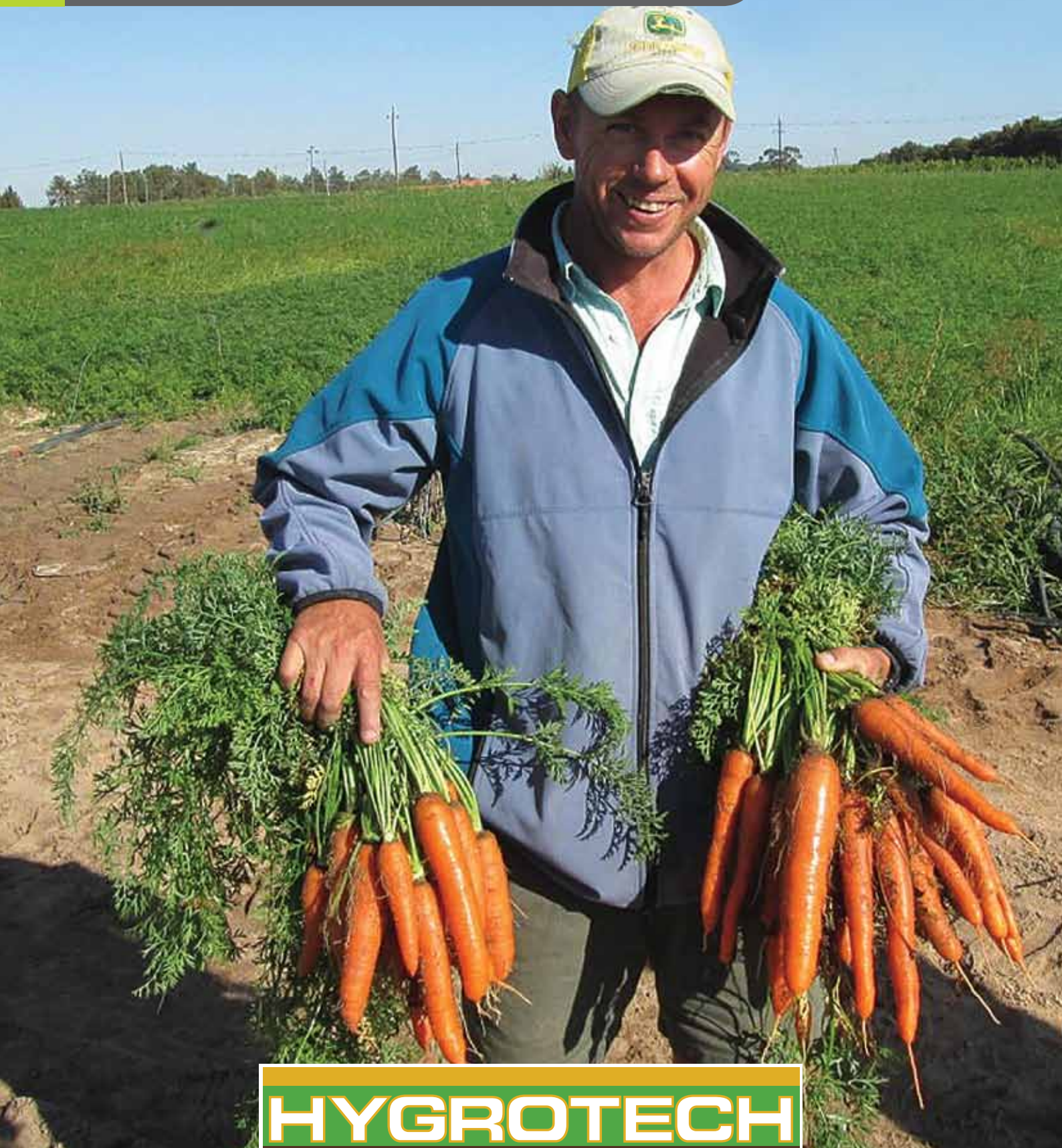


# the FORUM



## HYGROTECH

SUSTAINABLE SOLUTIONS

**INSIDE:** Exciting new tomatoes | Green bean genetics | Mist Control  
Water quality | Kow Kandy | Butternut fruit shapes | Mikskaar



VALUE  
PAK

# HYGROTECH

SUSTAINABLE SOLUTIONS

QUALITY VEGETABLE SEEDS FOR THE PROFESSIONAL GROWER

## HYGROTECH'S PROFESSIONAL SEED AFRICAN PACKS

Hygrotech derived from

HY - Hybrid GRO - Growing TECH - Technologies

Hygrotech pioneered the development of F1 Hybrids in the South African vegetable industry.

Offering a "one stop" service to more than 4 000 farmers throughout South Africa, Hygrotech offers seed, adjuvants, growth stimulants, seedling systems (seed trays, growing medium and sowing machines), fertilisers, foliarfeeds, biological products, plant manipulators and mechanical implements – in short many of the necessities for the modern vegetable farmer, and agriculture in Southern Africa.

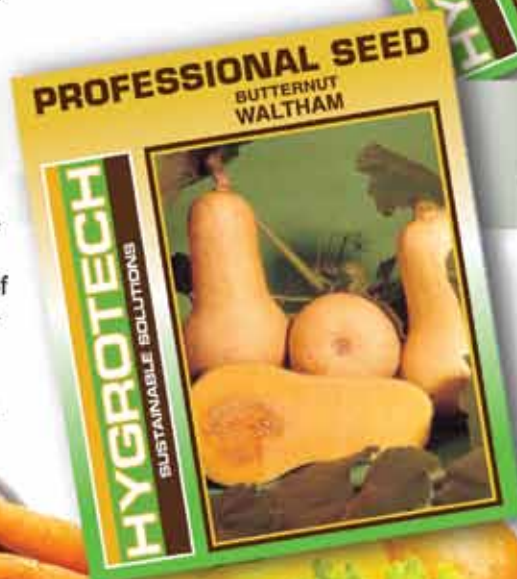
Hygrotech's African Packs are Value Packs containing quality professional seed meant for the small scale grower or home gardener with small holding properties wishing to grow mainly vegetables. Each pack is fully traceable to it's source by means of a professional lot number.



### STAND OPTION

Hygrotech will supply the stand free of charge should a minimum order be requested that fills the majority of the stand. The stand will remain the property of Hygrotech.

Options are available to purchase a stand, please contact us for further details.



### "CHOOSE FROM AFRICA PACK RANGE"

Open pollinated vegetable seed  
Please enquire for cost of packets



**HYGROTECH**  
SUSTAINABLE SOLUTIONS

Contact your nearest Hygrotech office for more information

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1 Gerard Braak St, Pyramid, 0120 • PO Box 17220, Pretoria North, 0116

[www.hygrotech.co.za](http://www.hygrotech.co.za)



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## ZAMBIA

Lusaka

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## MOZAMBIQUE

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## KENYA

Nairobi

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## BOTSWANA

Gaborone

00267 318 1346

Francistown

00267 241 3906

## NAMIBIA

Windhoek

00264 61-253322 / 248493

# SA

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www.hygrotech.co.za

## BOSVELD

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015 491 2651

Louis Trichardt

015 516 1504/5

## LAEVELD

Tzaneen

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Nelspruit

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## GAUTENG

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044 870 7808

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Vredendal

027 213 5609

Ceres

023 316 209

Malmesbury

022 482 2570

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.....  
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.



# EXCITING NEW TOMATO BREEDING TRENDS

During the Stellenbosch summer trials, Hygrotech presented more than 80 new F1 hybrids of various types and specialties of tomatoes from 10 different international tomato breeding companies from the USA, Europe, the Middle East and Asia.

**One of the highlights** was the introduction of high quality, large and tasty long shelf life All Flesh tomatoes on determinate plants with good disease resistance packages which include V2,F3, N,TMV, TSWV, P. There are round fruited as well as Saladette (Roma) types in the group.



The unique feature of this new generation All Flesh material is that the flesh is very firm, very tasty when fully red ripe and is almost solid inside with no locules that normally contain jelly. The application of these types of fruit can be on sandwiches, in salads, on pizza and in stews but should at all times be used red ripe to enhance the taste and flavour of the fruit.

**Another interesting development** from an exceptional and very experienced tomato breeder is a new range of Bacterial Wilt resistant material on indeterminate large fruited saladette types as well as determinate large fruited round types. The full house disease resistance packages on all the material include V, F3, TMV, N, TYLCV, TSWV. The fruit on these types are exceptionally firm, smooth shoulders, small blossom end scars, thick walls with good setting ability and strong, vigorous plants.

Hygrotech is indeed proud to share this information with all its Forum readers and customers in Southern Africa and will release semi-commercial seed lots towards the end of 2017 after a final winter trial evaluation in Komatipoort during early September 2017.





# MELON INDUSTRY UNDER PRESSURE IN THE WESTERN CAPE.

Written by Hugo Burger – Technical Manager, Stellenbosch branch.

## **The melon business/ trade has shrunk in the Western Cape over the last 3 years and various reasons had an influence on this.**

Low rainfall over the last 2 years, high input costs, and a decline in buying power are the main factors which influenced the decline in melon plantings. The good income potential in the citrus industry also had a huge effect and more plantings of citrus are still being done. Despite all these negative factors, there are still devoted melon producers who keep the wheels rolling to supply the public with product. Seed distributors therefore have a duty to supply these producers with the best advice and varieties.

The introduction of new long shelf life type melons had a beneficial effect on producers. Some producers are far from the bigger markets and these traits are therefore even more important when choosing a cultivar. The LSL cultivars usually have a high sugar content with good taste and firm flesh. Fresh Cut companies prefer LSL type melons. The big challenge with these cultivars is to inform the consumer about this new trend in the market.

Consumers are still used to the old Eastern Shipper type, like Athena, with cream coloured skin and aroma. The perception exists though that the SLS types are not 'ready' because of the green skin colour ...hence the decline in consumption. Supermarkets need to play an educational role in this regard.

A lot of work is done annually with the development of new material suited to South African circumstances. Certain selections are made to trial at preferred producers. This year was no different and 4 new cultivars with good disease packages, approximately 2 kg fruit sizes and small seed cavities, have been identified. The flesh colour is deep orange, firm and with a brix of higher than 15. The cultivars are 78-60001, USAMR 15333, USAMR 14836 and USAMR 15332.

Melon STRAVA has already been in the market for the last year and is aimed on the 'old' traditional market with a cream coloured skin, medium firm flesh and very good taste.

There is a wide range of cultivars available to select from for every producer to suit his/her own farming practices and needs.

Kindly contact your nearest Hygrotech office should you need more information.



Strava



USAMR 14836



Melon 78-6001



Melon USAMR 15333



Melon USAMR 15332



# GREEN BEAN GENETICS GO GLOBAL

**Breeding of a new successful bean variety involves dedication, focus and a clear understanding of the market needs and what the goal is with/for specific types into specific market segments.**

A breeding programme involves more than ten generations of consistent performances from a variety over several testing locations and different environments. Releasing a new variety from a breeding programme needs to generate good data comparing it to current green bean variety market leaders. The fruits of labour are reaped when these new Hygrotech varieties become the focus of the industry due to good results.

