Volume 1 • 2019

the FORUM

INSIDE: Life after HTX14 | ColourUp on plums | Lycopene | Jalapenos Melons | Calmabon Plus | Marlo Nursery | Red Bite | Rubistar pepper


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HYGROTECH
SUSTAINABLE SOLUTIONS

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After a successful run of 28 years as the most successful F1 hybrid processing / hawker tomato in Southern Africa, HTX 14 will be discontinued by Hygrotech effective 1 April 2019 and current seed inventory is expected to be sold out by May 2019.

Who would have believed that after the Forum article here above published in the Spring of 2001, HTX 14 would still be growing in strength, consistency, availability of seed, market acceptance by seedling nurseries, growers, the processing industries and hawkers alike, for a further 18 years. Indeed a performance that will probably never be equalled in years to come in an industry that is inundated with a cascade of newer hitec F1 hybrid processing tomatoes with additional features such as more disease resistance, larger size, firmness, adaptability, yield, colour and extended field holding ability.

After 28 years in the market one could say that HTX 14's hourglass has run out , although no doubt there will still be a lot of momentum in the Southern African market requiring seed of HTX 14 before it will be completely replaced by newer, state of the art material.

In this article Hygrotech will share a new strategic replacement strategy with all its customers in three categories :

1. **Replacement F1 hybrids** that will be very similar to HTX 14 and highly competitive in a price strategy which are already commercially available in the market. These hybrids are HTX 14 Turbo, HTX 28 and SHIMANO and brief descriptions, pictures where available, special features and disease resistance packages will be provided.

HTX 14 TURBO

The best short term replacement for HTX 14 with additional disease resistance features, large determinate plants, high Brix, high tolerance to leaf diseases and blocky-oval jointless fruit.

DISEASE RESISTANCE PACKAGE :
Verticillium Wilt, Fusarium Wilt Race 2, Bacterial Speck and Nematodes.

HTX 28

An advanced F1 hybrid to HTX 14 with an accompanying high disease resistance package, a big bush open plant habit, setting fruit over an extended period, good set of evenly sized 90 – 110 gram fruit with a good yield potential.

Specific fruit characteristics are extended field storage, very firm fruit, thick fruit walls, high brix level in blocky round fruit. Will be well accepted in the fresh hawker market due to size, shape, firmness and odour.

DISEASE RESISTANCE PACKAGE :
Verticillium Wilt, Fusarium Wilt Race 1,2, Nematodes (Mi, Mj, Ma), Bacterial Speck, Alternaria Stem Cancer

SHIMANO

A very unique F1 hybrid that could easily fit into the uniform saladette market, but due to a very competitive price structure will also fit ideally in the hawker – "smous" market in all of Southern Africa. It's strong disease package which include tolerance to Bacterial Wilt – Ralstonia – makes it ideal in sub-tropical areas with high disease pressure. A large determinate plant will produce smooth, oblong, 90 – 120g fruit turning into a bright red colour at maturity. Thick fruit walls ensure firm fruit with a good shelf life and a jointed peduncle.

DISEASE RESISTANCE PACKAGE :
Tomato Yellow Leaf Curl Virus, Tomato Mosaic Virus, Fusarium Wilt Race 1, Stemphylium sp. (Grey Leaf Spot), Tolerant to Bacterial Wilt

2. **New generation F1 hybrid** processing tomato varieties with exceptional traits that will address the higher levels of requirement for adaptability, yield, firm fruit, processing qualities such as Brix, viscosity and extended field storage as well as outstanding disease resistance packages.

RED BARON

An unique high red – Lycopene – trait that will provide an intense red flesh colour and abnormally red gel which makes it an excellent choice for sauces, pastas and salads. The blocky, even sized round, firm fruit with very thick fruit walls also makes it suitable for a unique, niche fresh market tomato. It has a jointless peduncle for easy harvest on vigorous plants that are suitable for on-the-ground or short stakes cultivation. The exceptional disease resistance package with extended field storage makes it a truly unique variety with multiple application in a demanding market.

DISEASE RESISTANCE PACKAGE :
Verticillium Wilt, Tomato Spotted Wilt Virus, Fusarium Wilt Race 1,2,3, Nematodes (Mi, Mj, Ma), Bacterial Speck, Bacterial Spot

HTP 328

An outstanding new F1 hybrid processing hawker tomato that out-performed all competitor varieties in a recent summer trial in the northern part of South Africa. It's unique characteristics can be summarized as having a compact plant with a concentrated set of even sized fruit with a high yield potential under high summer temperatures.

The 90 – 120g blocky-round red fruit has a jointless stem for easy harvest and will perform well when planted at a higher population than 30 000 plants per hectare.

DISEASE RESISTANCE PACKAGE :
Verticillium Wilt, Fusarium Wilt Race 1,2,3, Nematodes (Mi, Mj, Ma), Bacterial Speck, Stemphylium sp.(Grey Leaf Spot), Tomato Yellow leaf Curl Virus

3. Hygrotech will be moving into a new dimension of **crossover hawker type tomato hybrids,** by definition the more typical determinate saladette type varieties, which can be used as a classy or upmarket hawker type tomato where a smoother, larger and firmer tomato is required – for the hawker and / or fresh markets. This selection of 3 hybrids are stronger growers with a continuous rather than a concentrated set. These varieties can be grown on the ground or the more traditional method of trellising on short poles and will have a higher yield because of a higher pack out of smooth, large and uniform fruit accompanied by very strong disease resistance packages.

MAXIMO 3

A well trialed and tested hybrid tomato with the ideal features of a fresh market and hawker tomato on a medium sized determinate type plant with good setting ability for trellising on short stakes or on-the-ground culture. The fruit shape is round oval, 110-120g fruit mass, jointless for easy picking and firm. The excellent disease resistance package is expressed in a good tolerance to leaf diseases.

DISEASE RESISTANCE PACKAGE :
Verticillium Wilt , Tomato Yellow Leaf Curl Virus, Tomato Spotted Wilt Virus, Fusarium Wilt Race 1, 2, Nematodes (Mi, Mj, Ma), Bacterial Speck

TESSA

A relatively new determinate saladette type, very well suited for the fresh and hawker market. The medium to large fruit of 120 – 14 grams are elongated oval with thick walls that contribute to firmness and long shelf life with a jointed peduncle. The plants are strong growing with good leaf cover resulting in a good tolerance to leaf diseases.The plants are suitable for trellising on short stakes and on the ground culture and ideal for spring and autumn plantings.

DISEASE RESISTANCE PACKAGE :
Verticillium Wilt, Fusarium Wilt Race 1, 2, Bacterial Speck, Tomato Yellow Leaf Curl Virus, Tomato Mosaic Virus, Nematodes (Mi,Mj).

TAUNYA

Another new hybrid with blocky round saladette type 120 – 150g fruit with thick walls that contribute to firmness and long shelf life. The variety, apart from an unique disease resistance package, has a strong growth habit that produces a large framed plant with excellent cover, has a good yield potential and adaptable to many growing conditions. The variety is suitable for the fresh and hawker markets and can be grown on short stakes and on the ground culture.

DISEASE RESISTANCE PACKAGE :
Verticillium Wilt , Tomato Spotted Wilt Virus, Fusarium Wilt Race 1, 2, 3,Bacterial Speck, Tomato Yellow Leaf Curl Virus

We invite you to explore the new varieties to fit in your market needs and the diversity and adaptability that Hygrotech has on offer.

Please contact and visit our head office at Pyramid, our nation-wide branches to obtain prices, availability and detailed tech sheets of all the above varieties.

Join us moving into a new era of unique, advanced and superior processing and hawker / fresh market F1 hybrid tomato varieties.

