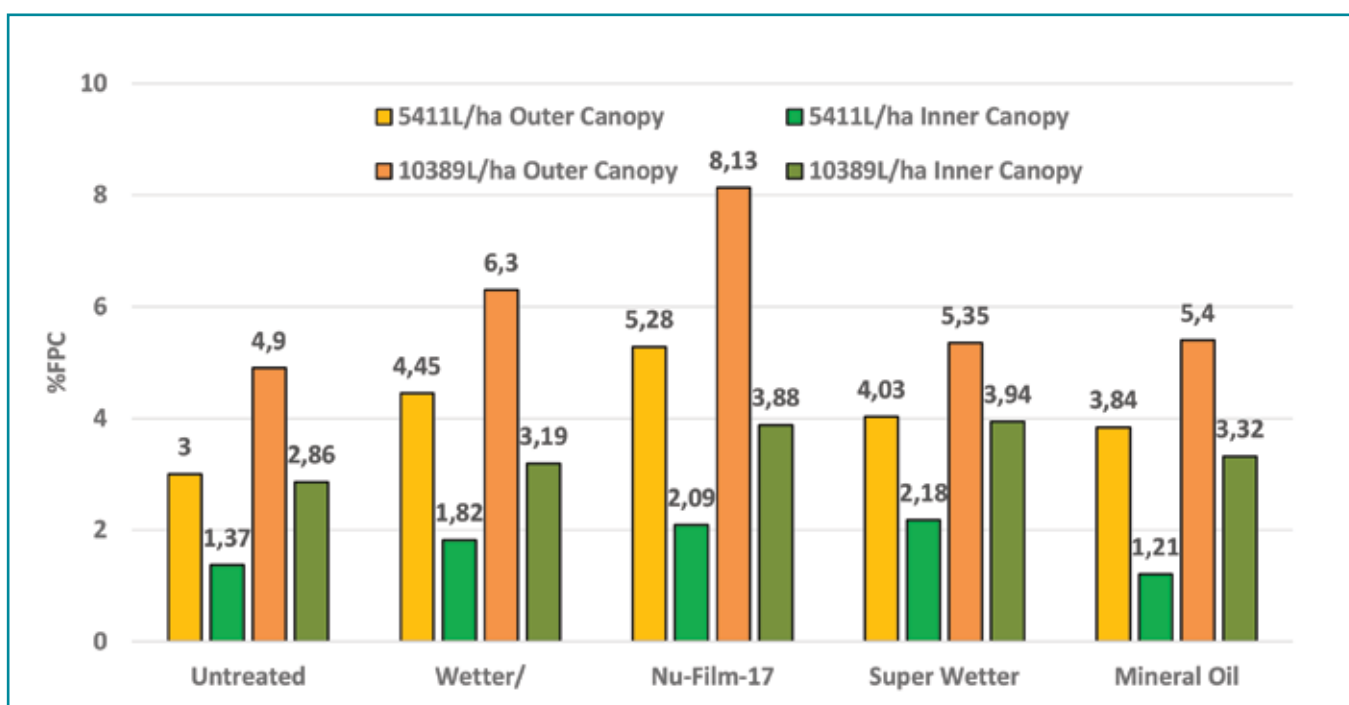


Figure 2: Mean deposition quantity achieved by several different adjuvant treatments and a water control of leaves sampled from the inner and outer canopy of 'Cara Cara' navel trees following respective sprays of 5411L/ha and 10389L/ha.

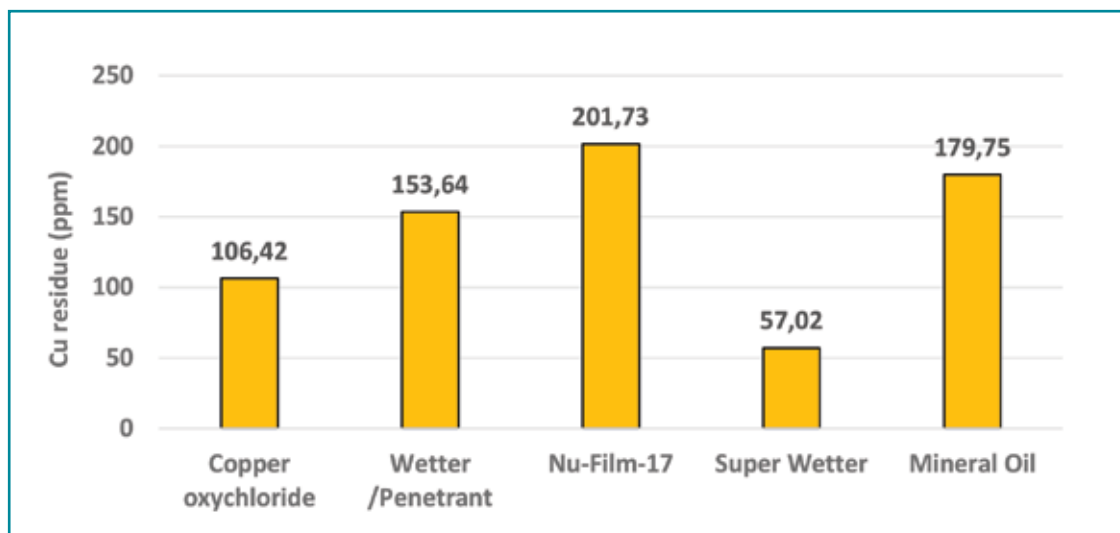


Figure 3: Copper residues realised after single leaves were treated with copper oxychloride and several adjuvants along with a fluorescent pigment *in vivo*

trees were selected from each of the treated rows at both trial sites whereafter leaves were randomly collected from different positions in and outside the tree canopy. The collected leaves were then photographed, and the resulting photographs subjected to image analysis to determine deposition quantity.

Retention

Leaves were collected from the young shoots of glasshouse reared 'Nova' mandarin nursery trees. Each treatment consisted of 8 leaves each treated with a 3 ml solution of 0.1% fluorescent pigment, 2 g/L copper oxychloride and deionised water with/without an adjuvant using a gravity fed mist spray gun and then left to dry. Each set of 8 leaves were replicated 5 times per treatment whereafter the entire batch was subdivided into three equal batches and sent for copper residue analysis.