It has been 13 years since the first green bean crossings were made by sourcing good breeding genetics worldwide and combining them into several interbreeding crosses with the specific intention to offer a wide range of different types of green bush beans such as:

- Extra fine 6-6.5mm x 12cm "mange toute" French whole bean variety ROMEO\*
- Fine types 7mm – 7.5mm x 14cm high quality export beans variety GOAL and ESCAPE
- Bobby types 8mm – 9mm x 14cm fresh market TAHOE and BLAZER
- Mechanical processing types with characteristics 8.5mm – 9.5mm x 14cm. EXCURSION\* and EXCELL\*
- Hand harvesting types (Bush Blue Lake) 9.5mm – 10.5mm x 14cm. WORLD CUP and EXCELANCE\*.

## GLOBAL NEWS

New pole bean DAKAR is a high quality bobby bean, 8mm – 9mm x 15cm and is in demand from Morocco. Global results from different customers have indicated that the new range of green bean genetics are making a mark in the seed industry. EXCURSION\*, a new mechanical harvesting processing type, has made inroads in the USA with several follow-up varieties such as EXCELL\* to follow soon. From Guatemala it is reported that the new Bobby bean ENCLAVE has made the farmers very excited showing extreme adaptation in the tropics with very good disease resistance. From Kenya and the rest of Africa who export fine types to Europe, GOAL and ESCAPE are leading the variety choices due to high percentage pack-out, excellent yields and quality with a long lasting shelf life.

New varieties from the breeding programme have now also made their way into other global markets such as Europe, with the main focus on mechanical harvesting processing beans into the different segments, namely extra fine types and true processing types. Eastern Block countries are also now sourcing new Hygrotech genetics and the outcome thereof is anticipated in the next season.

**In conclusion, Hygrotech offers you the uniqueness from their breeding programme satisfying your specific requirements.**







with us you are  
**growing  
goodness**

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- Customised plant & soil nutrition recommendations
- Specialised plant nutrition solutions & expertise
- Supportive technology
- Biological solutions

providers of crop solutions  
to the agricultural industry

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RECEIVE DAILY REPORTS OF YOUR SPRAYING ACTIVITIES



MONITOR DRIVING HABITS OF TRACTOR DRIVERS



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Specialist for more information.





# QUALITY CONTROL OF SWEET CORN SEEDS – THE STRATEGY AND RESULTS

History has shown that seed quality of sweet corn is the main factor influencing market share and growth in this segment. Trust is earned from sweet corn farmers who have become loyal to a specific brand due to continuous seed supply of high quality, superior genetics and technical support systems.



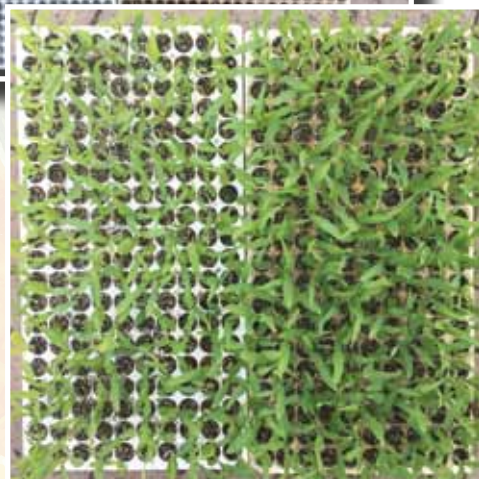
*Now this is a good field of sweet corn!*

Technical support systems combine a quality control system that has allowed Hygrotech to grow in the sweet corn industry. Several control systems are used to support the seed quality in sweet corn on a continuous basis and they include the following:

- Two confirmed germination tests - one from supplier and the other one from Hygrotech's own registered seed testing laboratory.
- Hygrotech sources only high germination seed lots which accompany every unit with a confirmed warm and cold germination test, confirming initial seed quality which are used for evaluation of seed deterioration.
- The cold germination is indicative to the seed lot's ability to germinate under cooler soil conditions normally associated with the critical soil temperature regime of super sweet corn seeds during germination periods of 13°C day temperature.
- Seeds are being stored under controlled storage conditions for not longer than 12 months using the FIFO system and the seed longevity factor °C + RH <60. This allows the seeds to have the required moisture content not lower than 10% and not higher than 14%. This is combined with the correct RH and storage temperature.
- For further assurance Hygrotech is now pre-planting every seed lot of sweet corn seeds in a practical way whereby a seedling tray is used confirming the quality of the seeds in germination conditions. This has helped in the past year to support any protocol on seed quality after the seed has left Hygrotech's warehouse. Several farmers have in the past accused seed quality for poor germinations, but seed treatment activities have now been identified as the biggest culprit.
- Farmers have been continuously supported by well-trained seed technicians to look at the bigger picture to become successful sweet corn growers.



*How about that 97% germination been counted seedling per seedling.*



In conclusion, the success in growing market share relies on the combination of all the mentioned inputs and systems whereby a global brand like SRS (Snowy River Seeds) is renowned for quality and consistency in seed quality.



# The Grower's Starter Kit

## Winter has arrived !!

Winter has arrived!! It is time to have your winter veggies planted and ready in order to make those unforgettable winter stews or soups. Let Hygrotech make it easier for you as an experienced grower or as a grower just starting out.

Make it affordable by buying our Africa Value Packs with our limited offer "The Grower's Starter kit" which includes the list below . This is real value for money answering all your growing needs.

**Contents**

**The Grower's Starter Kit**

- 1 x Hygrovent 128 Tray
- 1 x Octaround 200 Tray
- 4kg Hygromix for Seedlings (enough to fill each tray twice)
- 1 x container Speedling Mix Fertiliser with Applicator Spoon

**HYGROTECH**  
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Contact your nearest Hygrotech office for more information:  
1 Gerard Braak St, Pyramid | PO Box 17220, Pretoria North, 0116 | Tel (012) 545 8000 | Fax (012) 545 8088

**PLANT KIT**

**PROFESSIONAL SEED**  
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CABBAGE  
COPENHAGEN MARKET

**PROFESSIONAL SEED**  
CARROT  
KURODA

**Octa-Round** **Hygrovent**

For more info or orders please contact Hygrotech 012 545 8000 or [bonita@hygrotech.co.za](mailto:bonita@hygrotech.co.za)





# MIST CONTROL®

Drift Retardant and Deposition Aid for Pesticide Sprays

By Johann van der Vyver, Miller Chemical Director: African Region

**A major concern when spraying agricultural chemicals is the drift thereof, away from the intended target area or crop. Concerns include:**

1. Damage of non-target crops.
2. Exceedance of pesticide MRL values on non-target crops.
3. Disallowed pesticide residues on non-target crops.
4. Poor or less-effective response of agricultural chemical on crop earmarked for specific application due to insufficient spray application.
5. Financial loss due to sub-efficient application of agricultural chemicals.

The degree of drift hazard varies, depending on type of remedy used, climatic conditions and vegetation near the target area. Common sense, sound application technology and product labels must be followed when spraying agricultural chemicals. Drift minimization is the responsibility of the applicator. **DRIFT IS NO ACCIDENT.** Ultimately, if there is any doubt whether an application might result in harmful drift, wait until the element of doubt is removed or do not make the application. The following are well-known guidelines to consider:

## MIST-CONTROL®

Mist-Control® (Reg. No. L4567 of Act 36 of 1947) is a well-renowned and proven drift retardant and deposition aid used successfully for more than 2 decades in South Africa. Mist-Control® is manufactured in the USA by Miller Chemical & Fertilizer, LLC and is used in more than 30 countries globally. Despite Mist-Control® being very effective in limiting spray-drift and improving spray-deposition, spray-drift will not necessarily be eliminated completely each time. **To maintain a high level of success, adhere to instructions on Mist-Control® label as well as that on the label of the product with which Mist-Control® is to be applied with.**

## Benefits from Mist-Control® use include:

- Reducing spray-drift by up to 70%.
- Increasing deposition by up to 45%.
- Reducing evaporation by up to 30%.
- No reduction of chemical activity.
- Less presence of droplets smaller than 150 microns.
- Compatibility with most agricultural chemicals.
- Can be used in most spray equipment.
- Ideally suited for use within aerial application.

Recommended Procedure	Example	Explanation
Select nozzle type that produces droplets	Raindrop, low-pressure flat fan, flooding.	Use as large droplets as practical to provide coverage necessary.
Use lower end of pressure	Use 150 - 250 kPa for raindrop. Less than 200 kPa for other nozzle types.	Higher pressures generate many more small droplets (less than 100 microns).
Lower boom height.	Use as low boom height as possible to maintain uniform distribution.	Wind speed increases with height. A few centimeters lower boom height can reduce off-target drift.
Increase spray volume	If normal application is 60 to 80 L/ha, increase to 100 to 120 L/ha.	Larger capacity nozzles will reduce spray depositing off-target.
Spray when wind speeds are less than 16 kmph and moving away from sensitive plants	Leave a buffer zone if sensitive plants are downwind. Spray buffer zone when wind changes.	More of the spray volume will move off-target as wind increases.
Do not spray when air is completely calm or an inversion exists	Inversions generally occur in early morning or near bodies of water.	Calm air or inversions reduce air mixing and spray can move slowly downwind.
Use a drift retardant and deposition aid.	Product: Mist-Control®	Removes ultra-fine droplets that cause off-target concern. Increases agricultural chemical spray deposition on surface of target crop.

For further information on the use of Mist-Control®, contact your nearest Hygrotech branch or [johannvdy@millerchemical.com](mailto:johannvdy@millerchemical.com)



# GETTING DOWN IN LIMPOPO WITH MIST CONTROL®

## AERIAL APPLICATION DEMONSTRATION

By Johann van der Vyver, Miller Chemical Director: African Region

An aerial application demonstration with and without the addition of Mist Control® (a registered – Reg. no. L4567 of Act 36 of 1947 – drift retardant and deposition aid for agricultural remedies) was recently conducted in the Limpopo Province of South Africa. Herewith a summary of objective, proceedings, evaluation and results:

### OBJECTIVE:

To visually demonstrate the ability of Mist Control® to retard the drift of an aerial application.

### DEMO DETAILS:

**Locality:** Constantia Farm (Alto region) runway of Mr. C.P. Minnaar in the Limpopo Province of South Africa - 23°40'27.5"S 30°36'56.3"E.

### Demo coordinator:

Johann van der Vyver from Miller Chemical SA.

### Operator:

- Ockie Erasmus – Logistics Manager from Sandriver Crop Protection.
- Lardus Erasmus – Pilot from Sandriver Crop Protection.

### Co-workers:

Fielies Nieuwoudt (Hygrotech SA)  
Dirk le Roux (Hygrotech SA)

### Treatments:

- Water only (control).
- 1 L Mist Control® per 100 L water.

**Application volume:** 100 L water per hectare.

### Nozzles (make and total):

- CP nozzles.
- 68

**Spray pressure:** 60 psi

**Aeroplane:** Airtractor 402B

**Flight speed:** 200 – 220 km/ h

### Windspeed during applications:

- Water only: 2.7 m/s average. Maximum: 3.4 m/s
- Mist Control® in water: 2.4 m/s average. Maximum: 4 m/s

### Temperature during applications:

- Water only: 28.2 °C
- Mist Control® in water: 28.6 °C

### EVALUATION:

- Visual evaluation.
- Video footages at a stationary position on runway.
- Photos at stationary position on runway.