THERE IS INDEED A LIFE AFTER HTX 14 !

HYGROTECH SUSTAINABLE SOLUTIONS

FEEDBACK

Commercial trial with ColourUp on Plums

Written by Herman Walters – Technical Manager, Hygrotech South

Due to the increased cost of electricity, labour, fuel, fertilizers, chemicals and orchard establishing, the grower has many factors to contemplate when selecting a crop and variety. This is not different for plum growers. The ideal is to have early, middle, and late varieties to simplify the harvesting process and spread it over the production season. Markets and exporters determine the producer's revenue. This is closely related to the "timing" of a harvest (number of harvesting sessions required), irrespective of being an early, middle or late variety. Despite the best efforts (geographic/ climatic suitability, yield potential, variety characteristics etc.) in choosing what variety to plant, is it often still difficult for certain varieties to obtain sufficient colour development. This may relate to climatic conditions (e.g. a late variety struggling with lower night temperatures, as well as cooler and shorter days) or the genetics of the variety. Situations like these may lead to numerous harvesting sessions, increasing labour cost and reducing profit.

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 Calexin® in countries such as the USA, Peru, Chile, Costa Rica and Australia, and CalXpress in New Zealand.

ColourUp is applied as a foliar application 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

During the 2018/2019 South African production season two investigative commercial trials were conducted on commercial plum farms near Tulbagh and Robertson in the Western Cape Province. At both locations the plum variety was African Delight. Planting density at both locations was 1.5 m between trees and 3.0 m between rows. Direction of the rows was north to south. ColourUp was applied twice, at 28 days prior to expected harvest and 14 days later. At Robertson the application dates were 7 and 22 January 2019, while the dates at Tulbagh were 16 and 30 January 2019. Harvesting and final evaluations took place on 6 February 2019 (Robertson) and 15 February 2019 (Tulbagh). From the results, fruit from the Colour-Up treated trees appeared more uniform in both colour and size when compared to untreated trees. Randomly picked fruit from both locations are presented in Photos 1 and 2. As mentioned before more uniform coloured fruit have the potential of limiting the number of harvest sessions and reducing cost.

Photo 1: Randomly picked African Delight plums from Colour-Up treated trees (left) and untreated treated trees (right) from Robertson location.

Photo 2: Randomly picked African Delight plums from Colour-Up treated trees (left) and untreated treated trees (right) from Tulbagh location.

For more information on these and the use of ColourUp, contact Herman Walters (+27 66 229 8298 or hermanw@hygrotech.co.za).

Compiled by Pieter Vorster – Fertagchem Technical Manager - Gauteng

Mikskaar Peat

Hygrotech is the sole supplier of Mikskaar peat in South Africa. The peat is imported from Estonia and Mikskaar is a major supplier of high quality peat substrates. Mikskaar peat originated from Sphagnum fuscum plants, which are soft moss like plants that die and are preserved under snow for many years. After many years, layers on layers are formed from decomposed Sphagnum spp. These layers are then harvested out from bogs. Bogs are large areas which are water saturated and covered with snow during winter. There are two types of peat harvested, namely light and dark peat.

Mikskaar peat consists of 95% organic material that contains natural Humic and Vulvic acids which contributes favourable to seedlings and plants as a growing medium. Most vegetable seedling nurseries in South Africa are using peat in their growing mixtures because its light in weight , have a high water holding capacity and have natural root stimulating and development properties. Mikskaar is a sterile and pathogen free peat.

Hygrotech can supply a wide range of substrates that are available as per customer needs. Contact your nearest Hygrotech branch for more information.

WHITE PEAT	BLACK PEAT
Less composted	More composted
5 x higher water retention	Lower water retention
Light in weight , softer material	Heavier , harder material
Slow release of water	Quicker release of water
Re-wettable	Not re-wettable
C : N = 60 : 1	C : N = 80 : 1

Light Peat

Dark Peat

Base Substrate

- pH 5,2 - 6,0
- EC < 0,05
- *Sphagnum spp.*
- Structure
  - 0-5mm
  - 0-6mm
  - 0-10mm
  - 0-20mm
  - 0-40mm
  - 5-10mm
  - 5-20mm
  - 5-40mm


Bogs


Sphagnum spp


Bogs


MIKSKAAR
Professional Substrate 300
Professional Substrate
Kultursubstrat
Substrato Professionale
Sustrato Profesional
Kasvuturvas
Substrat de Culture
MIKSKAAR
Professional Substrate 300


Harvester

LAWN CARE

PROFEED

PRESCRIPTION MIXTURE

Fertilizer Group 1

25kg

20:6:20 (46)

Nitrogen	(N)	200	g/kg
Phosphorus	(P)	64	g/kg
Potassium	(K)	200	g/kg

DIRECTIONS FOR USE

Dissolve 25 kg of the mixture in 1000 L of water according to method of application. Stir until it is completely dissolved and apply as a full cover spray on 1 ha of **turf grass** to enhance growth and colour (or half bag per rugby, soccer, cricket and hockey field).

Use the mixture also at 25 kg/ha in irrigation systems on **turf grass** to replenish the, nitrogen, phosphate and potassium requirements. Sprayed area should be irrigated thoroughly immediately after application.

The mixture is compatible with fungicides and insecticides, except those containing copper, sulphur and alkaline materials.

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GREEN-UP

LAWN CARE

PRESCRIPTION MIXTURE

Fertilizer Group 1

5kg

Nitrogen	(N)	84	g/kg
Magnesium	(M)	18.8	g/kg
Sulphur	(S)	199.71	g/kg
Ferric	(Fe)	78	g/kg

DIRECTIONS FOR USE

Dissolve 2.5-5 kg of the mixture in 50-600 L of water according to method of application.

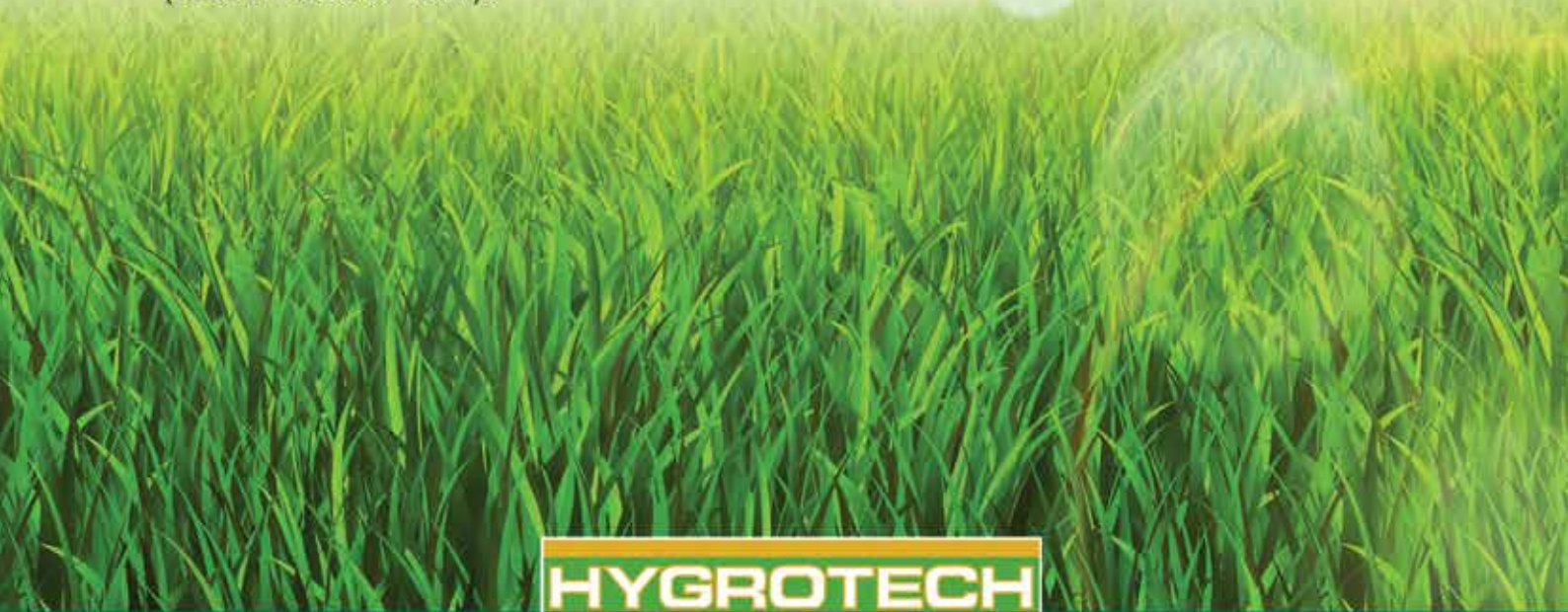
Stir until it is dissolved and apply as a full cover spray on 1 ha of **turf grass** during the summer months to enhance photosynthesis.