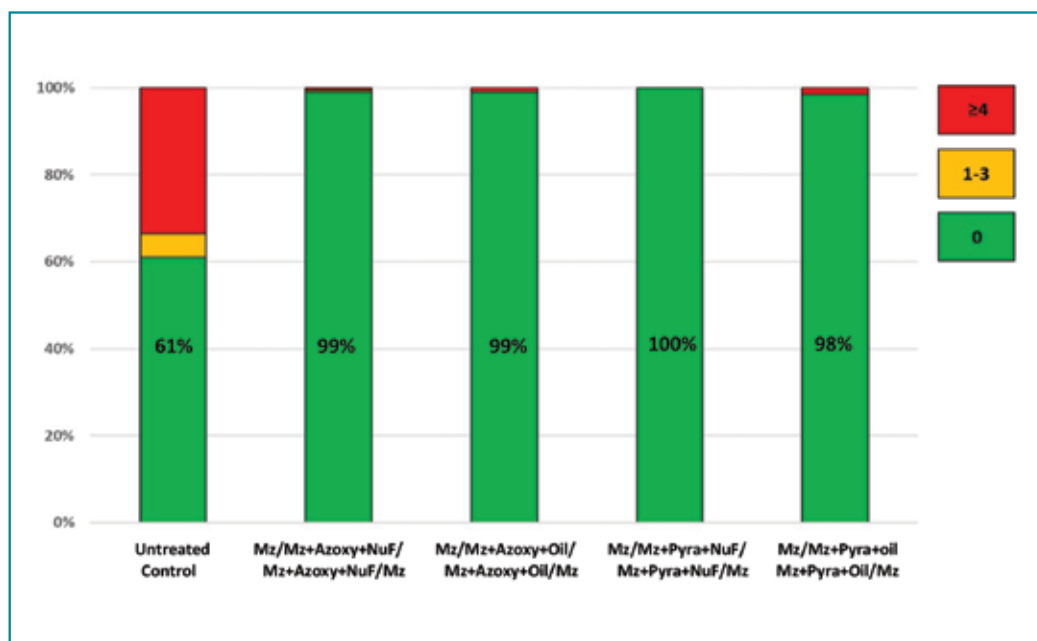
“Results from these studies indicated that Nu-Film 17 had the ability to increase the deposition quantity and retention of foliar sprays”

MATERIALS AND METHODS: FUNGICIDE AND INSECTICIDE EFFECTIVITY

Fungicide effectivity

CBS is a superficial disease to which fruit are susceptible for 16-20 weeks after fruit set. During that period fruit should be protected using spray programmes consisting of fungicides with different modes of action and periods of protection. The onset of programmes is from mid-October and, depending on the citrus type, up until the end of February. During the 2018-19 production season, Nu-Film 17 was evaluated in spray programmes consisting of mancozeb and strobilurins to control CBS. These trials were conducted at two separate trial sites in Brits, Northwest province and Nelspruit, Mpumalanga.

Figure 4: The evaluation of Nu-Film 17 as a substitute to mineral spray oil in a tank mixture with either azoxystrobin/pyraclostrobin and mancozeb as part of a standard citrus black spot spray programme at Brits, Northwest province during the 2018 and 2019 season.



At the Brits trial site, 'Eureka' lemon trees were treated using a tractor pulled tower sprayer equipped with two handheld spray guns, trees were sprayed to the point of run-off accumulating to approximately 5000 L/ha. Each treatment consisted of 4 randomly placed single tree plots from which 50 fruit were randomly evaluated at harvest according to a 3-point index: 0 = clean fruit with no CBS lesions; 1 = one to three CBS lesions per fruit; and 2 = four or more CBS lesions per fruit.

The Nelspruit trial site consisted of 'Valancia' orange trees with a history of high CBS infection levels. Each treatment consisted of 5 randomly selected single tree plots. Trees were sprayed to the point of runoff using a trailer-mounted high pressure spray machine with two handheld spray guns. Due to the varying size of the trees, the volume of water per tree ranged between 15 and 30 L, which accumulates to about 8 500 L/ha. At fruit maturity 100 randomly selected fruit were evaluated per tree according to the same 3-point index as the Brits trial. Unsprayed trees served as untreated controls.

Insecticide effectivity

Trials were conducted at two different trial sites in Mpumalanga to evaluate Nu-Film 17 in combination with three different insecticides (spinetoram, fenpropathrin and pyriproxyfen) for the control of either Citrus thrips (*Scirothrips aurantia*) or Californian red scale (*Aonidiella aurantia*) on citrus. At the first trial site located at Tekwane, Nu-Film 17 was evaluated along with fenpropathrin and spinetoram for the control of citrus thrips, while it was evaluated with

Figure 5: The evaluation of Nu-Film 17 as a substitute to mineral spray oil in a tank mixture with either azoxystrobin/pyraclostrobin and mancozeb as part of a standard citrus black spot spray programme at Nelspruit, Mpumalanga province during the 2018 and 2019 season.