### RESULTS:

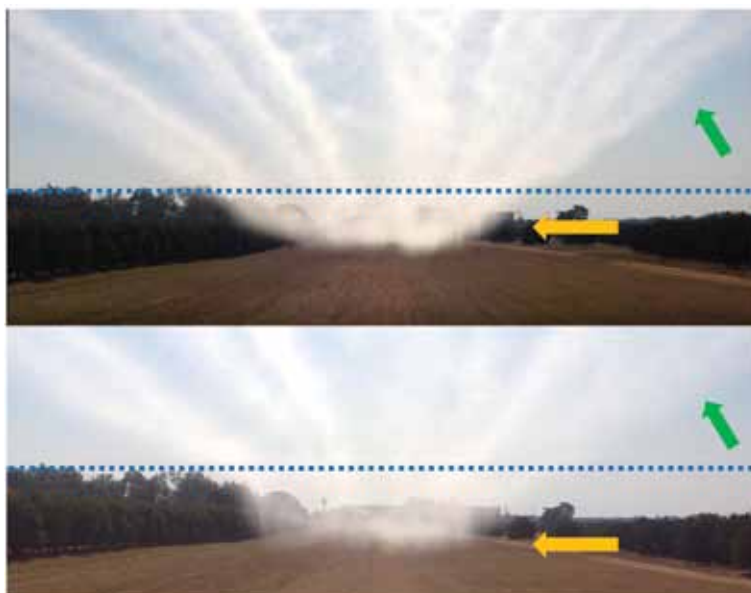
A definite reduction in drift of the aerial application was clearly visible. This was especially eminent when watching the amount of mist remaining in the air immediately after the aeroplane has passed the stationary camera positions on the runway (see comparative photos).





### THANK YOU

A special thank you to Sandriver Crop Protection (info@sandrivercrop.co.za) for the professional manner in which the demonstration sprays were conducted.



Lardus Erasmus, pilot from Sandriver Crop Protection taking breather between sprays



Two photos taken at stationary camera position. Note the amount of spray mist in air (above:  and below:  blue dash line) after aeroplane past camera when water only was sprayed (top photo). Note the drastically less spray mist in air (above:  and below:  blue dash line) after aeroplane past camera when water and Mist Control® was sprayed (bottom photo).



## MORE INTERNATIONAL RECOGNITION FOR MIST CONTROL®

APPLICATION REQUIREMENTS	TANK MIX	NOZZLES
<h3>XtendiMax® With VaporGrip® Technology</h3> <p>The webpage <a href="http://www.xtendimaxapplicationrequirements.com/Pages/tankmix.aspx">http://www.xtendimaxapplicationrequirements.com/Pages/tankmix.aspx</a> (see screencap from webpage) lists products (updated on 30 May 2017) that may be tank-mixed with XtendiMax® (dicamba product) With VaporGrip® Technology for use on Roundup Ready 2 Xtend® soybeans and cotton with XtendFlex® technology. Mist Control® is listed among the list of DRIFT REDUCING ADJUVANTS (DRAs). Products are listed based on successful studies (per EPA-approved testing protocols) of which the data and results have been submitted to the EPA and certified in accordance with the terms and conditions of registration for XtendiMax® With VaporGrip® Technology. An interesting observation is the recommendation to use the various listed adjuvants with one of the DRAs options such as Mist Control®.</p>		



# New Generation Turf Ryegrass

Written by Theo Schoonraad.

**F**or the first time now, a new generation called **4 turf** is available in South Africa. These tetraploid perennial turf-type ryegrasses consist of different varieties and mixtures suitable for sport, lawn / amenity and turf grass surfaces. The varieties are imported from our supplier DLF in Denmark and are exclusively available to Hygrotech. They are tetraploid grasses, which simply means that they have four sets of chromosomes versus only two sets in traditional turf-type perennial ryegrasses ( or diploids ). In other words, tetraploids have twice the amount of genetic material available which gives grass breeders more opportunity for dramatic advances. The newly bred tetraploid varieties show better stress- and disease tolerance compared to diploids.

**4 turf** is a new generation of tetraploid varieties, developed to be quick establishing, strong and deep rooting. Other benefits include :

- Rapid and stronger establishment.
- Increased drought tolerance and recovery.
- Darker green colour.
- Long lasting.
- Better able to withstand a range of stressful conditions such as drought, cold, disease and wear.

Hygrotech has 2 varieties, **ExpressMaster** and **SportMaster**, of these new generation **4 turf** ryegrasses available in stock.

These varieties have been sown on Loftus Versfeld Stadium (home of the Blue Bulls) and have also been trialed extensively on prominent golf courses in Gauteng.

*An excellent surface of ExpressMaster on Loftus Versfeld Stadium.*



4 turf mixtures were also used exclusively on all fields for SWC 2014 in Brazil, as well as during the UEFA championship in Europe and the Olympic Games last year.

For further information, kindly contact  
Theo Schoonraad – 083 273 2624.



## WATER BY NUMBERS

# SOUTH AFRICA'S WATER – A PRECIOUS RESOURCE

### WHO USES WHAT ?

- 67 % - Irrigation
- 18 % - Urban
- 5 % - Mining
- 4 % - Rural
- 3 % - Power generation
- 2 % - Afforestation
- 1 % - Transfer out

### Other facts :

- South Africa shares four major river systems with other countries.
- South Africa only receives around 450 mm rain a year – about half of the world average of 860 mm a year.
- 8 % of South Africa's land area provides 50 % of our runoff.
- Of all rain that falls, only 9 % reaches our rivers.
- South Africa's biggest river system is the Orange, which conveys 25 % of the country's surface water and is 2,000 km long.

With acknowledgement to 'The WATER WHEEL' magazine -  
March / April 2017 Volume 16 no 2 (Water Research Commission)

## AANDAG ALLE WEIDING-SAADKWEKERS!!!

Hygrotech is opsoek na eersteklas saadkwekers vir die uitkoop en produksie van die volgende weidingsade:

- Alle somergrasse (Rhodes, Smutsvinger, Blou en Witbuffel, oulands en tef)
- Alle winterkleingrane (hawer, stoelrog, korog, gars)
- Peulgewasse (akkerbone en sonhennop)
- Lusern (sa standaard, asook Hygrotech eksklusiewe hoë dormansie varieteite)
- Ander gewasse (radys, raap, babala en alle raigrasse)

Hygrotech bied TOP pryse aan kwalifiserende kwekers landswyd, vir die uitkoop van bestaande saad asook kontrakproduksies van toekomstige aanplantings op bogenoemde gewasse.

Vir meer inligting skakel J.J. de Klerk by  
072 376 9706 of epos  
voerenweiding@hygrotech.co.za

## ATTENTION ALL PASTURE SEED PRODUCERS!!!

Hygrotech is looking for first class seed producers for the production and buying of the following pasture crops:

- All summer grasses (Rhodes, Smutsfinger, Blue and White buffalo, eragrostis and teff)
- All winter small grains (oats, stooling rye, triticale, barley)
- Legumes (cowpeas and sunhemp)
- Lucerne (sa standard, as well as Hygrotech exclusive high dormancy varieties)
- Other crops (radish, turnip, millet and all ryegrasses)

Hygrotech pays TOP prices to all qualifying seed producers across the country. We do buy-outs of existing harvests and put up contracts on future plantings for all above mentioned crops.

For more information contact J.J. de Klerk  
on 072 376 9706 or email  
voerenweiding@hygrotech.co.za



# Water quality

Written by San-mari Louw

**W**ater quality and pH are often mentioned in the same sentence. pH is an indication for the acidity of a solution. It is determined by the number of free hydrogen ions ( $H^+$ ) in a solution. The pH of water can vary between 0-14. Where the  $pH < 7$  it is acidic, when the  $pH > 7$  its basic and when the  $pH = 7$ , it is neutral. pH is a logarithmic function, this means that when the pH falls by 1 unit, the solution becomes ten times more acidic. When the pH falls by 3 units the solution becomes a thousand times more acidic. The pH of spray water can easily be measured with a portable Eutech pH meter available at Hygrotech.

A common mistake made by farmers is to refer to water as hard based on a high pH and high salt content. Electrical conductivity (EC) measures the capacity of water to conduct an electrical current, it is directly related to the total salts dissolved (TDS) in water. Salts dissolve into positively charged ions and negatively charged ions which conduct electricity.

The EC of spray water can easily be measured with a portable Eutech EC meter available at Hygrotech. Although this test does not identify the ions present, it shows if there is a potential problem. Do not confuse salt concentration with hardness of water. Hard water is caused by positively charged minerals, primarily calcium ( $Ca^{2+}$ ) and magnesium ( $Mg^{2+}$ ) which are both multivalent ions. Monovalent ions like  $Na^+$  and  $Cl^-$  also form part of the EC of a solution, but do not contribute to the hardness of water. It is possible to have an  $EC > 225\text{mS/m}$ , which would be considered as hard water, but it might be that only  $25\text{mS/m}$  comes from  $Ca^{2+}$  and  $Mg^{2+}$  in which case it should actually be considered as soft water. Generally spray water with a  $EC < 75\text{mS/m}$  is considered to be soft water. When the EC of spray water is higher than  $> 75\text{mS/m}$  it is advisable to test for antagonizing cations like Calcium and

Magnesium at an external environmental lab.

A greater concentration of  $Ca^{2+}$  and  $Mg^{2+}$  results in hard water. If a pesticide is negatively charged these minerals will bind to the pesticide. This will reduce the effectiveness of the pesticide. Herbicides like Glyphosate are subject to these types of bonds in water. To overcome this effect Ammonium sulphate (AMS) is used to increase the herbicides efficacy. AMS also binds to cations and adjusts the pH so that the herbicide is taken up across the leaf surface.

It is also important to consider the buffer capacity of the spray water. Buffer capacity basically tells you how much acid or base you can add before the pH starts changing.



You might find that when adding the recommended amount of acidifier to your spray water the pH stays the same, you might even add double the recommended dose before the pH drops. If your spray water has a high buffer capacity, you would add a lot of your acidifier before the pH will start to change. If your spray water has a low buffer capacity, the pH will drop instantly when adding an acidifier and you might over acidify without knowing. Carbonate ( $CO_3^{2-}$ ) and bicarbonate ( $HCO_3^-$ ) ions are the main culprits that influence the buffer capacity.

This is because the bicarbonates and carbonates react with the hydrogen ions ( $H^+$ ) from the acid, preventing them from dropping the pH. Once all the bicarbonates and carbonates react with  $H^+$  the acid is free to drop the pH.

For detailed information about spray water testing and which laboratories are able to test irrigation water, please contact San-Mari Louw at Hygrotech Head Office.



# Success with Summer Carrots in Western Cape.

**H**ygrotech recently launched their new F1 hybrid summer carrot varieties, Ern  and Anri. These 2 varieties were planted in a commercial plot in the Western Cape at Eikerivier Boerdery and Beamer Boerdery in Bainsvlei near Bloemfontein, both yielding positive results. These carrots are harvest ready 10-14 days earlier than other varieties, have very good alternaria tolerance and bigger roots on average, resulting in a better yield.

Both these varieties need to be harvested at full maturity which will vary between 95 – 110 days from planting depending on the summer planting date; early, mid or late summer. An excellent choice for summer cropping from beginning October to end February when typical autumn, winter and spring plantings do not perform well. Planting out of season may result in bolting. Both varieties have strong tops for easier pulling or harvesting, no purpling on the shoulders and uniform size for high pack-out.