Use the mixture also at 5 kg/ha in irrigation systems on **turf grass** to enhance good growth and colour.

Apply as foliar feeding just after mowing. Sprayed area should be irrigated thoroughly immediately after application.

The mixture is compatible with fungicides and insecticides, except those containing copper, sulphur and alkaline materials.

Use a suitable sticker-spreader such as Nu-Film P® (L2980 Act 36 of 1947) or Nu-Film 17® (L2981 Act 36 of 1947).



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LYCOPENE

Health benefits

Lycopene is one pigment in a large family of plant pigments known as carotenoids. Carotenoids produce colours ranging from the yellow colour of squash, to the orange colour of pumpkins, to the red colour of tomatoes. Carotenoids also contribute to some plant food aromas *(Rodriguez-Bustamante & Sanchez 2007).* Some carotenoids also possess provitamin A activity and have shown potent antioxidant activity.

Lycopene, a naturally occurring red carotenoid pigment found in tomatoes, pink grapefruit, watermelon, papaya, guava, and other fruits, has been extensively studied for more than 70 years, with more than 2000 articles published in peer-reviewed journals and 4000 other publications (scientific and otherwise) written on the subject. Most of these articles have focused on lycopene derived from tomatoes. Given the vast amount of information already published about lycopene, **we focus on literature related to the health effects of tomato lycopene in humans.**

Although in vitro and animal studies are vitally important to understanding the mechanisms behind potential health effects, human studies, specifically clinical trials, are ultimately used to determine the effect of dietary constituents on health, as well as to set nutrition and food labelling policy.

Over the past decade, lycopene-containing foods (primarily tomato products) and lycopene supplements have been reported to affect diseases ranging from cancer to heart disease to asthma *(Dahan et al. 2008, Riccioni et al. 2008, Wood et al. 2008)*. Most recently, researchers have begun to investigate lycopenoids, oxidative metabolites of lycopene, based on the possibility that these lycopenoids may produce biological effects (Erdman et al. 2009).

"LYCOPENE BIOAVAILABILITY IS GREATLY AFFECTED BY DIETARY COMPOSITION. GIVEN THAT LYCOPENE IS A LIPID-SOLUBLE COMPOUND, CONSUMING IT WITH FAT INCREASES ITS BIOAVAILABILITY."

Red Baron

versus

Regular tomato

Reactive oxygen species (ROS) are oxygen-containing molecules that either are or have the potential to generate free radicals. Overproduction of ROS results in a condition known as oxidative stress, which has been linked to both cancer and cardiovascular disease *(Halliwell 1994)*. Carotenoids, including lycopene, can be potent antioxidant molecules and are especially effective at scavenging the ROS singlet oxygen Of the carotenoids, lycopene is the most effective singlet oxygen scavenger in vitro *(Sies & Stahl 1995).* This antioxidant activity has been proposed as a mechanism for the potential health benefits of carotenoids *(Sies & Stahl 1995, Agarwal & Rao 2000).*

More than 80% of dietary lycopene intake in the U.S. is derived from processed tomato products such as ketchup, tomato juice, spaghetti sauce, and pizza sauce *(Clinton 1998).* The amount of lycopene present in various types of tomatoes also differs significantly. Some varieties have a much higher lycopene content due to breeding focussed on enhancing colour by using parent lines that carry the dominant homozygotes gene. To better illustrate the difference in colour intensity due to different lycopene content, see the image (previous page) of a regular tomato compared to Hygrotech's **Red Baron.**

Lycopene bioavailability is greatly affected by dietary composition. Given that lycopene is a lipid-soluble compound, consuming it with fat increases its bioavailability. For example, consuming salads with full-fat dressing results in higher blood carotenoid levels than eating salads with reduced fat dressing. When salads were consumed without fat in the same study, no measurable lycopene uptake occurred *(Brown et al. 2004).* A study by *Unlu et al. (2005)* showed a similar result, whereby the consumption of tomato salsa with avocado (as lipid source) led to a 4.4-fold increase in lycopene absorption as compared with salsa without avocado.

Over the past decade, the effects of lycopene have been studied with respect to a wide range of diseases. The consumption of tomatoes and tomato products has been associated with a reduced incidence of a number of different types of:

- **Cancers,** most notably prostate, lung, and stomach *(Giovannucci 1999)*
- **Cardiovascular Diseases** *(Dahan et al. 2008, Riccioni et al. 2008)*
- Statistically significant reductions in **gingivitis** and bleeding index (Chandra et al. 2007).
- The ability of lycopene to affect **UV-induced sunburn.** A study by *Stahl et al. (2001)* indicates that the tomato paste treatment was protective against UV-induced sunburn.

Jalapenos

"May the burn stay with you"

Compiled by Christo le Grange, National Product Development Manager and Pieter Vorster, Fertagchem Technical Manager- Gauteng.

The name jalapeno is Spanish for "from Xalapa " (also spelled Jalapa), the capital city of Veracruz, Mexico, where the pepper was traditionally cultivated. Jalapeños were in use by the Aztecs prior to the Spanish conquest. The use of peppers in the Americas dates back thousands of years, including the practice of smoking some varieties of peppers in order to preserve them.

In order to grow chillies or Jalapenos and producing healthy plants with high yields, the necessary nutrients need to be applied to obtain optimal growth. Available nutrients and the uptake of nutrients will be crucial in developing strong and healthy plants. Any deficiencies could lead to decrease in production potential and yield lost.

AVAILABILITY OF NUTRIENTS

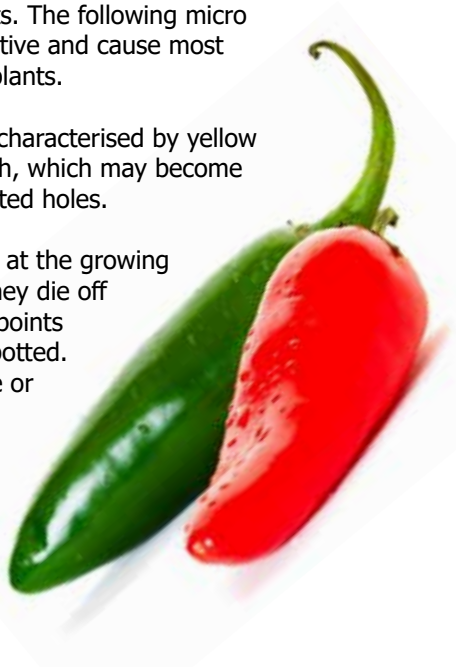
All plant nutrients are classified as macro and micro nutrients and most of the time, focus is placed on the macro nutrients which are Nitrogen (N), Phosphorus (P) and Potassium (K). The micro nutrients Calcium (Ca), Magnesium (Mg), Sodium (Na) and Sulphur (S) play a big role in the availability of all nutrients because of their quantity, electro molecular charge and the balances between these elements. The rest of the micro nutrients are mostly metals like Zink (Zn), Manganese (Mn), Copper (Cu), Iron (Fe), Boron (B), Molybdenum (Mo), Chlorine (Cl), Cobalt (Co) and Aluminium (Al) and play a part in most processes in plants. They are required in smaller quantities but have a greater effect in the plant's physiological functions. Soil pH, temperature, soil texture, clay percentage, aeration, organic or carbon content, microbes and water play the biggest part in availability of all nutrients.