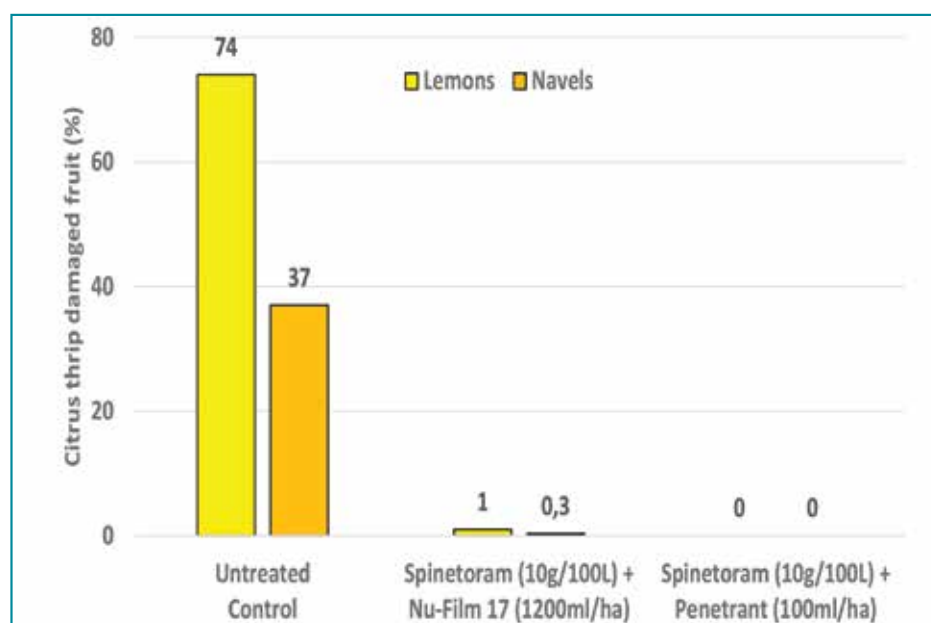
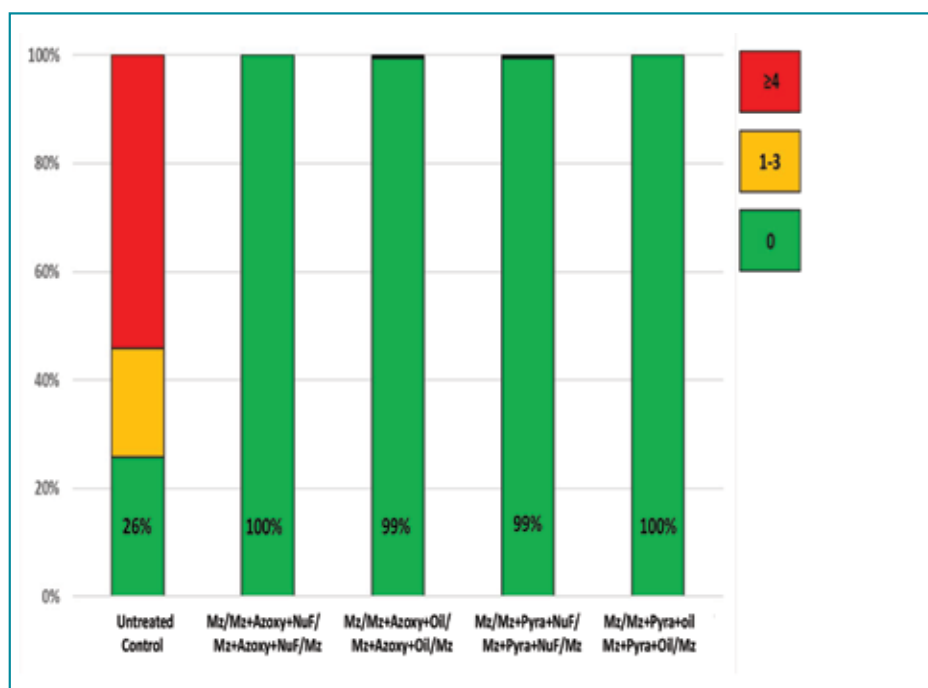


Figure 6: The evaluation of Nu-Film 17 with spinetoram for the control of citrus thrips on 'Eureka' lemons at Tekwane and 'Witkrans' navel oranges at Emgwenyama during the 2019-20 production season



pyriproxyfen for the control of Californian red scale. These insecticides were applied according to their labels, either with Nu-Film 17 or with an industry standard adjuvant. Each treatment consisted of 4 single tree plots randomly placed in a 'Limoneira' lemon orchard and sprayed to the point of runoff (2976 L/ha) using a pickup fitted sprayer equipped with spray guns. Unsprayed trees served as the untreated control. When determining the efficacy of the fenpropathrin and spinetoram in combination with either Nu-Film 17 or the industry standard adjuvant, 100 fruit were randomly selected per tree and inspected for thrip damage at predetermined intervals after each application. The data was then expressed as percentage damaged fruit. Furthermore, when evaluating the efficacy of the pyriproxyfen and adjuvant combinations for the control of red scale, 100 fruit per tree were inspected for the presence of red scale at similar predetermined intervals after each application. In this case the data was expressed as the percentage number of infected fruit.

The second trial site at Emgwenya consisted of a similar trial layout and treatment combinations. However, in this case the efficacy of fenpropathrin in combination with either Nu-Film 17 or an industry standard adjuvant was evaluated on 'Nadorcott' mandarins. On the other hand, the efficacy of spinetoram and pyriproxyfen in combination with an adjuvant for the respective control of thrips and red scale were conducted on 'Witkrans' navels. As with the previous trial site the trees were sprayed to the point of runoff, with the resulting spray volumes achieved being 2976 L/ha and 3472 L/ha due to the different canopy sizes of the 'Nadorcott' and 'Witkrans' orchards, respectively. The evaluation of the effectivity of each treatment for the control of both thrips and red scale were conducted according to the same methods as previously mentioned.

RESULTS: DEPOSITION AND RETENTION

Deposition quantity

In this regard deposition quantity can be defined as the percentage leaf area covered with fluorescent pigment (%FPC). The resulting data is therefore an indication of the amount of deposit available per leaf area. From Figure 1 it can be observed that Nu-Film 17 performed numerically better than most adjuvants regarding deposition quantity on lemon trees when taking leaves sampled from both inside and outside of the tree canopy into consideration.

When the same adjuvants were compared on navel oranges at two different spray volumes of 5411 L/ha and 10389 L/ha, Nu-Film 17 resulted in a higher deposition

quantity per leaf sampled from the outer canopy than any of the other adjuvants. However, when comparing the deposition quantity of leaves sampled from inside the tree canopy the super wetter gave a higher percentage leaf coverage at both spraying volumes. Resulting in 2.18% and 3.94% at the 5411 L/ha and 10389 L/ha volumes, respectively. This was however only marginally higher than the 2.09% at 5411 L/ha and 3.88% at 10389 L/ha achieved by Nu-Film 17.

Retention

Results observed from Figure 3 indicate that when copper oxychloride was applied with Nu-Film 17 to 'Nova' mandarin leaves *in vivo*, it resulted in 201.73 ppm of residual copper. When comparing this to the other evaluated adjuvants, mineral oil yielded the second highest level of residual copper resulting in 179.75 ppm.

Fungicide effectivity

The most frequently used CBS programme consists of a contact fungicide applied by mid-October, followed by a tank mixture of a contact fungicide, a strobilurin fungicide and mineral oil 21-24 days later. This is followed by the same tank mixture 6 weeks later while a final contact fungicide application will occur 6 weeks thereafter. The objective is to provide approximately 20 weeks of protection during the period of fruit susceptibility. In the two trials conducted, Nu-Film 17 was compared to mineral oil, by replacing the latter with Nu-Film 17 (at 1200 ml/ha) in a tank mixture with mancozeb and either azoxystrobin or pyraclostrobin.

At both trial sites a relatively high incidence of CBS was observed, with 39% and 74% infection of the untreated control at the Brits and Nelspruit trial sites, respectively (Figure 4; 5). Furthermore, whether Nu-Film 17 was applied in a tank mixture with either azoxystrobin or pyraclostrobin it yielded 100% clean exportable fruit at the Brits trial site (Figure 4). This was similar to the oil containing tank mixtures that yielded 99% with azoxystrobin and 100% with pyraclostrobin. While at the Nelspruit trial site the Nu-Film 17 containing tank mixtures yielded 100% and 99% clean exportable fruit with azoxystrobin and pyraclostrobin respectively (Figure 5). Furthermore, this was once again similar to the results achieved by the oil containing tank mixtures which yielded 99% and 100% clean fruit with azoxystrobin and pyraclostrobin respectively.