## Eikerivier Boerdery - Western Cape

Sowing Date: 19/12/2016

Harvest Date: 18/04/2017

110 DTM (Days to Maturity)

Heinz Punt of  
Eikerivier Boerdery



Anri left, shorter more rounded root.  
Ern  right, longer root with sharper tip



## Beamer Boerdery - Bloemfontein

Sowing Date: 15/02/2017

Harvest Date: 20/05/2017

95 DTM

Ern 



Anri





# Sporekill® - New people, new visions and new opportunities

Written by Kobus Serfontein

It has been more than 2 decades since the introduction of Sporekill® to South Africa. Thanks to Wouter Schreuder Snr, who had the vision to see the multiple opportunities in this versatile product, it was developed for the agricultural industry and became a household name in crop protection and sanitation in South Africa. ICA International Chemicals was born out of Sporekill® and Johann van der Vyver with vast field experience with Sporekill®, later joined ICA and became the face of Sporekill® here and abroad over the last decade. Johann moved on to Miller Chemicals early in 2017 and two new faces joined the ICA team. Martin Breytenbach and Wouter Schreuder Jnr will be the Technical and Marketing Managers for the Northern and Southern provinces respectively bringing a new dimension for ICA and Hygrotech alike in Sporekill® marketing and support.

## **Martin Breytenbach** (Based in Pretoria)

Martin Breytenbach is passionate about agriculture and Africa. He joined ICA International Chemicals the 1st of March 2017, where he is responsible for the marketing and technical support for the ICA product range in the northern region of South-Africa.

Martin's career started after he



Wouter Schreuder Jnr

obtained a degree at the University of Pretoria in BSc (Agric) Agricultural Economy, here he had the opportunity to broaden his knowledge on Microbiology, Agronomy, Horticulture and Economy. He joined an agricultural consultation company that advised farmers on the agricultural input side to be more profitable and sustainable using precision farming methods to apply variable nutrients according to varying soil requirements, advised on crop type and tilling methods, as well as appropriate fertilizer recommendations for optimal sustainability and profit. For Martin, it was important that farmers understand what they implement and why.

Martin moved on to a fertilizer company where he extended his crop nutrition knowledge on tree, vegetable and grain crops. His ability to interpret plant nutrition needs based on his knowledge of crop needs at different stages, soil conditions and available plant nutrition products made him a sought after crop nutrition advisor.

**The roads for Martin and ICA**  
International Chemicals crossed while Martin was living out his passion to put South-African farmers on the fore ground of profitability. He was excited about the opportunity to use the information that he gained during University and apply it to his career.

His enthusiasm, good marketing skills, ability to grasp opportunities and swift adoption and interpretation of new technical information makes him the ideal person for the position of ICAs Technical and Marketing Manager for the Northern provinces. His investigative nature immediately draw him to Sporekill® and its versatile uses and since he joined ICA, he kept the lines busy enquiring about the product.

## **Wouter Schreuder Jnr** (Based in Stellenbosch)

Wouter is still young but full of energy and very enthusiastic about working in the agricultural industry. He joined



Martin Breytenbach

ICA International Chemicals in January 2017 after finishing his MSc in Plant Pathology. After completing his BSc (Agric) in Plant Pathology and Entomology at Stellenbosch, he joined the Citrus Research International team in Nelspruit where he did his Masters on the post-harvest control of Citrus Black Spot. He is already well known in the citrus industry.

Wouter Jnr grew up with Sporekill® as it was his dad's main focus during his adolescent years. The Sporekill® brand can almost be seen as part of his genetics which reflects in his enthusiasm about the product. Like Martin in the north, Wouter Jnr, as ICAs Technical and Marketing Manager for the Southern provinces is already setting the pace down south.

Exciting times lies ahead for ICA and Hygrotech alike in the marketing and further development of Sporekill®.

### **Contact details:**

Martin Breytenbach (0713557775)  
Wouter Schreuder Jnr (0823376912)



# KOW KANDY

## STILL THE BEST BANG FOR YOUR BUCK

By JJ de Klerk: National Technical Manager - Pasture and Forage.

**W**hat can be planted as a multipurpose forage crop that has high heat and stress tolerance and doesn't cost an arm and a leg? There is only one option...**KOW KANDY**.

The **Kow Kandy** brand of Forage sorghum (Forage sorghum x Sudan grass) has become synonymous with reliability in various climatic conditions, high yield with low input costs and very high palatability.

We are glad to report that we have had a bumper crop of **Kow Kandy** seed despite some terrible weather conditions at planting. As such, we will be able to supply our valued customers with top quality seed at a very competitive price come spring. **Kow Kandy** can be planted from October for best results, but can be planted as late as January. **Kow Kandy** is renowned for its drought tolerance and can be cultivated under harsh conditions and still yield a fair crop of green feed, standing hay or hay for baling, with some farmers even opting to cut it as silage.

**Kow Kandy** is by far the cheapest feed crop to establish in relation to yield. Where adequate rain is received

coupled with a proper fertilization programme, yields of up to 20 tons dry material per hectare are achieved.

**Hygrotech** can also help with the analyses and recommendations of soil samples so that each plot gets a custom fit fertilizer programme for optimum yields after taking water, climatic and soil conditions into consideration.

Seeding rates vary according to seeding method. Where broadcast, **Kow Kandy** should be seeded at 25 -30 kg/ha. If planted in rows seeding rates can be adjusted to as low as 10 kg/ha depending on row width. Seeds should be spaced according to final use. In cases where **Kow Kandy** will be used as standing hay or cut for silage, seeds need to be spaced further apart to promote sturdy stems and side shoot growth. If **Kow Kandy** is going to be grazed, seeds can be planted as close as 3-5 cm apart to prevent thickening of stems, thus resulting in a more palatable plot. This also promotes regrowth after grazing. **Kow Kandy** is very tolerant of seeding depth and can be planted from 1 cm to as deep as 5 cm (2-3 cm is the most ideal seeding depth). **Kow Kandy** can be seeded into all soil types but does require a good clean and loose soil bed for best germination.

Grazing can be done as soon as

plants reach knee height. Palatability will decrease as plants grow higher. Plots can then be grazed to a height of 10 cm for best regrowth. Strip grazing is highly recommended for best results.

Nitrogen applications are recommended after grazing or cutting. Applications rates will be included in the fertilizer recommendations if done by **Hygrotech**.

**Kow Kandy** also responds well to foliar feeding if soil amendments have been made to standard. Foliar feeds with high Nitrogen contents and growth stimulants have proven to improve yield and can also have a beneficial effect on palatability. Products such as **Hyperfeed/Hygro Boost Flo** from **Hygrotech** can yield the required results.

**Kow Kandy** also has reduced inputs with regard to weed control due to its strong establishment abilities and rapid growth rates. In cases where broadleaved weeds are prevalent, make use of a registered broadleaved herbicide and be sure to include the correct adjuvants available from **Hygrotech** to improve efficacy.

For further information on **Kow Kandy** and any other forage and pasture crop, their management and/ or fertilization recommendations, feel free to contact us on [voerenweiding@hygrotech.co.za](mailto:voerenweiding@hygrotech.co.za)





# Stellenbosch Farmers Day 2017

This prestigious annual event, once again took place at our Hygrotech Stellenbosch Trial-grounds on the 9th March 2017.

Vegetable farmers, producers and other prominent people within the vegetable supply chain attended the day and had the opportunity to hear and learn more about an array of existing and new Hygrotech varieties on display.

Johan Carstens from Montagu with Ig Terblanche of Hygrotech having a close look at the hot chillie varieties.



Lettuce trials.



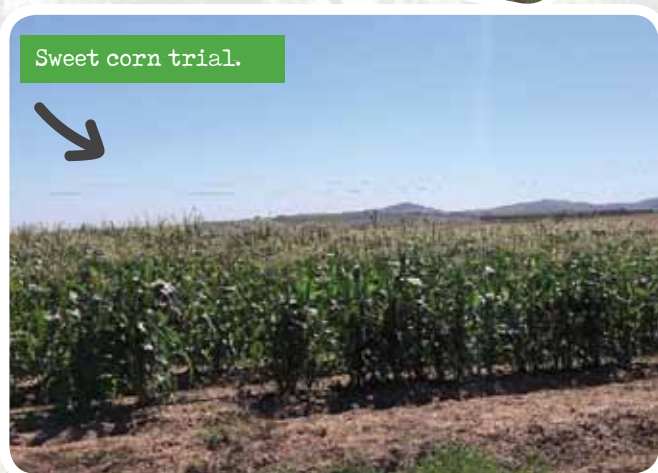
Correctional Services personnel also attended the day.



Johan Stassen, Jaco Vermeulen of Wynland Brdy and Wynand Viljoen from Greyton discussing sweet corn varieties.



Sweet corn trial.



Michael Pinto in a serious discussion with tunnel producers.







Henry Coetzer and Luhan Swart from Hygrotech HO looking happy and contented.

Bean and pepper trials on display.



Eduan Theron at the chemical products display.



David Rennie and his team discussing cherry tomato cultivars.



PJ Fourie of Hygrotech with Steven and Richard Hansen at the baby marrow trials.



Wouter Schreuder Jr (ICA) and Willie du Preez of Rennies Farms discussing Sporekill.



Theo Scholtz, Ig Terblanche and Phillip Mans convincing Johan Carstens about the superior quality of Hygrotech chillies.



# Effect of climate on butternut fruit shape

**It is very important to understand that environmental conditions play a major role in production, marketable pack-out and shelf-life of Butternut squash.**

The most important factors determining your planting time and variety are:

1. Soil temperature
2. Air temperature
3. Sun hours (latitude)

Soil temperature has an important effect on germination and root growth. The minimum temperature for good field germination is about 18°C and the maximum about 30°C. Plants should appear above the ground within about seven days provided the temperature is within these limits.

Physiological damage due to low temperature occurs, followed by the penetration of soil pathogens, which are better adapted than the seed to these temperatures. Butternut seed does not germinate at all below 10°C.

In theory the earlier you seed, the slower your root development, the slower your plant grows for the first 6-8 weeks. Your plants' genetic functions stay the same in time, not in the size of the plant. That means that the function of setting fruit would be

at the same time but on smaller plants resulting in smaller fruit, the factory (leaf canopy) is smaller than it should have been if planted in the correct slot. The fruit shape is also affected by this, resulting in a shorter peanut shaped butternut.

This also happens in pumpkins but does not have such a dramatic effect as in Butternut Squash. Pumpkins tend to give you a bigger variation in ribbing and external colour.

## CLIMATIC CONDITIONS

One of the main characteristics of Butternuts is the adaptability of this squash type. Butternuts are far more sensitive to unfavourable conditions than Flat White Boer pumpkins.

Pumpkins can be grown successfully even if the conditions are less than ideal.

## CLIMATE

Butternuts prefer a warm, dry climate. The optimum temperature for growth is between 20° and 25°C, with a maximum of 32°C and a minimum of 10°C. Under very hot conditions (>30°C) female flowers can abort and young fruits will wilt and shrivel. There is a tendency for the plants to form less female flowers under conditions of long days and high temperatures. The soil temperature for good

germination should be higher than 16°C and preferably between 20° and 25°C.

In the late summer plantings slots the total opposite happens. The plants are grown in perfect growing conditions causing rapid growth, resulting in longer shaped butternuts.

## FERTILIZATION

Fertilization is a crucial area in butternut production. The soil, the climate, the cultivar and the time of year all interact to determine what needs to be applied to the plant and when. In many cases fertilizer programmes are based more on guess work than scientific data.