"THE NAME JALAPENO IS SPANISH FOR "FROM XALAPA " (ALSO SPELLED JALAPA), THE CAPITAL CITY OF VERACRUZ, MEXICO, WHERE THE PEPPER WAS TRADITIONALLY CULTIVATED."

MICRO NUTRIENTS

All crops have different nutrient needs and sensitivity for certain micro elements. The following micro nutrients are highly sensitive and cause most deficiencies in Jalapeno plants.

Manganese deficiency is characterised by yellow spots in the young growth, which may become necrotic and form elongated holes.



Boron deficiency displays at the growing points first, sometimes they die off completely. New growth points can curl up or become spotted. Stems can become brittle or even sometimes hollow. Secondary roots are normally swollen and shorter. This could also be deficiency of potassium, because a plant needs potassium to absorb boron.

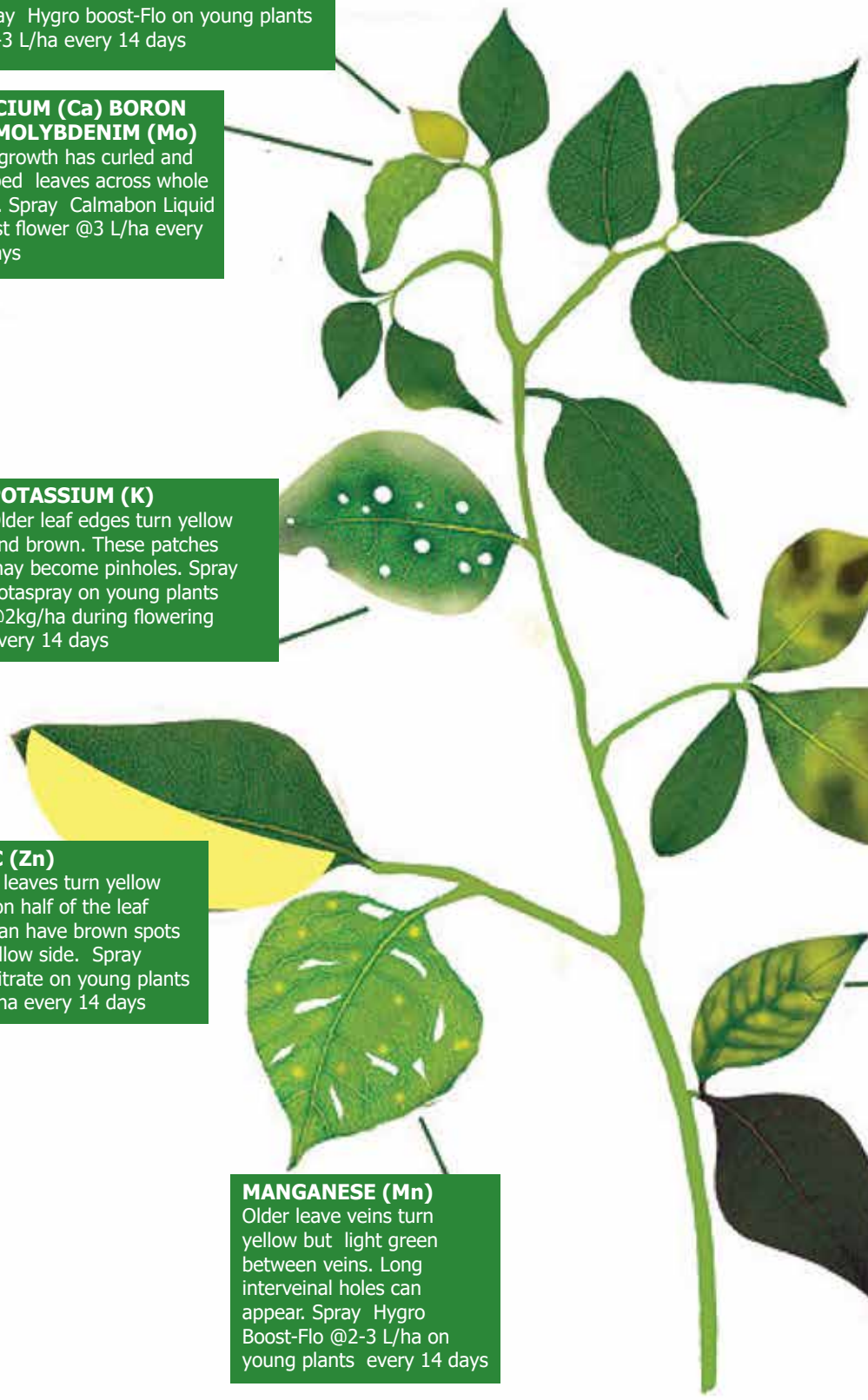
Copper deficiency will make the plants become stunted. Growing points will die back completely, and new growth wilts away. Plants need Copper for healthy stems and new growing points. Hand in hand with Copper deficiency goes Nitrogen deficiency….. so please look out for both.
Zinc is the glue that keeps a number of processes in the plant going, production of chlorophyll, the absorption of water, and the growth of leaf and stem. Deficiency will show up with a display of yellow or grey patches between the veins.

Haver a look at the following deficiency guide to see which products are available to minimize possible problems. Jalapenos within the Hygrotech & Seedcor range will create a heatwave in the diverse South African market.

Chilli Plant Deficiency Guide

IRON (Fe) COPPER (Cu)
New growth has patches of yellow / grey between veins and across whole leaf. Spray Hygro boost-Flo on young plants @2-3 L/ha every 14 days

CALCIUM (Ca) BORON (B) MOLYBDENIM (Mo)
New growth has curled and crimped leaves across whole plant. Spray Calmabon Liquid at first flower @3 L/ha every 14 days



POTASSIUM (K)
Older leaf edges turn yellow and brown. These patches may become pinholes. Spray Potaspray on young plants @2kg/ha during flowering every 14 days

NITROGEN (N)
Old growth and lower leaves turn yellow first and then move up the plant.. Spray Nitrospray Plus on young plants @2 L/ha every 14 days

ZINC (Zn)
Older leaves turn yellow only on half of the leaf and can have brown spots on yellow side. Spray Zinknitrate on young plants @2L/ha every 14 days

MAGNESIUM (Mg)
Older leaves turn yellow but the veins stay green. Spray Calmabon Liquid @2kg/ha during flowering every 14 days

MANGANESE (Mn)
Older leave veins turn yellow but light green between veins. Long interveinal holes can appear. Spray Hygro Boost-Flo @2-3 L/ha on young plants every 14 days

PHOSPHATE (P)
Older leaves are small and turn purple. Will move up the plant. Spray Fosfaspray @2 kg/ha on young or older plants every 14 days

Bravo BLS F1*

Dark green Jalapeno, with a strong plant and excellent leaf cover will provide fruits, between 9 – 12 cm long and diameters of 3,1 – 3,7cm. This cultivar could be cultivated under moderate temperatures, with almost no sugar cracks in those diverse conditions. **Disease resistances:** BLS 1-3

Tharos F1*

Similar to Bravo BLS, this Jalapeno has a strong plant with excellent leaf cover. Fruit lengths of between 10 – 12cm and diameter's of 3,1 – 3,8cm makes this ideal for fresh, processing and chilli poppers. Noticeable less sugar cracks also a good feature.