Insecticide effectivity

When Nu-Film 17 was applied with spinetoram for the control of citrus thrips on both lemons and navels it yielded significantly fewer fruit with thrip damage than the untreated control plots. This can be seen in Figure 6, that shows the untreated plots of the lemon and navel trial sites that respectively yielded 74% and 37% thrip damaged fruit. Although the treatment of spinetoram and a penetrant adjuvant yielded no thrip damaged fruit at both the lemon and navel treated plots it was only marginally better than the plots that received Nu-Film 17 and spinetoram that resulted in 1% and 0.3% at the lemon and navel plots, respectively.

From Figure 7 the effect of Nu-Film 17 and fenpropathrin on citrus thrip damage can be observed. At both the lemon

"The use and advantages of Nu-Film 17 within foliar citrus sprays are locally and globally well researched and documented.

Some results and comments have been published in previous Hygrotech Forum editions"

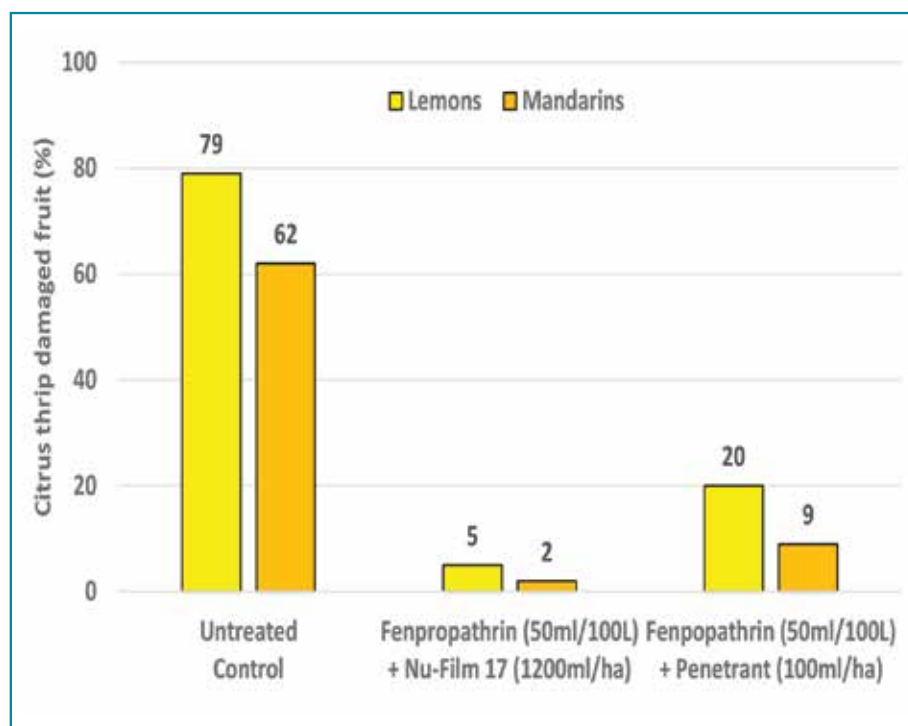


Figure 7: The evaluation of Nu-Film 17 with fenpropathrin for the control of citrus thrips on 'Eureka' lemons at Tekwane and 'Nadorcott' mandarins at Emgwenyama during the 2019-20 production season.

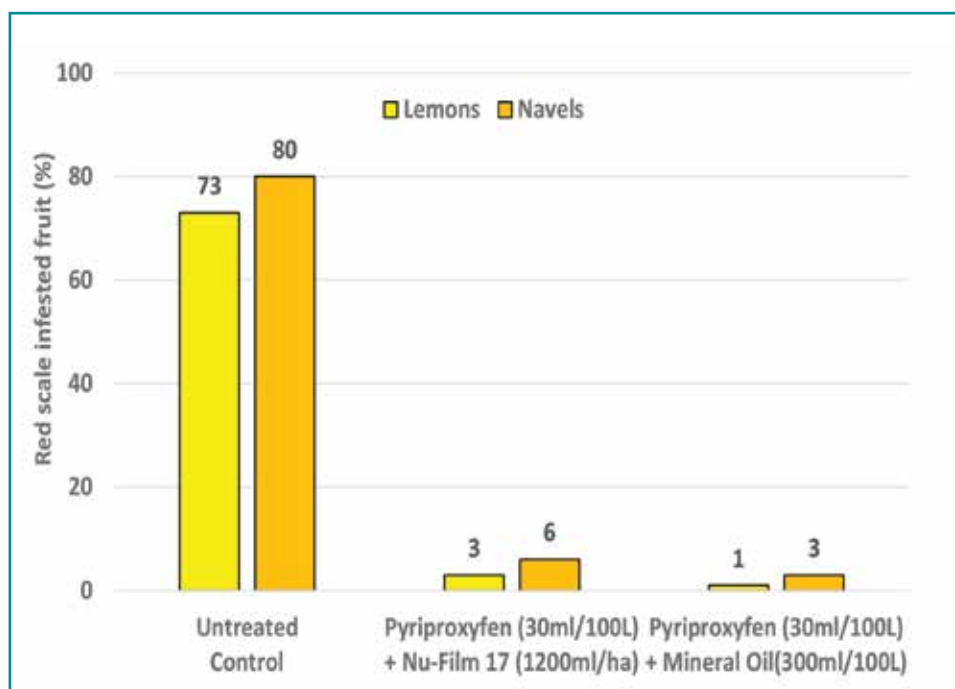


Figure 8: The evaluation of Nu-Film 17 with pyriproxyfen for the control of Californian red scale on Eureka lemons at Tekwane and 'Witkrans' navel oranges at Emgwenyama during the 2019-20 production season.

and mandarin trial sites the Nu-Film 17 with fenpropathrin treated plots yielded only 5% and 2% thrip damaged fruit, respectively. This is significantly fewer than the untreated lemon and mandarin plots that respectively yielded 79% and 52% thrip damaged fruit. However, when fenpropathrin was applied with a registered penetrant adjuvant it yielded more thrip damaged fruit than when applied with Nu-Film 17.

The incidence of Californian red scale at both trial sites was very high, with the untreated plots at both the lemon and navel orchards respectively yielding 73% and 80% (Figure 8). Both the pyriproxyfen treatments, with mineral oil and Nu-Film 17 showed a marked reduction in fruit infested with red scale.