**MACRONUTRIENTS:** A butternut planting producing a good yield will use up to 200kg N; 50kg P; 500kg K; 120kg Ca and 70kg Mg per ha. It is important to know when the plant takes up these nutrients if a meaningful fertilization programmes is to be developed. It is also necessary to know how much of the requirements can be provided by residual elements in the soil. Nitrogen is one of the most problematic nutrients in this respect. Soils can release anything between 20kg and 200kg N/ha during the growing season. Rates of N mineralization depend on temperature, soil moisture and N applications. It is important to realize that Nitrogen is not usually analyzed for and should be requested specifically. N analyses are also somewhat variable and must, therefore, be taken as a rough guideline only.

For fertilizer purposes, the growth of butternuts is divided into three phases:

1. From sowing to the beginning of fruit-set;
2. Fruit-set and fruit development;
3. Ripening of the fruit.

By the time a butternut plant begins to set fruit it has taken up less than



*Poor internal quality as an result of excessive Nitrogen applications late in the season.*



10% of total N, P and K (traditionally this is the point at which the last N is given). Nutrient uptake increases rapidly after fruit-set to reach a peak and then declines. In the case of N and Ca this peak is reached approximately a month before the first fruits achieve full size (full size, but the rind still shows a slight green tint). Peak K uptake is reached only at this point.

### FRUIT DEVELOPMENT

The period of fruit development is also the time of peak nutrient uptake. Between 65% and 75% of N, P and K are taken up by the fruits, compared with 43% of Mg and 23% of Ca. Low Ca content in the fruits is probably due to Ca moving in the transpiration stream to the leaves. It would be desirable to have more Ca in the fruit as this would improve quality and shelf life.

### NUTRIENT UPTAKE

At the time of peak nutrient uptake, as much as 30kg N and 70kg K is taken up per week, per hectare. It is difficult to introduce this level of nutrients through the dripper into the root zone. Fertilizer programmes must therefore aim to have surplus nutrients in the root zone prior to peak demand. Although foliar sprays cannot meet demand for nutrients at this stage, such sprays can help to keep the foliage active and reduce the competition between fruits and growing points for carbohydrates.

During this period irrigation must be optimum with a good balance between aeration and moisture supply. Nutrients such as Ca can only be taken up by the fine root hairs. Any moisture stress or boron deficiency will lead to roots dying off limit nutrient uptake.

Roots need the carbohydrates produced in the leaves for growth and respiration. Under conditions of low oxygen supply (water logging) or low carbohydrate supply, respiration stops and nutrient intake drops. There is a priority of demand for nutrients produced by the leaves: nutrients are allocated first to the developing fruits, then to the growing points in the shoot tips and lastly to the roots. If leaves are not functioning efficiently or if the demand from fruit is too high, carbohydrate supply to the roots will be cut off. For this reason it is important that the vines be kept in a state of active growth. This can be done by

means of fertilizer applied to the soil or foliar sprays.

Usually most of the P and at least some of the N and K required by the crop are placed in the soil before planting. The decision of how much of the plants' requirements should be placed in the soil depends on the irrigation system, the cultivar, time of planting and soil type.

P does not move in heavy soils and even in sandy soils movement of P is very limited. For this reason, all the P is usually applied pre-planting. K does not move as easily as N, particularly in heavy soils. The amount of K applied as pre-planting can vary between 25% in coarse sands and 80% in clay-loam soils.

There is usually a delay between the time nutrients are applied and the uptake by the plant. On sandy soil the nutrients reach the roots more rapidly and the delay is a week or less. In heavy soils it can be as much as 2-3 weeks. This must be considered when fertilizing for the peak uptake periods. As a general rule N applications will be reduced much earlier on clay soils than on sandy soils. In cold or acid soils the conversions of nitrogen from the ammonia to the nitrate form is slow.

This must also be allowed for in the programme.

Planting time can also play a role. Early plantings are exposed to cooler, wet weather and will require less irrigation. The opportunity to apply nutrients through the irrigation water is limited and a greater proportion of the nutrient should be applied before pre-planting. The same applies to cultivars with a short growing period which offer less time in which to apply nutrients after planting.

It is impossible to provide a single fertilizer programme for all cultivars and soils. As a very general guideline, fertilizer programmes can be based on 130kg-150kg N, 60-80kg P and 180-250kg K/ha.

These amounts are for soils with low levels of nutrients and should be reduced based on soil samples. In soils with less than 30mg/kg P and K the full



*A good example of different Butternut shapes on the same plant.*

amounts should be applied. At P and K levels of 50-60mg/kg 70% should be applied. At P levels, higher than 100mg/kg and K levels over 150mg/kg, only 25% of the total quantity should be applied.

These are rough guidelines and factors such as the (Ca + Mg)/K ratio needs to be considered. Ca, Mg and K compete for uptake sites and in soils with high Ca levels, K deficiencies can occur even with K levels over 150mg/kg.

Similarly, Ca uptake can be depressed by high K levels or applications. In soils with more than 1000mg/kg Ca it is unlikely that Ca applications will be necessary. With Ca levels between 500 and 1000mg/kg it may be necessary to apply Ca during fruit development, particularly for cultivars prone to internal breakdown. Where Ca levels are below 500mg/kg, Ca related problems should be expected.

Butternut plants take up only approximately 0,8kg N; 0,1kg P and 1,3kg K per ha between seeding and transplant stage. For this reason, directly seeded and transplanted butternuts are fertilized at the same rate but the time of application will differ.

Most important is that excessive Nitrogen can lead to poor fruit development, low set and fruit with a very short shelf life.



# Why Foliar Feed a plant?

**F**oliar feeding can give plants a direct boost of nutrients through their leaves. This is done by means of thousands of microscopic pores on leaf surfaces. These openings, called stomata (Greek: stoma, meaning "mouth") are located primarily on the underside of the leaves. This prevents them from plugging up with dust and other environmental contaminants and also prevents fungal spores from entering. The primary functions of stomata openings are to permit gases containing carbon, hydrogen and oxygen to enter the plant. These are then used to manufacture sugars during photosynthesis. Conversely, stomata allow water vapour to escape from plants. In most cases, stomata close at night because the absorption of carbon dioxide is unnecessary when photosynthesis is not taking place. Stomata may also close on hot, dry days, in heavy winds or when the soil becomes dry.

We can use these stomata openings to help increase a plants growth, health, and overall production through the application of a fertilizer in the form of a foliar spray. The stomata are able to absorb dissolved nutrients and minerals and translocate them to the parts of the plant where they are needed. Foliar feeding is a proven efficient method of curing plant nutrient deficiencies and boosting plant development at specific physiological stages. In this method of plant fertilization nutrient solutions are sprayed directly on the plant leaves. Foliar feeding can provide the nutrients required for normal development of crops in cases where absorption of nutrients by the roots system is suboptimal.

Certain plant growing stages are of higher importance in determining the final yields. Foliar feeding with fully water-soluble fertilizers at these critical stages dramatically increases yields and improves yield quality. As uptake of nutrients through the foliage is considerably faster than through roots, foliar sprays is also the method of choice when rapid correction of nutrient deficiencies is required.

**Hygrotech** has a large range of water-soluble fertilizers such as **Hygroboost Flo**, **Nitrospray Plus**, **Maize Plus**, **Calmabon Plus**, **Potaspray**, **Fosfaspray** and many more.

Seaweed extract contains an abundance of trace minerals as well as growth hormones that can quickly stimulate plant growth through the division, enlargement, and elongation of cells. Plant hormones called cytokinins, which increase the speed of cell division, are particularly important. Nothing can replace feeding the soil, but foliar applications can be a good addition at certain times of the year or as a strategy and remedy for nutrient deficiencies, until the soil is able to supply them. Supplementary foliar feeding may also be necessary as an annual practice in some soil and climate situations. For example, in cold soils, foliar fertilizer may be necessary each spring to supply nitrogen, phosphorous, and other essential nutrients until the soil warms up and nutrients become available from the soil. **Asco Gro**, **Millerplex** and **Grotonic** are seaweed extract fertilizers that **Hygrotech** have in their range.

## When To Foliar Spray:

The best time to spray is late in the afternoon or in the early morning, when temperatures are mild and wind is minimal. When wind is minimal, finely atomized sprays drift readily. This is most desirable. Absorption is further enhanced when weather conditions are humid and moist. The presence of dew on leaves facilitates foliar feeding. Absorption is maximized when sprays coat the underside of leaves where the majority of the stomata are located. Don't spray when temperatures exceed 30°C or onto wilted plants as this can result in reduced uptake and damage to the plants.

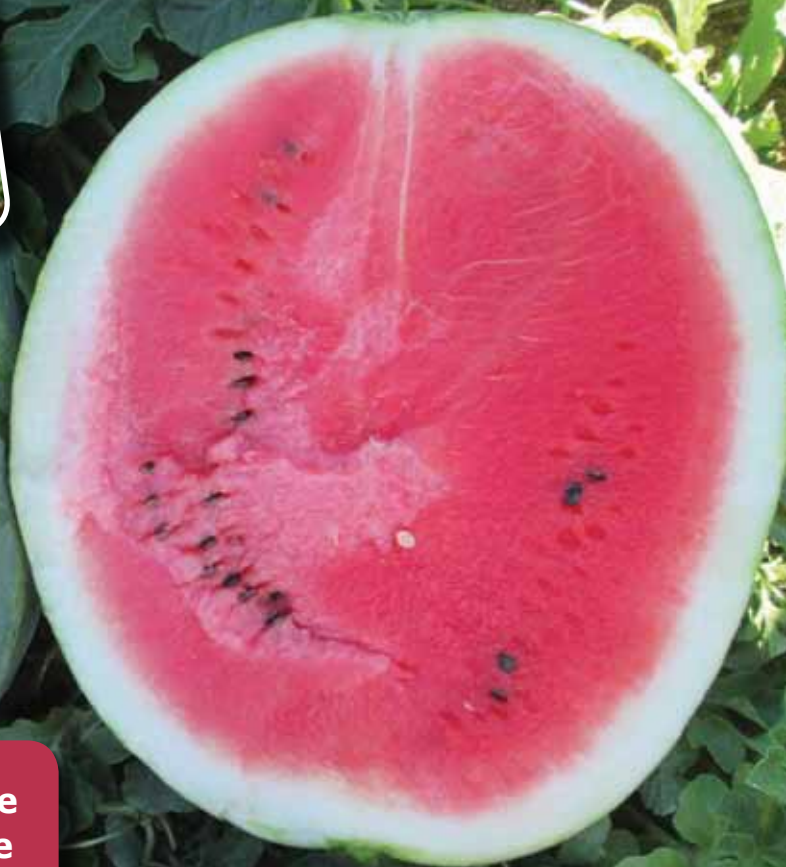
**For detailed Foliar feeding programmes on all crops contact your local Hygrotech Representative. Taken from article: [drearth.com/ learning-center/ projects/ foliar feeding](http://drearth.com/learning-center/projects/foliar-feeding)**





# WATERMELON PRODUCTION INCREASES.

Written by Hugo Burger – Technical Manager, Stellenbosch branch.



**Contrary to crops like melons, the production of water-melons have actually increased over the last 2 years for the simple reason that it is easier to produce water-melons and the input costs are lower.**

Fertilizer and water needs of both melons and water-melons are more or less the same, but in the case of melons the packaging material ( boxes ) are responsible for increased and higher production costs.

Water-melons are transported in wooden crates which is a much cheaper option for the producer. The shelf-life of water-melons is substantially longer than that of melons and it can be kept in cold storage for weeks before being used. The risk of crop losses is therefore much lower. During the harvesting process of water-melons, the harvest phase is also much more flexible in the sense that the fruit would not be over ripe in the space of 1 or 2 days.