Fermin F1 *

The long but thinner fruit of Fermin makes it unique, with fruit lengths between 13 – 19cm. Diameter range between 2,9 – 3,2cm ideal for the fresh market.

Monaco F1*

One of the old standards around that will ensure that you have a quality product. More compact plant for processing and fresh market use. Monaco F1 will have a Scoville reading of 1500/2100, with fruit specifications of 11 x 3cm.

Spitfire F1*

Spitfire F1 jalapeno produces a continuous set, prolonging the harvest period. Fruit specifications of 10 x 4cm, but could be harvested as a smaller fruit depending on what the market needs. Shows tolerance to purpling under excessive sun exposure, and cracking, with similar disease resistances as Bravo Bls above: BLS 1-3

The Hygrotech & Seedcor ranges are creating a heatwave in South Africa, make sure to include them in your next planting programme !

FORAGE AND PASTURE SEED CLEARANCE SALE!

Perennial ryegrass Telstar (Diploid)	R820.00 per 25 kg
Perennial ryegrass Indiana (Diploid)	R1200.00 per 25 kg
Perennial ryegrass Alto (Diploid)	R1300.00 per 25 kg
Perennial ryegrass Calibra (Tertraploid)	R850.00 per 25 kg
Tall fescue Kora	R1100.00 per 20 kg
*Westerwold ryegrass Lolan	R720.00 per 25 kg
*Italian ryegrass Danergo	R800.00 per 25 kg
Hybrid ryegrass Storm	R1300.00 per 25 kg
Ryegrass mix More milk	R660.00 per 25 kg
Nemat (Nematode trap crop)	R2800.00 per 25 kg
Stooling rye LS 62 (Long cycle)	R300.00 per 25 kg
Stooling rye LS 35 (Short cycle)	R300.00 per 25 kg
*Stooling rye Rahu (Long cycle)	R260.00 per 25 kg
Lucerne HL9 (Class 9 non winter dormant)	R3200.00 per 25 kg
Lucerne HL10 (Class 10 non winter dormant)	R3750.00 per 25 kg
Lucerne HLS9.2 (Class 9 non winter dormant and salt tolerant)	R4300.00 per 25 kg
Mustard Caliente 199 (Bio fumigation crop)	R3100.00 per 25 kg
Fodder radish Sodbuster	R1700.00 per 25 kg
Fodder turnip MPT	R1600.00 per 25 kg
Chicory Oasis	R3900.00 per 25 kg
Red clover Oregon Red	R1500.00 per 25 kg

Limited stock
Discount on bulk orders

* Pietermaritzburg branch only

All prices exclude VAT and delivery

Prices ex depot

FOR MORE INFO CONTACT YOUR NEAREST HYGROTECH BRANCH

BENEFIT FROM LONG SHELF-LIFE MELONS

Written by Hugo Burger – Technical Manager, Western Cape region, Stellenbosch branch

Melons with a long shelf-life are easier accepted by end-users in certain parts of the country, like in Gauteng. In Gauteng these types of melons have been utilized for a considerable time already, whilst users in the Cape Provinces are still battling to get used to melons with firm flesh and a grey skin colour. There is a misperception with some users that these types of melons are not mature / ripe, because of the absence of a cream coloured skin and no aromatic fragrance. The worldwide tendency is to move away from the Athena type cultivars to Eastern Shippers with LSL characteristics or Harper types.

Hunter

Eastern Shippers with LSL characteristics and Harper types have more benefits than disadvantages for the producer and end-user. Benefits for the producer are :

- plants are much more vegetative and the runners stay healthy longer.
- noticeable higher yield in marketable fruit
- fruit more uniform in size
- producer is not pressed for time during the harvesting process
- fruit can stay on the runner for longer even if its mature already
- fruit's ability to produce a second crop which will result in higher yields.

To harvest the fruit at the right time of maturity, is the only negative aspect. It's for this reason that some producers still avoid production of these types. When the attachment to the fruit slips, the fruit is mature/ripe or when the skin's colour changes to light green. This is a learning process which will be understood once producers get to grips with the farming practices of these types. Supermarkets and market agents prefer the Harper type melons because they can stay on the floor for longer which results in less losses due to rotten fruit.

Avenger

The end-user will have to get used to melons with firmer flesh. The aroma and brix are excellent and could even be better than those of the traditional cultivars.

Hygrotech and Seedcor have one Eastern Shipper with LSL characteristics and 2 Harper type cultivars with lots of potential. **COLLINS** is an Eastern Shipper (LSL) with a weight of 2 kg and a medium size seed cavity. The flesh is firm with a Brix of 14. **COLLINS** has a full disease package of F 0,1,2 and PM 1 and 2. **HUNTER** is a Harper type melon with a very strong growing habit and delivers fruit of more or less 2.5 kg and a Brix of 14 and above. The flesh is firm and very fragrant. **HUNTER** is suitable for export, local and processing. It has a disease package of F 0,1,2 and PM 1,2,5. The plants stay healthy till the end of the harvest process. **HUNTER** can be produced in the north of our country during winter because of the fruit size.

Collins

AVENGER is a sister line of **HUNTER** with the same characteristics. This cultivar needs more Potassium in the fertigation programme though, to have the same results as **HUNTER.**

Between these 3 cultivars, everybody in the food-chain will be satisfied with the results reached.

Producers should undoubtedly try to plant these cultivars. Satisfied clients would be the result !!

For more technical information, kindly contact Hugo Burger – 082 325 9907.

STELLENBOSCH 2019 FARMERS DAYS

This prestigious annual event took place at our Stellenbosch Trial-grounds on the 7th and 9th March 2019. A wet Western Cape could not put a damper on the proceedings and vegetable farmers, producers and other interested parties attended to have a closer look at the crops and varieties on display. The following crops/varieties on the photographs below, attracted considerable interest.

Butternut Crusader

Karajan Koo from Nongwoo Bio with Michael Luttig inspecting some of the varieties

Fancy lettuce on disply

Tomato Stella

Cherry tomato HY 1267

Tomato 1722

Sweet watermelon Rocky Ford

WHAT IS 'THE PLUS' IN CALMABON PLUS?

Written by Pieter Vorster – Fertagchem Technical Manager – Gauteng.

Anyone that has used Calmabon Plus, a flowering enhancer from Hygrotech, can tell you how potent this product can be. Calmabon Plus can increase the size and weight of flowers, increase the number of flowers per plant, and even improve the quality, aroma, and colour of flowers. Many farmers that reap the rewards of Calmabon Plus become curious as to what it is exactly that they give their plants to produce such huge advantages over those that don't use Calmabon Plus. It isn't really anything magic or diabolical. It is simply a combination of nutrients and resources that make these nutrients more available to the plant that help to set better flowers and harvest time become a much happier time for the grower. Here is what you find with Calmabon Plus.