CONCLUSION

All the mentioned results have indicated that not only does Nu-Film 17 perform similarly to other registered adjuvants when evaluating its deposition and retention qualities, but it has the ability to give similar effectivity results when evaluating it with registered fungicides and insecticides for the control of important citrus pests.

LITERATURE

Van Zyl, J.G. 2019. Evaluation of adjuvants in fungicide spray application for the control of *Alternaria* brown spot in South African citrus orchards. PhD thesis University of Stellenbosch.



LUCERNE HLS 9.2 -

making the cut in 2020

Written by Dirk Moolman

The Vaalharts irrigation scheme is one of the largest irrigation schemes in the world, covering 370 square kilometres in the Northern Cape. It is named after the Vaal - and Harts rivers, the Vaal being its main source of water supply.

Due to the poor water quality of the Vaal River and saline soils, HLS 9.2 is the perfect cultivar for the area since it is known for its salt tolerance. The HLS 9.2 is also classified as a dormancy 9 (non-winter dormant).

Even though this cultivar was planted in the Vaalharts irrigation scheme for the past few years, 2020 showed record sales of +- 750 hectares cultivated for the year. This can be attributed to the excellent performance of HLS 9.2 and strategic marketing.

On visitation of our established HLS 9.2 clients, we received positive feedback which includes the following: Yielding between 25 – 28 tonnes per annum, excellent regrowth capability, great yields in saline soils, high protein content and excellent hay quality for feeding and exporting. The large 3 leaf structure is also preferred by these farmers.

These positive outcomes are sure indications for what is to come in 2021.



SURVIVAL

By Theo Schoonraad

From the tiniest organism right through to the biggest whale or elephant, survival is key to every living entity. Even if they have to adapt and make the best of a bad situation. This was beautifully demonstrated when a chili pod somehow got stuck in a groove of a damp wooden table.

With only a little bit of moisture, but without soil and the necessary nutrient matter, this chili germinated and grew. That is determination to survive, although in this case it would only be for a short while.

Wonderful nevertheless.



Lucerne HLS 9.2 (Salt tolerant) Lusern HLS 9.2 (Sout tolerant)



Specifications

- Dormancy 9 (non winter dormant)
- SALT TOLERANT; soil and water
- Top yield: 25 plus tons baled hay/ha/year
- Variety was selected to work well in hot temperatures
- Variety has shown adaption throughout many regions
- High leaf to stem ratio
- Produces excellent quality hay
- Very large leaf structure
- Pre-inoculated with Nitrocoat
- Bred and produced in the USA

Spesifikasies

- Klas 9 dormansie (Nie winter dormant)
- SOUT TOLERANT; grond en water
- Top produksie: 25 plus ton gebaalde hooi/ha/jaar
- Variteit was geselekteer om in warm toestande te presteer
- Variteit is aangepas in verskeie omstandighede
- Hoë blaar tot stam verhouding
- Produseer uitstekende kwaliteit hooi
- Baie groot blaar struktuur
- Reeds ge-ent met Nitrocoat
- Geteel en vermeerder in die VSA

	HOOG WEERSTANDIG	WEERSTANDIG	MEDIUM WEERSTANDIG
Bacterial wilt		X	
Fusarium wilt	X		
Phytophthora	X		
Verticillium wilt		X	
INSEKTE/INSECTS			
Pea aphid	X		
Blue alfalfa aphid	X		
Spotted alfalfa aphid	X		
Cow pea aphid		X	
NEMATODES			
Stem nematode		X	
Northern rootknot nematode	X		
Southern rootknot nematode	X		
	HIGHLY RESISTANT	RESISTANT	MEDIUM RESISTANCE

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SUSTAINABLE SOLUTIONS

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PO Box 17220, PRETORIA NORTH, 0116, South Africa | Tel: +27 12 545 8000 | Fax: +27 12 545 8088



PERENNIAL RYE GRASS - **PLATFORM**

A worthy contender in the heavyweight arena

Written by Renier van Rooyen – George branch

A new addition to Hygrotech's pasture basket is the diploid perennial rye grass named **PLATFORM**. This cultivar originates from PGG Wrightson Seeds out of New Zealand.

The strongest characteristics of **PLATFORM** are the excellent dense tillers as well as its strong resistance to crown rust, but most impressive of all.....is its total yield. With different plantings which stretched from the Southern Cape to deep into the Eastern Cape and Tsitsikamma, this cultivar has demonstrated its adaptability, not to even mention the total hectares planted in KZN-province.

Prominent leading farmers were identified to make **PLATFORM** part of their grass selections and **PLATFORM** passed these trials with distinction. From the initial establishment and market entrance, this cultivar doubled its hectareage in the next season and proved that it's a top cultivar worthy of the heavyweight arena where many other competitors from different suppliers are boxing.

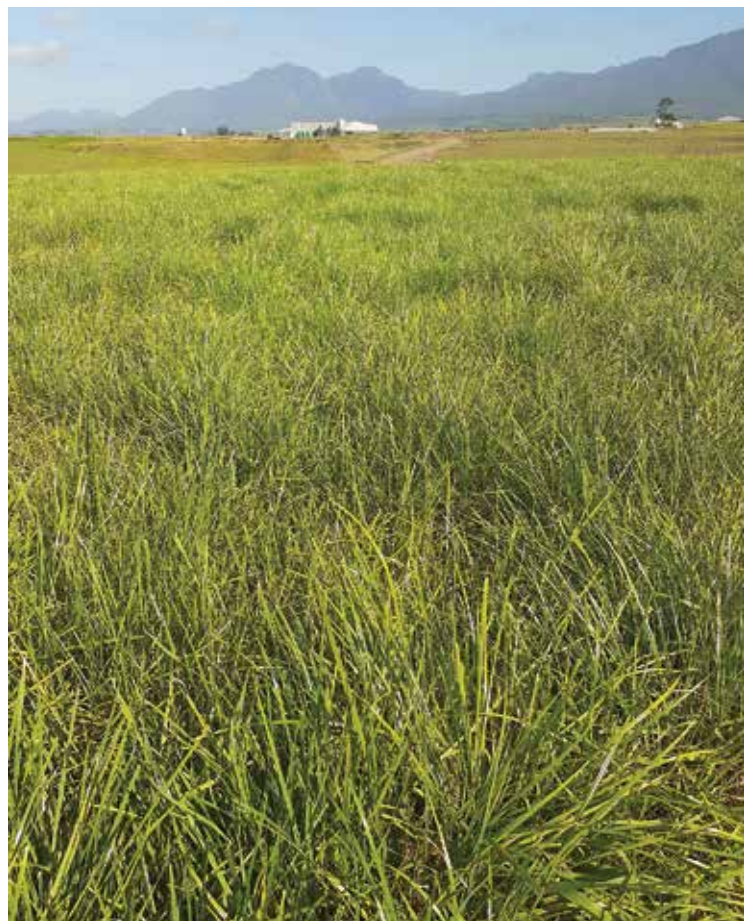


PLATFORM will fit in most systems where additional dry matter is required early in the season when more fodder should be available for milk-and-meat production. A further bonus is a lower capital lay-out in the form of supplements due to ample grass on the land.