Cultivar availability is more stable with water-melons and some varieties like **CARMEN**, are still being produced with huge success after more than 20 years in existence.

The producer is therefore confident with the cultivar and its needs. **CARMEN** has proven itself as a hardy cultivar which can tolerate the bumps and bruises of nature. Good crop productions have been achieved with plantings as early as in the beginning of July.

The good news is that there are now 2 new cultivars, which show lots of promise, from the same stable as CARMEN. **RANGER** was planted commercially for the first time last year and produced good results. **RANGER** is mature 5 to 7 days earlier than Carmen. The fruit weighs 12 to 14 kg on average, with firm red flesh and a brix of above 12. **RANGER** is a very strong grower.

**HSR 4680** is the new addition to this segment with fruit sizes of around 14 kg, deep red flesh colour and good eat quality. **HSR 4680** is still in the experimental phase and will be tested at key clients this coming season.

With these new range of cultivars available, water-melon production surely creates exciting opportunities and consumers can look forward to quality fruit on the market.



# INCREASE DEPOSITION ON PLANT SURFACE

## A HEAD START WITH NU-FILM

Nu-Film®



By Johann van der Vyver, Miller Chemical Director: African Region

**G**lobally Nu-Film® P and Nu-Film® 17 are well-renowned in agriculture for their sticker-spreader and extender sticker-spreader capabilities respectively during crop production sprays.

Both products originate from the USA, where it is manufactured by Miller Chemical and Fertilizer, LLC.

In South Africa Nu-Film® P (Reg. No. L2980 according to *Act 36 of 1947*) and Nu-Film® 17 (Reg. No. L2981 according to *Act 36 of 1947*) have been distributed exclusively by Hygrotech and its distribution channels for more than three decades.

In fact, you will seldom find a crop production spray in South Africa that does not include Nu-Film®. In this 3-part series, we will focus on the

major objectives for using Nu-Film® within spray applications.

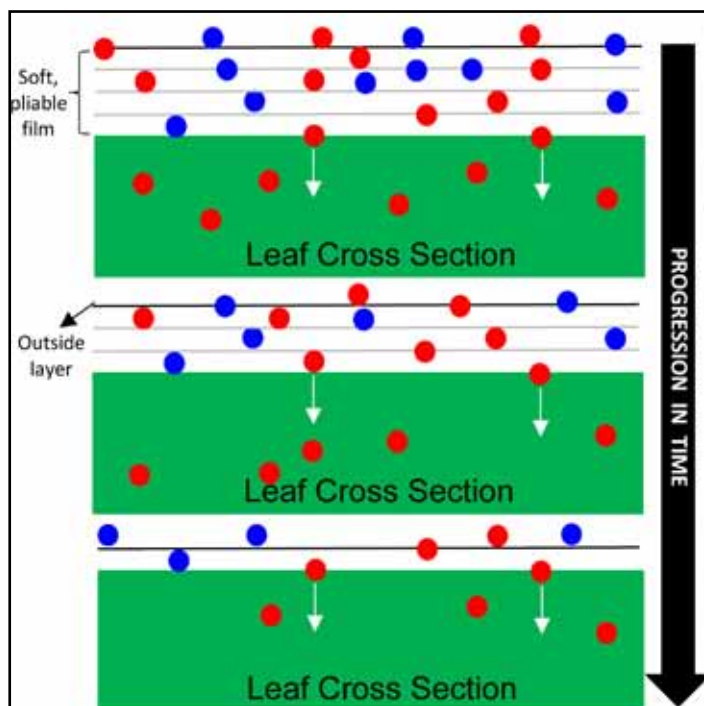
### These are:

- **Increased deposition of agricultural chemicals during spray applications – QUANTITATIVE BENEFIT.**
- **Improved spreading (coverage) of agricultural chemicals during spray applications – QUALITATIVE BENEFIT.**
- **Prolonging applied agricultural chemicals on plant surface – TIME BENEFIT.**

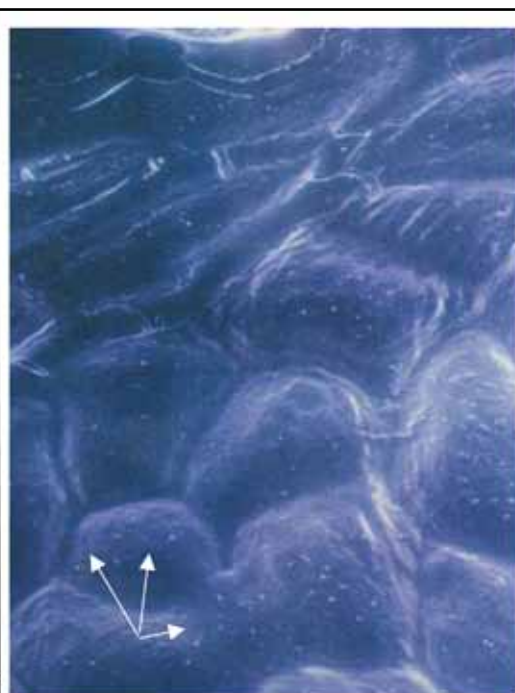
### MODE OF ACTION

Nu-Film® stickers are natural Pinolene® based (pine resin) terpenoid formulations. The similarity of

Nu-Film® to plant waxes allows it to bond with the waxy foliar surface of plants forming a soft, pliable film. This provides excellent sticking ability, while also reducing the possibility of agricultural chemicals becoming phytotoxic. The film forms a bridge for agricultural chemicals (applied with Nu-Film®) to either stick to or move into the plant by means of diffusion – depending on the mode of action of the agricultural chemical. The film remains soft and pliable, while the outside layer only sets and never becomes hard. Over time the outside layer is slowly degraded through depolymerization. During this time, systemic products and foliar feeds inside the film are continuously available for uptake by means of diffusion. Non-systemic products are available for controlled



**Figure 1a:** Simplified illustration of the mode of action of Nu-Film® forming a soft, pliable film on the plant surface that depolymerizes over time with systemic and non-systemic products that Nu-Film® was applied with. [ ● = Non-systemic product; ● = Systemic product or foliar feed ]



**Figure 1b:** Electron microscopy photo of grape leaf surface (800 X enlarged) covered by soft, pliable film from Nu-Film® application. Note copper crystals (arrows and other) on top of film from copper fungicide that Nu-Film® was applied with.



**Table 1:**

Time that may be required for 50% of certain elements (when applied as foliar feed) to be absorbed into plant tissue.

Element	N	Mg	K	Ca	Mn	Zn	P	Fe	B	Mo
Time	30 minutes to 2 hours	2 to 5 hours	10 to 24 hours	1 to 2 days	1 to 2 days	1 to 2 days	5 to 10 days	1 to 20 days	1 to 20 days	1 to 20 days

re-activation (re-wetting) and re-distribution as the outside layer of the film polymerize (see *Figure 1a* and *b*). Eventually a “new” outside layer is set, repeating the process until the entire film is depolymerized. Continuous availability of systemic products and foliar feeds are vitally important since certain elements within foliar feed products may take a couple of days to move into the plant tissue (see examples in *Table 1*).

The proven ability of Nu-Film® P and Nu-Film® 17 to prolong (7-14 days and 21-32 days respectively) the presence of agricultural chemicals on the crop surface will be discussed in detail in Part 3. Immediate attributes (during application) include increased deposition of agricultural chemical onto the plant surface (discussed in this first part), as well as maximizing the number of droplets in the preferred droplet size (spreading, improving coverage of target) and reducing volatilization of sensitive products (both to be discussed in Part 2).

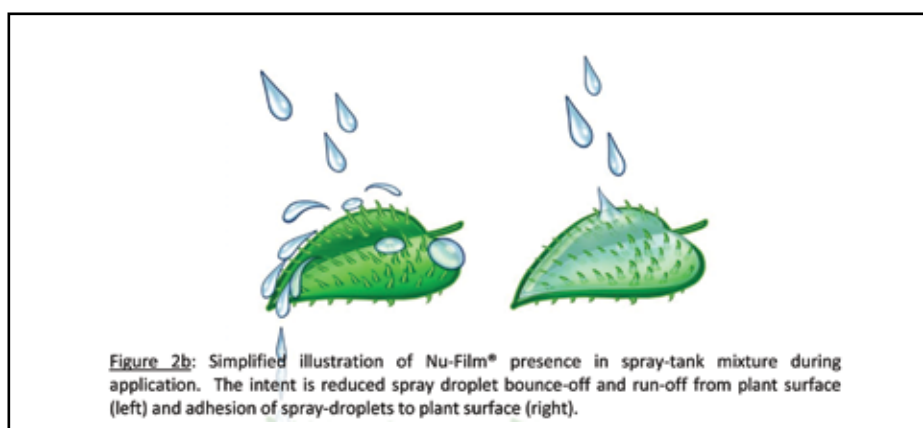
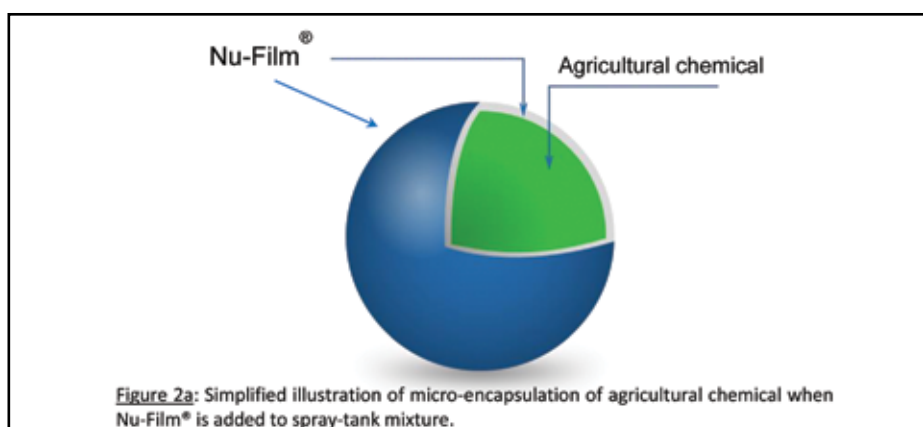
### INCREASED DEPOSITION

This starts with the addition (PLEASE **NOTE:** always last) of Nu-Film® to a spray-tank mixture during which the agricultural chemical is micro-encapsulated (see illustration in *Figure 2a*). Micro-encapsulation enables

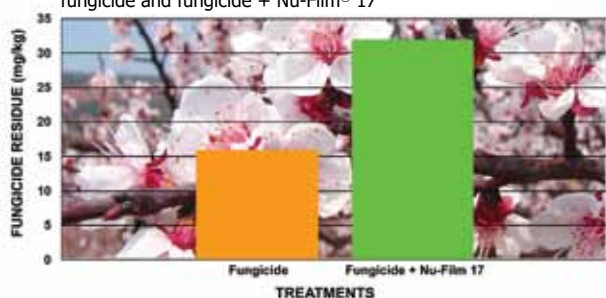
the spray droplets to adhere to the plant surface as described before (see illustration in *Figure 2b*).

This results in reduced bounce and run-off of spray droplets from the plant surface at the time of application.