Amino Acids - Amino acids help synthesize proteins, which make up the building blocks of your plant. In plants, the only amino acids that are used are 'L' amino acids, so **Calmabon Plus** come packed with them. Every plant, like any organism, needs certain components for growth over and above soil, sun, rain and air. The basic component of living cells is proteins, with building block material, amino acids. Proteins are formed by a sequence of amino acids. Plants synthesize amino acids from the primary elements, the Carbon and Oxygen obtained from air, Hydrogen from water in the soil, forming Carbon Hydrate by means of photosynthesis and combining it with the Nitrogen which the plants obtain from the soil, leading to synthesis of amino acids by collateral metabolic pathways. Only L-Amino Acids are part of these proteins and have metabolic activity. The requirement of amino acids in essential quantities is well known as a means to increase yield and overall quality of crops. The application of amino acids for foliar use is based on its requirement by plants in general and at critical stages of growth in particular. Plants absorb amino acids through stomas and they are proportionate to environment temperature.

Fulvic Acid - Even if you have a perfectly balanced nutrient solution, it doesn't help if it's not "chelated" properly. Fulvic acid in **Calmabon Plus** takes the nutrients and turns them into substances that are much more "bio available," increasing uptake. Fulvic acid is a natural organic electrolyte in that it is both a complex organic molecule that would contrarily not be soluble in

water, but it is also covered in negative charges that enable solubility in water. Because it is smaller and more electronegative than other humates, fulvic acid readily complexes with itself, other organic molecules and inorganic materials like metals and minerals making them all become more readily available to plant roots. Fulvic acid acts like a tiny claw that grabs everything your plant may not be able to take in on its own and helps the leaves utilize and process these essential molecules.These elements are transported into the plant tissue faster and easier with fulvic acid than without, resulting in a plant that is able to achieve better fruit set and produce larger yields. Utilizing fulvic acid in **Calmabon Plus** means that nutrients are immediately absorbable and more transportable within the plant.

Kelp - Deep in the bed of virtually every ocean and sea, there lies a large plant-like organism that survives incredibly harsh conditions through the sheer power of its natural vitamins, nutrients and hormones. The turbulent waves and swarms of kelp eating animals mean that in order to survive, it has to propagate easier and grow much faster than your average plant. Hydroponics supply companies harness everything that makes kelp such a powerful, fast growing and disease resistant plant by distilling it into seaweed plant food. Seaweed plant food can be a fantastic addition to your overall nutrient and supplement strategy.

Though most seaweed plant food is produced with the expectation that it will be used primarily in the root zone, it can also make for a fantastic fertilizer. This can be particularly helpful you if you want to protect your plant from disease. Kelp contains natural antibiotics that can help keep harmful bacteria at bay. In addition to **Calmabon Plus**, foliar feeding can help give your plants an extra boost of vitamins and hormones that they might not be receiving through their roots. By using **Calmabon Plus** with added kelp in this foliar fertilizer, you will be increasing nutrient uptake substantially.

Extra Minerals and Nutrients - With all of these factors increasing the metabolism of your plants, you are going to need to add extra nutrients to ensure that your plant is getting the most productive environment. That's why **Calmabon Plus** comes with an extra boost of nutrients. More importantly, they supply Calcium (Ca), Magnesium (Mg), Boron (B) and Molybdenim (Mo). These nutrients are essential to producing the biggest, healthiest flowers possible and deliver higher fruit set and less flower or fruit drop during unfavourable climatic or soil conditions.

OUR **SWEET PEPPER** FAMILY IS GETTING **BIGGER** AND **BETTER** !!!

Written by Fielies Nieuwoudt – Area Marketing Manager, Tzaneen.

Most producers already know about the success story... named Rubistar (green/red). This cultivar once again stood out in the trials at the farmers day held at Marlo Nursery. Short on its heels though, is Floyd which makes it difficult to choose between the two. Floyd is slightly smaller, but has thick walls which is an indication of excellent shelf life. Both cultivars are well priced and seed stock is available. A very important characteristic which needs to be pointed out, is that both cultivars have a long and productive harvest period.

Floyd

Specifications:
Suitable for: Fresh market
Maturity : Mid-season
Type: Open field
Colour: Green to red
Fruit shape: Blocky
Weight: 11x11cm; 180 – 250 g

Disease resistance:
TMV (L4); Xcv 1-3; Bs; TSWV

Rubistar

Specifications:
Suitable for: Fresh market
Maturity : +- 80 days after transplanting
Type: Open field
Colour: Green to red
Fruit shape: Blocky
Weight: 220 g

Disease resistance:
TSWV
Bs (Xanthomas vesictoria)
Xcv 1-3

Bacterial wilt	RS
Potato y	PVY
Tobacco Mosaic Virus	TMV
Tomato mosaic	ToMV
Tomato spotted wilt	TSWV
Bacterial spot	Xcv
Powdery mildew	Lt

Farmers and producers looking for a yellow pepper or net house pepper respectively, don't have to look further than Felix and Taylor. Both stood out at the Marlo farmers day trials. Kindly speak to our Hygrotech field personnel to inquire about prices and availability of seed.

Felix

Specifications:
Fruit shape: Deep blocky
Maturity: Mid-season
Weight: 9x8,5 cm; 270 – 290 g
Colour: Green to yellow
Days to maturity: Green - 80 days; blush- 95 days

Disease resistance:
TSWV
ToMV
PVY

Taylor

Specifications:
Fruit shape: Deep blocky
Maturity: Mid-season
Weight: 8x9,5 cm; 260 – 280 g
Colour: Green to red
Days to maturity: Green- 80 days; blush- 95 days

Disease resistance:
TSWV
ToMV
PVY

Marlo Nursery has done it again!

Marlo Nursery Farmers day was as suspected once again a huge success, with a brand new infrastructure and excellent weather. Hygrotech and Seedcor are proud to be partners in growing this day to one of the biggest vegetable display days. Well done Marlo ! We wish you great success with this farmers/nursery day in future. Hygrotech was there in full force to enjoy and support Marlo Nursery, providing the farmers with a day to remember and show case all the new material in the vegetable seed industry.

(Left) Lodewyk de Jager, (Middle) Herman de Beer & (Right) Michael Luttig

Clients visiting the Hygrotech display

Lodewyk & Johnny Muller who appeared on the cover of the last Forum.

Lodewyk & Tinus from Marlo

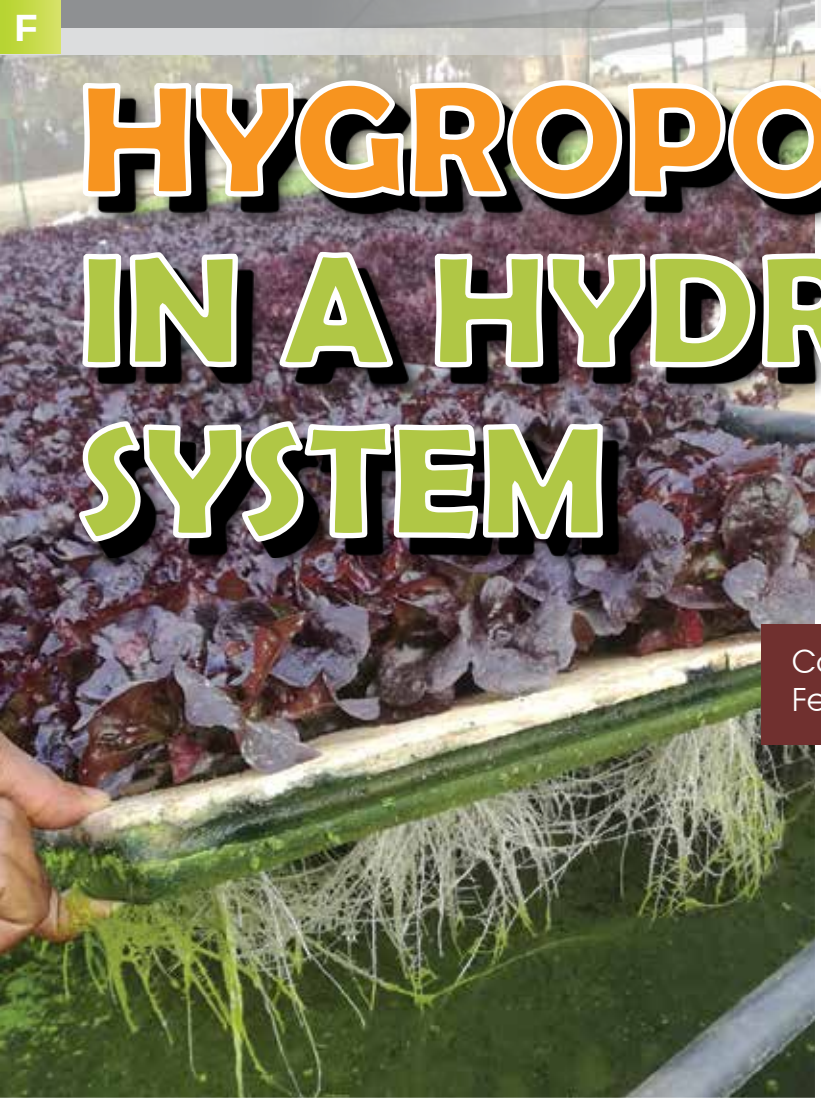
Luhan Swart in dicussion with a client from Botswana