PLATFORM will establish quickly with a long growing season and with a very high yield under a wide range of climatological conditions with favourable fertilisation practices. It will 'look-after' the farmer in terms of quick recovery after grazing and to withstand 'traffic'.

PLATFORM is the # 1 choice when a longer growing season is required. This will ensure that it will produce during the difficult times from December to February just prior to establishing new lands.

For any further inquiries, kindly contact your nearest representative to establish this top cultivar on your farm and kick dust in the eyes of the competitors.

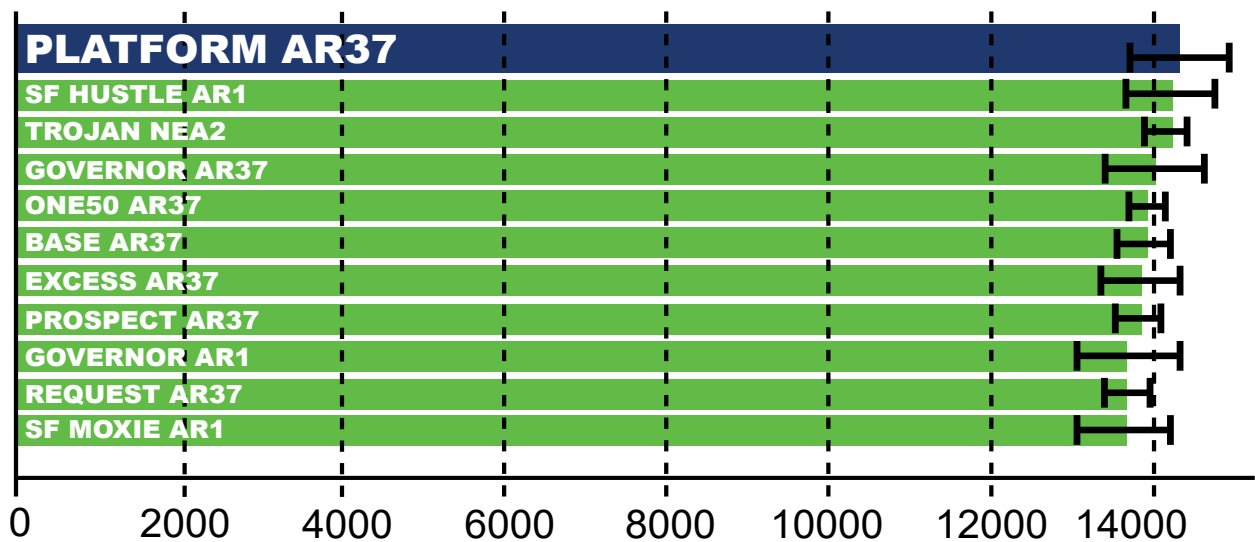


" The strongest characteristics of PLATFORM are the excellent dense tillers as well as its strong resistance to crown rust, but most impressive of all.....is its total yield"



No 1 Perennial ryegrass in total yield

New Zealand Trials; Perennial Ryegrass Total Yield



NFVT Summary 1991 - 2018 (August 2018)*

Full results available at <https://www.nzpbra.org/forage-trials/results/>

WHY SHOULD YOU PLANT PLATFORM DIPLOID PERENNIAL RYEGRASS

- Elite New Zealand and North- West Spanish genetics
- Strong cool season growth
- Fine leaved and densely tillered
- Dairy NZ five star rating (Total seasonal DM yield)
- Late heading date (+12)
- Strong crown rust tolerance



Proudly brought to you by:



PGG Wrightson Seeds



FOOD FOR THOUGHT

Compiled by Theo Schoonraad

Vegetables offer an unique market for the South African producer since they are a basic requirement of every person. Vegetables play a central role in addressing food security and providing nutritional supplements and requirements to people.

Vegetable production is largely driven by the expansion of the domestic market and is important for job creation and food security. It has been placed in the quadrant of having both high-growth potential and being labour intensive.

• EXPORTS AND IMPORTS

Top vegetable exports in 2019: (FPEF, 2020)

- Butternuts (37%)
- Onions (34%)
- Carrots (8%)
- Pumpkins (9%)
- Potatoes (8%)
- Sweet potatoes (6%)

The annual Food Trade SA and the Fresh Produce Exporters' Forum (FPEF)'s Export Directory publications are good sources of export statistics for fresh produce.

• LOCAL BUSINESS ENVIRONMENT

Using the Abstract of Agricultural Statistics (DALRRAD 2019), the Bureau for Food & Agricultural Policy (BFAP -2020) gives the gross production value (GPV) of vegetables in South Africa as being R 17.7 billion. This GPV figure is constituted by :

- Potatoes – 42 %
- Green mealies and sweet corn – (26 %)
- Tomatoes – 12 %
- Onions – 8 %
- Pumpkins, gem squash & cauliflower – 3 %
- Carrots – 3 %
- Other – 6 % (cabbage – 2 %; beetroot – 1 %;

lettuce – 1 %; sweet potatoes – 1 %;
and green beans – 1 %.

The top 5 largest traded (in value) vegetables are :

1. Potatoes
2. Tomatoes
3. Onions
4. Peppers
5. Carrots

• AFRICAN BUSINESS ENVIRONMENT

Prior to Covid-19, vegetable exports into Africa were supported by the relatively higher GDP growth in the sub-Saharan region, coupled by the boldness of retail supermarkets that have expanded into Africa over the past two decades. These countries were forecasting to grow their GDP significantly faster than South Africa and the trends of urbanization and the inevitable switch from informal to formal retail meant that supermarkets not in South Africa would continue to deliver growth in excess of what can be achieved in South Africa.

Source: ABSA Agricultural Outlook 2017 (adapted)

The World Bank publication 'Growing Africa: Unlocking the potential of Agribusiness' emphasized the critical important role that agribusiness needs to play in Africa's development. Agriculture and Agribusiness are projected to be a US\$ 1.0 trillion industry in sub-Sahara Africa by 2030 and should thus be at the top of the agenda for economic transformation and development.