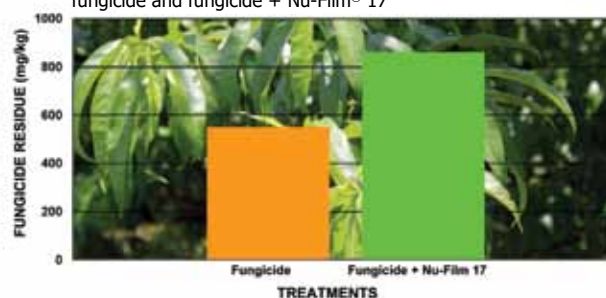
Thus, more of agricultural chemical on the plant surface when applying with Nu-Film® when compared to applying without Nu-Film® at the time of application (as confirmed in many studies – see summaries in graphs).



Fungicide residue on APRRICOT blooms 0 days after application of fungicide and fungicide + Nu-Film® 17

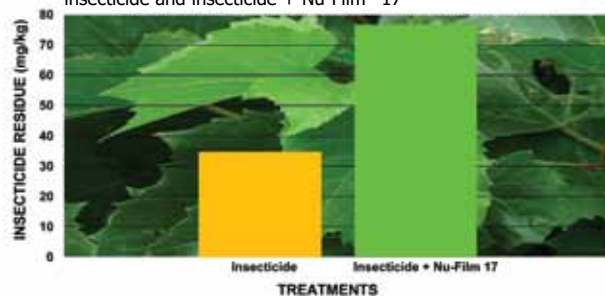


Fungicide residue on PEACH foliage 0 days after application of fungicide and fungicide + Nu-Film® 17





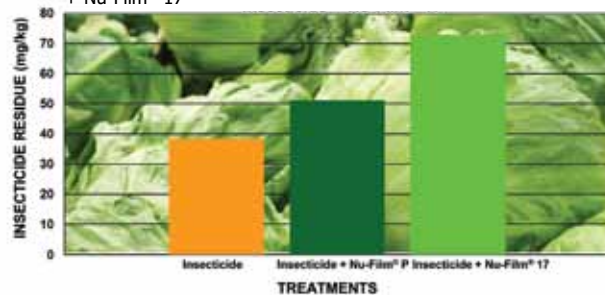
Insecticide residue on GRAPE leaves 0 days after application of insecticide and insecticide + Nu-Film® 17



Fungicide residue on GRAPEFRUIT foliage 0 days after application of fungicide and fungicide + Nu-Film® 17



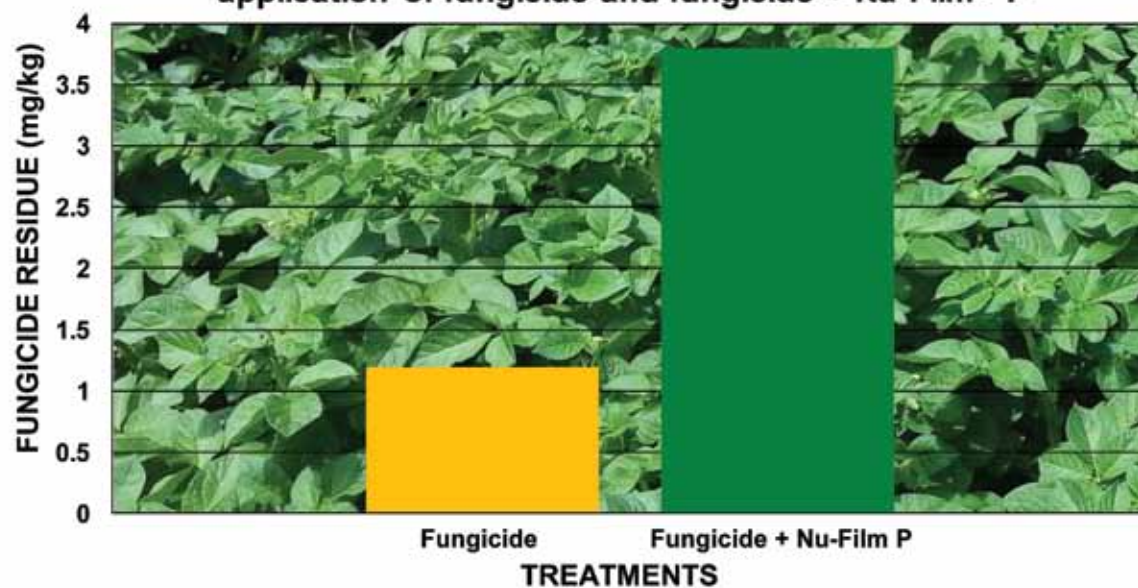
Insecticide residue on LETTUCE outer leaves 0 days after application of insecticide, insecticide + Nu-Film® P & insecticide + Nu-Film® 17



Insecticide residue on COTTON leaf 0 days after application of insecticide and insecticide + Nu-Film® P



Fungicide residue on POTATO foliage 0 days after application of fungicide and fungicide + Nu-Film® P







how can we help you?

# gain knowledge and grow.

AgriCommodities from FNB is an online market information system that collates information from a number of sources, allowing users to view daily information of the fresh produce, grain markets and weekly information for livestock and fibre. **It is the first service of its kind that enables you to create portfolio reports, which can be emailed to you on a daily basis.**

AgriCommodities is invaluable to a range of players in the agricultural sector. Farmers making use of the system have access to price and volume information to make informed business decisions. The system is also designed for use by fruit and vegetable vendors, processors, retailers, analysts and consultants.

Get information on all major markets, with payment options to suit you and the ability to generate reports in various formats.

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# Estonia, a country steeped in history, beauty and peat moss.

Written by Henry van der Voort – CEO Hygrotech.

**I had the opportunity to visit Estonia recently, during their early summer. The purpose of the visit was, for the most part, to learn more about this country situated in Eastern Europe.**

Amongst other things, I learnt that Estonia has a population of approximately 1.5 million people with a third of them living in the capital city, Tallinn. This is where I had the honour of meeting the Mikskaar team of Kristel, Marillis, and Ave. This team of dynamic ladies initiated me into the culture of Estonia with excellent food experiences and a grand tour of the old part of Tallinn, which dates as far back as the 13th Century.

Good company and historical beauty, combined with a small town feel in Tallinn, set me up for an exciting visit to the peat bogs and the factory of Mikskaar.

The bogs are situated about 160 km from Tallinn. The drive through the country side is especially beautiful with greenery and forests along the route. The bogs themselves cover huge areas, with only small pockets being uncovered at a time. These areas have been worked fondly for 25 – 30 years, are only 1 -4 hectares in size with depths that vary between 4 -8 meters. A couple of cm are mined each year by an impressive piece of machinery referred to as a vacuum cleaner. These machines suck up many cubes at a

Figure 1. Indicates different grades supplied by Mikskaar



Figure 2. Estonia is situated north of Latvia and is bordered by Russia to the East and the Balkan Sea to the North and West.



time which are then transported to the factory, 40 km away. This whole process is duplicated at many spots around Estonia, giving Mikskaar flexibility, continuity and sustainability in supply for many decades to come. The factory, situated in rural Estonia inside an old dairy which in the past milked more than a thousand cows, contains state of the art equipment to process the raw peat.

The guided tour of the factory was an eye opener for me. Mikskaar is a supplier of peat that in terms of quality and flexibility to supply options, can compete with any such supplier internationally. Mikskaar can supply product which differs in size. They have further options to add fertilizer enrichment and options to add beneficial micro-organisms. They also have options to blend Perlite and Vermiculite into the different peat formulations. This factory includes a laboratory filled with impressive equipment and manned by professional technicians, which puts them in a position to keep quality at extremely high levels. A small growing area also gives Mikskaar the ability to do product development on a small, but accurate scale. The storage area can store up to 48,000 bales at any given time. Every step, from where the raw peat enters the factory until it gets stored, packed and shrink wrapped (24 bales per pallet), is basically fully automated. The word 'impressive' sums up everything around Mikskaar, their people and their facilities!



# New innovations from **Milkskaar**

The first pallets of Bio Substrate are on their way to South Africa for testing. Half of the consignment has been enriched to test as an alternative to local enrichment.

## BIOsubstrate

### Bio-components

**BioSubstrate** is natural growing medium composed of **sphagnum peat moss** and **wood fibre** and it is extremely well aerated and has high drainage capacity. This helps with rapid rooting and stronger roots, which results in rapid vegetative growth of plants.

#### Peat Moss

Peat moss is the most forgiving medium with the highest buffering of fertilizer and the best water holding ability.



#### Wood Fibre

Wood fibre is lightweight, fluffy and completely organic – it provides optimum oxygen diffusion rates in the root zone.

## The advantages of BIOsubstrate

- Trustworthy sources for raw material
- Light-weight and well compressible – decrease in transportation costs
- Free of pollution, diseases, weed seeds
- Made from biodegradable materials, no disposal problems
- Good drainage for roots
- Good rewet ability
- Decrease in shrinkage value
- Avoidance of accumulation of fine particles at the bottom of containers
- Low fluctuation in salt and chloride levels
- Produced in Europe



**Milkskaar** has more than 20 years' experience producing high quality peat moss substrates for clients in more than 60 countries, using its own peat resources in Estonia, 9 peat bogs in 1000 hectares, production in two modern factories.



# DIPLOID AND TETRAPLOID PASTURES

R.E.Nicolay

**R**yegrass is widely considered to be the best option for efficient livestock production. Given the correct growing conditions, this is in fact so. Ryegrass is known for its high quality, sugars and in most cases, more economical to produce when compared to total mixed ration livestock production systems. Establishment is rapid in cooler, moist regions and is excellent for grazing as well as mechanical harvest. Incorporating a perennial ryegrass into your milking platform or beef pasture will give you a longer growing season; however one should take note that ryegrasses have heavy water requirements and will perform less than optimally in drought situations and are also sensitive to intense grazing pressure and extreme temperatures.

Ryegrasses respond well to nitrogen based fertilisers and trap any other available nutrients in the soil. Ryegrass also improves soil health with its dense, deep root mass which contributes to abundant free Nitrogen for crops following ryegrass pastures. It is for this reason that it makes its mark on rotations in both livestock or cover crop production systems, considerably increasing yield potentials in crops such as maize. Looking at these mentioned factors, it can be said ryegrass is the optimal choice but there are means of improving its efficiency even further.

## Not Just Ryegrass

Understanding the different categories of ryegrass and their growth cycles will assist you in selection based on your specific production plan. Ryegrasses are available in three types.

### Namely:

- Perennial ryegrass (*Lolium perenne*): In favourable conditions, last for 2 to 3 years and go to seed once a year in late spring.
- Italian ryegrass (*Lolium multiflorum* Lam.): classified as a biannual, often planted in spring, usually exhibits fast initial growth and cut a number of times in its first year of growth before its conclusion the following spring.
- Annual ryegrass (*Lolium mul. westerwoldicum*): typically planted in the



autumn as a winter annual and often used to follow a maize crop in a cereal and/or annual clover mix. Autumn planted annuals are typically harvested the following spring.

## Diploid or Tetraploid??

Like many other pasture species, ryegrass can either be a Diploid or a Tetraploid. By combining them, you are giving the added benefit of resilience and added productivity to your pasture. By understanding the features of both a Diploid and a Tetraploid, one will see why this is so.

### Diploids:

- Plant cells are made up of two sets of chromosomes (2n).
- When compared to Tetraploids, they have lower cell water content and a higher DM content.
- Diploid plants display smaller seed and leaf width.
- Growth is predominantly prostrate, making it more tolerable to heavy grazing.
- Better ground cover as it tillers more readily than a tetraploid.
- This dense cover acts as a weed suppressant
- Higher persistency and tolerance to marginal soils and wet growing environments.
- Diploids and Tetraploids however have similar protein levels, based on variety.