Impressive display of Hygrotech vegetable varieties

F

HYGROPONIC IN A HYDROPONIC SYSTEM

Compiled by Pieter Vorster –
Fertagchem Technical Manager, Gauteng.



Hygroponic is a balanced nutrient mixture for various crops under protection or open field production in a hydroponic system. Hygroponic is formulated to enhance and optimize your crop potential. Hygroponic could be used in a wide range of hydroponic systems and is easy to use. A Hydroponic system has no ability of storage or buffering of fertilizers, nutrient management is therefore of extreme importance. The Hygroponic mixture of Hygrotech makes it easy to manage the nutrient status of all crops.

The Hygroponic mixture consist of all the macro and micro nutrients and is well formulated to be used with Calcium Nitrate (CaNO3) and Potassium Nitrate (KNO3) to adapt to different crop requirements. The key factor in maximum yield and quality in any hygroponic system is determined by the ratio and concentration of nutrients applied at certain growth stages. The ratio and concentration are determined by growth stage, climate, sunlight and type of crop. This can differ from one grower to another.

Water quality plays a major role in the success of hydroponic production. Some water might not be suitable for hydroponic production because of a high content of salts or carbonates that prevent growers to add any nutrients before the roots start to burn. The Electrical

HYGROPONIC

A SPECIALISED HYDROPONIC FERTILIZER TO BE USED WITH SOLU-CAL AND POTASSIUM NITRATE FOR THE PRODUCTION OF TOMATOES, CUCUMBERS & PEPPERS

Nitrogen (N)	68	g/kg
Phosphate (P)	42	g/kg
Potassium (K)	208	g/kg
Magnesium (Mg)	30	g/kg
Sulphur (S)	64	g/kg
Iron (Fe)	1254	mg/kg
Manganese (Mn)	299	mg/kg
Zinc (Zn)	149	mg/kg
Copper (Cu)	22	mg/kg
Boron (B)	373	mg/kg
Molybdenum (Mo)	37	mg/kg

GROUP 1 FERTILIZER

Reg. No. K5709 **Act No 36 of 1947**

Conductivity (EC) or salts in water is measured in milli Siemens or micro Siemens scale. The lower the EC the better the quality and more nutrients can be added to mixtures before root burn occur. EC stands for Electrical Conductivity and is measured in mS/cm or milli Siemens per centimeter.

TDS stands for Total Dissolved Solids and is measured in PPM (parts per million). TDS is acquired by taking the EC value and performing a calculation to determine the TDS value. Conductivity and TDS (total dissolved solids) are often thought of being interchangeable, but they are not. Conductivity is a measurement of the ability of a substance to conduct electricity.

Electrical conductivity of water is directly related to the concentration of dissolved ionized solids in the water. Nutrients in a hydroponic system are more plant available at a water pH between pH 5, 5 -6, 5. pH is the measurement of hydrogen ion activity (acidity or alkalinity) in solution. pH of mixtures can be lowered with adding nitric-acid or phosphoric-acid and Potassium-hydroxide, whilst Sodium-hydroxide can be added to increase the pH to the required level. Normally when adding nutrients, the pH of the mixture will go up and the mixture should therefore be measured after the correct quantities were added.

Hygrotech has an unique nutrient management plan to assist the grower to obtain the correct Electrical Conductivity (EC) with the Hygroponic mixture and the water source. The Hygroponic Management Plan can be obtained at any of the Hygrotech offices. Ask for a technical advisor to advise you on the use of the Hygroponic Management Plan.

BOTSWANA

unlocking the potential for vegetable production

Written by Luhan Swart – Hygrotech Technical Manager.

Botswana, the country with underestimated opportunities, has for the first time ever held a vegetable farmers day co-presented by **AGRICHEM NR** and **HYGROTECH.**

The trial site, close to Francistown, was developed for the purpose of demonstration and training, but also as an example of the ability to start a **GREEN FIELD** from nothing and then farm on the trial site with vegetables as a commercial production unit.

Crop planning and preparations were done by a team of people who took it upon themselves to show the ability to plan and run a demonstration trial site on a commercial basis. The theme for this was: **'SUSTAINABLE VEGETABLE PRODUCTION USING CONSERVATION AND PRESERVATION FARMING METHODS'**

The following basic agriculture production methods were utilized:

- Crop planning and rotation methods
- Soil and water analysis
- Optimum planting periods for showing and harvesting
- Using soil conditioner/fertilizer **PERLKA**
- Irrigation methods and scheduling
- Integrated pest control management for the Fall Army Worm and Tuta absoluta problems in Botswana
- Crop conservation methods with mulching
- **OFF THE GRID FARMING** methods

First preparations and planning for the trial site were started in June 2018 and ended on 22 December 2018. During the course of the period more than 500 Botswana farmers were trained and exposed to the efforts from **AGRICHEM NR.**

The next demonstrations are planned for the same time in 2019 and **HYGROTECH** will again work together in partnership with **AGRICHEM**. Thank you very much to the **AGRICHEM** team who made it possible to present this first ever farmers day in Botswana.

Demo plots and visiting farmers at the Botswana Farmers Day

NU-FILM® WITH MICRO-ORGANISMS USED AS BIO-CONTROL PRODUCTS

By Johann van der Vyver, Director: Miller Chemical SA (Pty) Ltd

In recent Hygrotech Forum editions the following 2 benefits were discussed in detail why Nu-Film® P or 17 are more often than not included in agricultural pest and disease spray programmes in South Africa:

IMMEDIATE BENEFITS
- Reducing possible volatilization of spray-tank mix.
- Improved deposition on crop surface.
- Adequate spreading and coverage of crop surface.

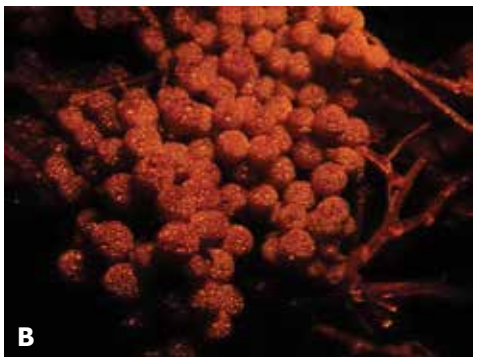
BENEFITS OVER TIME
- Reducing loss of spray-tank mix due to rain, overhead irrigation or dew.
- Reducing UV light degradation of UV sensitive agri-chemicals on crop surfaces.
- Reducing heat degradation of agri-chemicals on crop surfaces.
- Protecting uptake availability of systemic agri-chemicals against sudden evaporation of spray from crop surface after application.