Source: Dr. John Purchase - Agribiz

*Acknowledgement to and with permission of:
The Agribook*

CEO: Craig Macaskill (076 164 0957)



LAWN GRASS DEFICIENCY

SYMPTOMS

Compiled by Theo Schoonraad.
National Manager: Turf grass products.

A deficiency or lack of a nutrient in your soil will be evident by the appearance of the plants or grass growing there.

The secret to eliminating any one of these soil deficiency problems from occurring is in testing your soil before planting or even each season. Feeding the lawn on a regular maintenance schedule as prescribed by the product information, will probably result in not having any of these problems with your lawn.



DEFICIENCY SYMPTOMS:

Major Elements: NPK

- **Nitrogen (N)** – Older leaves turn yellow green and little new growth is noticed.
- **Phosphorus (P)** – Leaves turn purple, reddish-brown or very dark green (almost black)
- **Potassium (K)** – Leaf tips and edges look burned. Yellowing of older leaves followed by die-back at the tips.

Minor (Trace) Elements:

- **Magnesium** – Foliage will appear yellowish green with red tinted edges.
- **Calcium** – New leaves will be small and grass will be rust coloured.
- **Sulfur** – Fully grown leaves turn yellow.
- **Iron** – New grass will turn yellow.
- **Manganese** – New grass turns yellow.
- **Zinc** – Grass leaves will appear shriveling, narrow bladed and smaller than usual.
- **Boron** – Yellowed grassing and immature growth.
- **Molybdenum** – Fully grown and mature grass appears gray-green.

Take note: Colour changes are not always exclusively caused by deficiency of the described elements above but could also be caused by various lawn grass diseases like fungi, and others.

Kindly contact Theo Schoonraad
 (083 273 2624) for more information
 on the establishment and maintenance
 of a healthy lawn.



MEET OUR SALES TEAM



During the month of February 2021 our sales team from all over the country gathered at Kwalata, Dinokeng to discuss sales matters. Strategic planning made up a large part of the discussions to ensure a successfull new season and year.



1

1

LIMPOPO / BUSHVELD: Dirk le Roux, Henno Breytenbach, Herman de Beer, Tank Hendriks and Emile du Plessis

2

FREE STATE / NORTHERN CAPE: Francois Fourie and Dirk Moolman

3

KWAZULU NATAL: Stephen Pennells, Luhan Swart, Nishee Singh and Rajen Rajcoomher



2



3



WESTERN CAPE

Theo Scholtz and Fanie Verwey

Absent: Belinda Nel and
Hugo Burger

MBOMBELA / MPUMALANGA

Francois Mostert and Lodewyk van Staden



SOUTHERN / EASTERN CAPE

Renier van Rooyen



Gauteng / North West

Dr. Martin Maboko and
Hannes van der Merwe



NEW DEPOT'S FOR HYGROTECH

Hygrotech recently decided to open up and establish new depot's in Komatipoort and Brits respectively to further strengthen our visibility and service in these prime vegetable areas.

KOMATIPOORT DEPOT

Ideally located in the 'Onderberg' area, this new depot will make it substantially more beneficial for vegetable farmers and clients in this region to get exposure to our full product range.

Clients from close neighbouring countries like Mozambique and Eswatini would also be able to visit the depot on a regular basis without travelling too far.

We would like to express our gratitude and acknowledgement to Mr. Dirk Wolfaard who gave us the opportunity to occupy space in his Waterland business complex in Komatipoort.



 **Agri Waterland Business Complex**
1 Hotchkiss street
Komatipoort, 1340
Tel no: 013 813 2745

BRITS DEPOT

We are happy and excited to re-open a branch / depot in Brits, known as the vegetable hub of the Northwest Province.

Farmers and clients are most welcome to contact us and/or pay us a visit



5 Van Deventer Street
Brits, 0250
Tel: 012 001 4944 /
Tel: 012 001 4945

New Appointments



LODEWYK VAN STADEN

Lodewyk, who successfully served Hygrotech for a few years as Marketing Field Officer, has recently been promoted to the position of new Area Marketing Manager in Nelspruit / Mbombela. Lodewyk has excelled in his role as a marketer and there is no doubt that he will carry the torch left by the late Michael Luttig and take the region to new heights.

We wish Lodewyk all the best with his plans and endeavours.

Contact number: 082 926 3450



FRANCOIS MOSTERT

Francois recently joined Hygrotech and will be stationed at our Nelspruit / Mbombela branch where he will look after product marketing and sales in specific geographical areas of Mpumalanga Province.

Francois grew up in Louis Trichardt where he also spent most of his weekends on their family farm near Musina. He matriculated from Louis Trichardt High School in 2013 and excelled in rugby and cricket.

In 2016 he graduated from the North-West University, Potchefstroom campus with a B Com degree in Marketing Management. Francois previously worked for Hazera Seeds SA as Area Sales Manager.

He has had a passion for agriculture his whole life and would now like to pursue his dreams further at Hygrotech. All the best Francois ! **Contact number:** 084 874 4601

ANTIONETTE MEYER

Antionette started her career with Hygrotech in October 2020. She has a National Diploma in Human Resources Management. Antionette has been appointed as Branch Clerk in the new Brits Depot, Northwest.

We are sure that her excellent sense for detail, record holding and orientation towards service will be an asset to the company and our clients.

Welcome, Antionette and we hope you have a fruitful and happy stay with Hygrotech.



LAWN GRASS TO BE PROUD OF

Make sure your lawn catches the eye and stand out this Spring and Summer. A beautiful and healthy lush green lawn will always unleash positive response.

Hygrotech supplies and distributes seed of the following lawn/ turf grass varieties:

- Kikuyu
- Bermuda kweek (Cynodon)
- Bahia Pensacola
- Annual turf rye grass
- Perennial turf rye grass
- Turf fescue
- Hygro Lawn grass mixture

We are also supplying an excellent range of specialized lawn grass fertilizers :

- Profeed 18-6-18
- Calpomagnit
- Spes Maxi-Turf
- Spes Hygro ASN 40
- NC 32
- Green-Up
- Liquid 6-3-4 (20)
- Hygro Sports Pack



Contact Theo Schoonraad (083 273 2624) for advice on seasonal preparations, technical details, availability and prices of our lawn grass products.