### Tetraploids;

- Plant Cells are made up of 4 copies off each chromosome – 4n (a result of plant breeding)
- Larger cell size and higher proportion of



soluble carbohydrates to fibre content.

- Higher sugars, quality as well as digestibility resulting in improved milk production.
- Higher accessible sugars and starches.
- Erect growth habits with a higher set plant base as well as superior palatability make tetraploids more vulnerable to overgrazing and damage thereof.
- The above mentioned factors also result in a slower post grazing recovery.
- Tetraploid cells have a higher cell water content, resulting in animals filling up faster and subsequent lower DM intake overall.
- Plant features, such as seed size and leaf width, are generally larger when compared to a diploid (almost double) which would result in a advisably higher planting rate.
- Tetraploids don't tiller as much when compared to Diploids, resulting in a sparser ryegrass stand



- Although a sparser stand and a less rapid recovery may be seen as a disadvantage, it could be considered advantageous when used as a companion crop in mixed pasture species situations as they would be less likely to overshadow other species such as clovers etc.
- Tetraploids have a lower tolerance of heat which again has an advantage in warm climate mixed pastures as it dies back enough in the summer months to allow for summer species to emerge and grow unhindered. The opposite is so in the cooler winter months.



### Blending Diploids and Tetraploids

By mixing a tetraploid and a diploid, one often finds an ideal grazing situation for improved production stability and grazing quality, resilience and nutrient balance. By improving your species diversity, one is not only improving the health of your soils through biodiversity but ensuring production if presented with unfavourable conditions by combining the best of both worlds. Complimentary companion species in a mixed pasture safeguards against entire crop failure, when one species may battle to grow, the other will fill in.

By combining tetraploid and diploid ryegrasses you will be combining high sugar content and foliage matter of the palatable tetraploid with the robust spring growth, winter hardiness and stability of your persistent diploids. By adding a diploid to your pasture, your drying ability would be improved for bailing purposes.

By understanding the differences and taking note of them in the field, one could soon appreciate the benefits of multicropping your ryegrass to facilitate and improve your production requirements.



# SUPER FOODS



Written by: Michael Pinto & Robert Young  
Product Manager: Michael Pinto

## Kale

Kale is fast becoming known as one of the new "Super Foods" together with Spouting Broccoli. The interest on supplying Kale for the various markets in South Africa is growing at a rapid rate and Hygrotech is pleased to announce that we are now supplying a range of Kale varieties to the South African market and grower.

### Health Aspects:

Kale contains more than 1,000 percent of the recommended daily intake of vitamin K, 98 percent of vitamin A and 71 percent of vitamin C.....that's more than an orange! Kale is also a great source of calcium, magnesium, iron, antioxidants & has a good balance of omega-3 and omega-6 fatty acids, necessary for heart health.

Red kale varieties are also very high in anthocyanins. Anthocyanins are a type of flavonoid, a class of compounds with antioxidant effects. Found naturally in a number of foods, anthocyanins are the pigments that give red, purple, and blue plants their rich colouring. In addition to acting as antioxidants and fighting free radicals, anthocyanins may offer anti-inflammatory, anti-viral, and anti-cancer benefits. Kale is associated with many health benefits, from having a high nutrient profile, managing diabetes, weight, cholesterol, to supporting heart, brain, bone. Kale is also well known for cancer prevention.

## Varieties supplied by Hygrotech:

### Southern Blue



Southern blue is a dwarf blue-green curly kale type that is fast becoming our leading variety. The variety compliments salads and is excellent when steamed. The variety is also tolerant to cold weather.

### Cavolo Nero

Cavolo nero is also known as black kale, black cabbage, Tuscan kale, or by its Italian names Lacinato and Nero de Toscana.

With its distinctive long, dark green, almost black leaves, Cavolo nero originates from the fields of Tuscany where it was first believed to be grown in 600BC.

Generations of Italians have appreciated the delights of Cavolo nero and now the South Africans are catching on to its benefits too. Many traditional Italian & Portuguese dishes are made with kale, from soups through to main meals. Cavolo nero is an extremely versatile vegetable with a marvellous rich, intense and slightly sweet flavour, which means it can be used



in a number of different ways. It is great in hearty meals like minestrone soup, but is also delicious in lighter dishes such as salads.

### Borecole Red

Borecole Red is a more premium type kale, with attractive scarlet coloured curled leaves that complement salads etc.

### Russian Red







Russian Red is a highly indented leaf, green-grey in colour and a anthocyanic stem that looks attractive as a mature leaf as well as a babyleaf. The variety is characterised as having a mild cabbage flavour.

## Sprouting Broccoli

Sprouting Broccoli, also known as Broccolini® & Tenderstem®, is a green vegetable similar to broccoli but with smaller florets and longer thin stalks. Often misidentified as young broccoli, it is a hybrid of a broccoli and Chinese kale - both cultivar groups of Brassica oleracea.

Like Kale, Sprouting Broccoli is also known as a "Superfood". Sprouting Broccoli is also well known for its superior flavour ....from the floret to the stem!

The entire vegetable is consumable, including the occasional yellow flower. Common cooking methods include sautéing, steaming, boiling, and stir frying. Its flavour is sweet, with notes of both broccoli and asparagus, although it is not closely related to the latter.

Nutritionally, there's twice the vitamin C content in Sprouting Broccoli than in the same fresh weight as oranges, not to mention it is also high in vitamin A, B6, potassium and a good source of iron, calcium and folic acid.

## Varieties supplied by Hygrotech:

Hygrotech has decided not to limit our Sprouting Broccoli range with exclusivity agreements, that are common with Broccolini® & Tenderstem®.

Instead we have decided to make our varieties available to any grower or market.... any shape or size!

Hygrotech is already well known for Apollo - our leading commercial Sprouting Broccoli, but we are in the process of launching new varieties in this segment that we are all quite excited about!

## Here is an overview of our range:

### Apollo

Apollo is Hygrotech's current commercial standard and is known for its high production potential and slightly thicker and heavier stems.



### Royal Tenderette

Royal Tenderette is a new variety that Hygrotech has been trialing. Initial trial results have been favourable, showing the variety has longer and thinner stem length with good smoothness and flavour. The variety is currently available semi commercially.



### Gemini

Gemini is a new variety that Hygrotech is planning to launch at the end of the year. The variety is characterised as a strong plant with earlier production and the stems are shorter and thicker.





# GIGANTIC PUMPKIN!

**It's difficult to believe, but yes, your eyes are not deceiving you.**

The enormous pumpkin in the picture below has broken the African record and came in with a weight of **556 kg** ! That is the combined weight of 5 burly forward rugby players.... A very proud Hugo le Roux cultivated and grew this monster from seed of a cultivar called **Goliath van Gat** in South Africa.

Hygrotech will be importing seed for the 2017/2018 competition and will supply the seed as main sponsor. A production guide will also be made available to each contestant entering the competition.



As an additional incentive, Hygrotech will sponsor a magnificent prize of R100,000 to any grower who is able to break the World Record, currently standing at 1,190 kg!!!

**For more information, kindly contact Luhan Swart – 082 468 6559**



# SEAFOOD STUFFED PUMPKIN



## INGREDIENTS:

- 8 Casperita and or/ Orangita Pumpkins
- ½ Cup Olive oil
- 700g Small scallops or shrimps
- 2 sticks of butter
- 2 cups brown sugar
- 1cup dried cranberries
- 470ml rum
- 230g Spinach
- 450g bread croutons
- Hot spice

## METHOD

- Preheat oven to 220 degrees
- Wash and remove dirt from pumpkins and dry
- Coat pumpkins with olive oil
- Bake on flat pan or sheet for 45 minutes or until soft
- Remove from oven to cool
- Peel and dice 2 of the pumpkins meat and set aside
- Using a serrated knife remove 1/3 of top of 6 remaining pumpkins and set tops aside
- Use a spoon and scoop out the seeds and pulp
- Season pumpkins insides with salt and pepper

## STUFFING

- Heat a large pot on stove top with ½ cup of olive oil
- After oil is heated, add scallops/ and or shrimps until brown, flip over
- Add butter, brown sugar and reserve pumpkin with cranberries
- Add spinach, salt, pepper, rum and mix in cubes of bread until butter is absorbed
- Remove from heat
- Distribute mix between six pumpkins
- Place stuffed pumpkins with tops in oven for 15-20 minutes at 220 degrees and serve





**Miller Chemical & Fertilizer, LLC** is proud to be associated with **Hygrotech SA (Pty) Ltd**, its exclusive distributor in South Africa for more than 4 decades.

- Miller® Chemical & Fertilizer, LLC is celebrating its 80th birthday.
- The company was founded as Miller® Chemical & Fertilizer Corporation in Baltimore, Maryland, U.S.A in 1937.
- In 1968 the company moved to its current head quarters in Hanover, Pennsylvania, U.S.A.
- In 1972 Miller® and Roode Lyon from which Hygrotech was founded, signed an exclusive distribution agreement for Miller® products in South Africa.
- Miller® products are currently sold in 90 countries worldwide.
- Besides South Africa, Hygrotech also distributes Miller® products in: Kenya, Tanzania, Zambia, Zimbabwe, Mozambique, Botswana, Namibia and Swaziland.

**Exiting Miller® products available in South-Africa:**

**ASCO-GRO**  
**COLOUR UP**  
**ENTRÉE**  
**GROTONIC**  
**HYGRO-STIC**  
**MILLERPLEX®**

**MIST CONTROL®**  
**NU-FILM® P**  
**NU-FILM® 17**  
**NUTRIENT**  
**EXPRESS®**  
**SUSTAIN®**  
**SUGAR EXPRESS®**

HYGROTECH SA (PTY) LTD REGISTRATIONS (according to Act 36 of 1947):  
HYGRO-STIC is a non-ionic sticker-spreader. Active ingredient: 219 g/L di-1-p-menthene. Reg. no. L5545.  
MIST CONTROL® is a drift retardant and deposition aid for agricultural remedy sprays. Active ingredient: 20 g/L polyvinyl polymer. Reg. no. L4567.  
NU-FILM® P is a non-ionic sticker-spreader. Active ingredient: 875 g/L poly-1-p-menthene. Reg. no. L2990.  
NU-FILM® 17 is a non-ionic extender sticker-spreader. Active ingredient: 905 g/L di-1-p-menthene. Reg. no. L2981.  
MILLER CHEMICAL SA (PTY) LTD REGISTRATIONS (according to Act 38 of 1947):  
ASCO-GRO is a proprietary liquid sea plant fertilizer. Reg. no. K6714.  
COLOUR UP is a calcium complex product. Reg. no. B3386.  
ENTRÉE is a non-ionic activator enhancer. Active ingredient: 819 g/L vegetable oil. Reg. no. L8055.  
GROTONIC is a proprietary liquid fertilizer which promotes growth. Reg. no. K6942.  
MILLERPLEX® is a kelp based crop formula, designed to supplement specific physiological crop stages. Reg. no. K6899.  
Nutrient Express® is an omnipotent water soluble fertilizer aiding crop production. Reg. no. K6715.  
SUSTAIN® is a non-ionic sticker-spreader. Active ingredient: 875 g/L poly-1-p-menthene. Reg. no. L7680.  
SUGAR EXPRESS® is an omnipotent water soluble fertilizer product to aid in crop production. Reg. no. K6716.



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