Thai chicken potjie

INGREDIENTS

coconut oil, for frying

- 1 T Fresh ginger, grated
 - 1 T Fresh garlic, diced
 - 1 T Fresh red chilli, chopped
 - 1 Red pepper, chopped
 - 1 Yellow pepper, chopped
 - 1 Punnet baby marrows
 - 1 Punnet patty pans
 - 1-2 Tins coconut milk
 - 1 Cup chicken stock
 - 2 T Fish sauce
 - 2 T Lime juice
 - 5-6 T Thai red curry paste
 - 8-12 Chicken pieces
 - 1 Stalk lemongrass, whole, peeled and pounded
- Brown sugar (optional)
Fresh coriander, for serving
Long grain jasmine rice, cooked

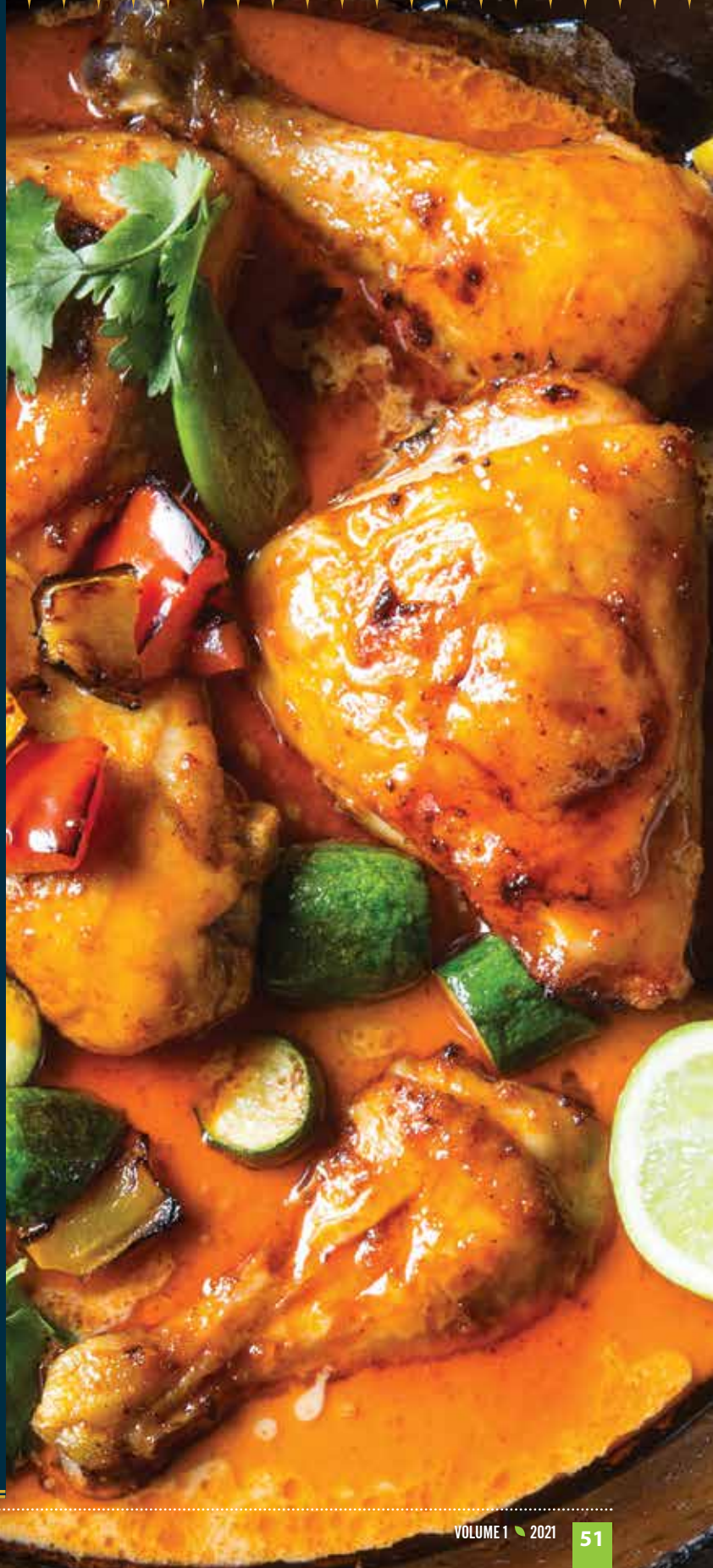
COOKING INSTRUCTIONS

Heat the oil in the potjie. Fry the patty pan, marrows and peppers. Remove once cooked but still crisp.

Heat more oil. Fry the ginger, garlic, chilli, lemongrass and curry paste for about 2 minutes, or until you can smell the aromas. Add the chicken pieces and fry for another minute or 2. Add 1 tin coconut milk and chicken stock. Cook for 1 hour. Add $\frac{1}{2}$ to 1 tin of coconut milk if it becomes dry.

Add lime juice, fish sauce, and brown sugar, to taste. Add the fried veggies and remove the lemongrass.

Serve hot with fresh chopped coriander and jasmine rice.



AS-SISTANCE
MIST CONTROL®

HYGROBUFF 4
SUSTAIN®

SUREBUFF
ENTREE™

**YOUR BEST ATTACK STRATEGY
BY WATER, AIR & LAND**

WAR ON WEEDS

PRODUCED BY



Mist Control®, Sustain® and Entrée™ are trademarks of Miller™ Chemical & Fertilizer, LLC in Hanover, Pennsylvania.

AS-sistance contains 520 g/L Ammonium sulphate. Reg. No. L8015 of Act 36 of 1947.

Hygrobuff contains 85 g/L Alkylaryl Polyoxyethylene Glycol Phosphate ester & 497 g/L Organic acid buffer system. Reg. No. L5512 of Act 36 of 1947.

Surebuff contains 480 g/L Acidifier, Buffer. Reg. No. L6539 of Act 36 of 1947.

Mist Control® contains 20 g/L Polyvinyl polymer. Reg. No. L4567 of Act 36 of 1947. Sustain® contains 875 g/L Poly-1-p-menthene. Reg. No. L7690 of Act 36 of 1947.

Entree contains 819 g/L vegetable oil blend. Reg. No. L8055 of Act 36 of 1947.

Hygrotech South Africa (Pty) Ltd is the principal supplier of these products.

Hygrotech Properties (Pty) Ltd is the registration holder of AS-sistance, Hygrobuff 4, Mist Control® and Surebuff. 1 Gerard Braak Street, Pyramid, 0120, Tel. +27 12 545 8000

Miller™ Chemical South Africa (Pty) Ltd is the registration holder of Entree™ and Sustain®. 215 Jack Hindon Street, Pretoria North, 0182