Internationally, micro-organisms such as fungi, bacteria and viruses are incorporated more and more into agricultural spray-programmes either as part of a holistic approach to combat pests and diseases or as dictated by certain crop production programmes or as an end-user preference. These product types are part of a bigger group of organisms commonly referred to as "bio-control products/ agents" and include other organisms such as predatory insects, trapping plants, etc. In South Africa the number of registrations of products containing fungi, bacteria and viruses to control pests and diseases grows annually. Not just the number of products, but also the number of crops applied onto increases. Miller® and Hygrotech frequently receive enquiries how the known benefits of Nu-Film® will suit the application of these products. Such benefits will now be discussed.

IMPROVED DEPOSITION AND ADEQUATE SPREADING OF SPRAY APPLICATION

Bio-control products consisting of micro-organisms primarily involve contact with the target pest/ disease or consumption by the target pest. Therefore, to enhance the probability of contact or consumption maximum coverage of the crop surface by the bio-control product is crucial. Nu-Film®'s ability to improve deposition (and reduce the bounce-off effect) of a spray application on the crop surface, together with a near perfect droplet spreading really creates every opportunity (Figure 1) for the bio-control product to come into contact with its prey.

Figure 1: Many types of UV sensitive pigment studies have illustrated and confirmed Nu-Film®'s ability to create excellent crop coverage of fruit and foliage. A - example of UV pigment study in vineyard. Photos of grapes (B) and mandarin leaves (C) covered with UV sensitive pigment after a spray application illustrate and confirm Nu-Film®'s ability to improve deposition and coverage on the crop surface.



REDUCING LOSS OF SPRAY DEPOSIT FROM CROP BY RAIN, IRRIGATION OR DEW

Reducing removal of spray deposition from crop surface is crucial, especially during the period after application and until the beneficial micro-organism has developed and settled on the crop surface. The Nu-Film® film sets within 1 hour after application when exposed to UV light. Its ability to reduce the loss of spray deposit by surface water from the crop surface, and contributing to improved efficacy, is excellently illustrated in Figure 2.

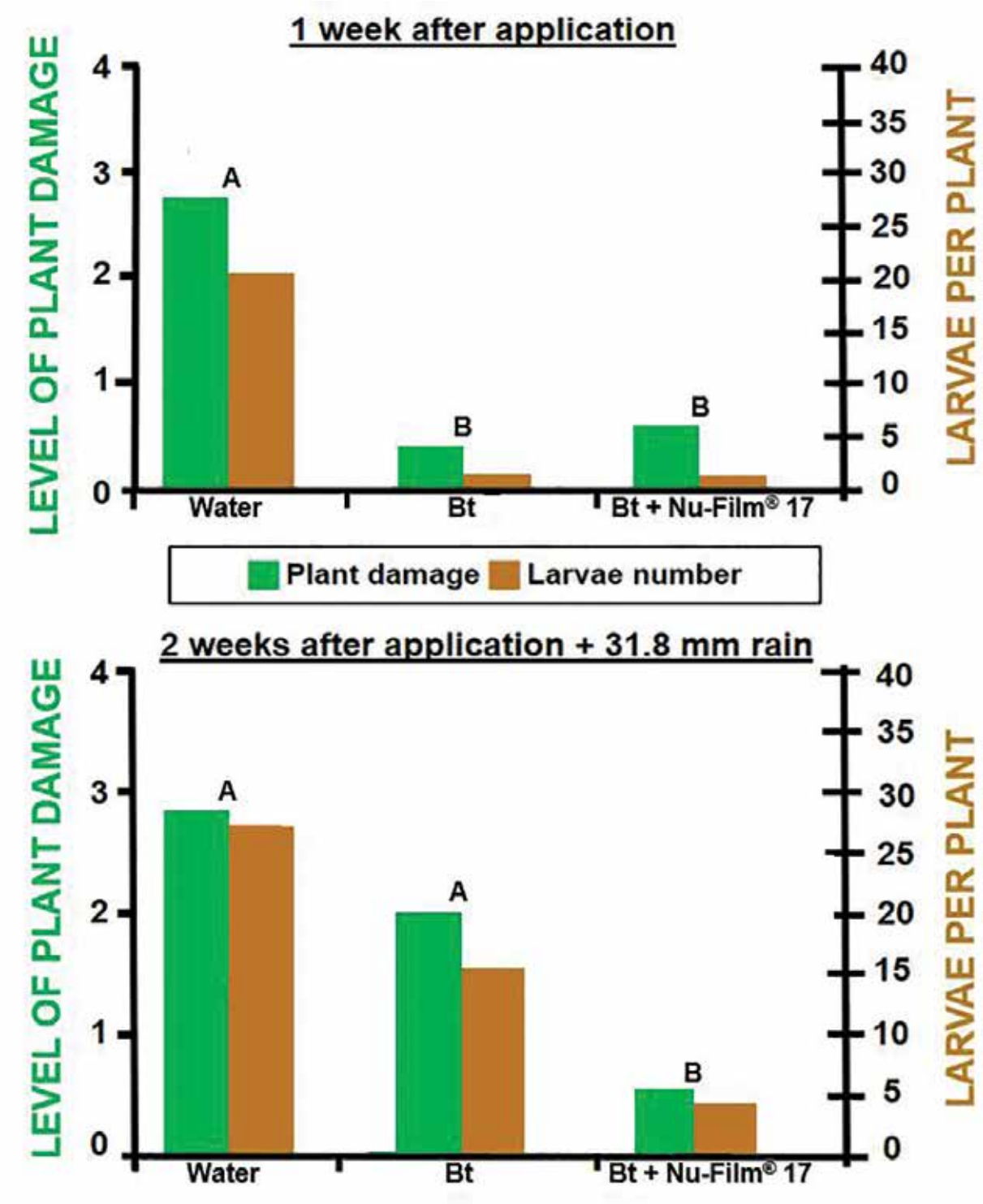


Figure 2: Summary of the persistence of a *Bacillus thuringiensis* (Bt) containing product with a Bt containing product + Nu-Film® 17 on Pistachio saplings as indicated by the number of live *Thaumotopoa solitaria* (pistachio processionary moth) larvae on plants and the degree of defoliation. Means with the same letter do not differ significantly. Note the significant improved efficacy after rainfall by the Bt containing product + Nu-Film® 17 in comparison to the Bt treatment only. From G. Gindin *et al.* 2008. Phytoparasitica 36(5): 472-482

REDUCING UV LIGHT AND HEAT DEGRADATION OF SPRAY DEPOSIT ON CROP SURFACE

These attributes of Nu-Film® are well demonstrated by two studies in particular. The first study (conducted in Costa Rica – see Table 1) evaluated the ability of Nu-Film® P to protect a commercially prepared Bt product from UV light degradation for various time intervals. The pest evaluated was the sugar cane borer *(Diatrea saccharallia)*. Possible influence of environmental components such as heat, rain and wind were eliminated by conducting this investigation *in vitro.* This made it possible to evaluate the influence of UV LIGHT ONLY.

Table 1: Summary of the mean percentage dead sugar cane borer larvae that fed (for 24 and 48 hours) on a commercially prepared Bt product - with and without Nu-Film® P - that was subjected to 2, 4, 6 and 8 hours of UV radiation respectively. Note the higher percentage mortality from the Bt + Nu-Film® P treatment in comparison to the Bt treatment only for each evaluation category. The results clearly indicate the ability of Nu-Film® to reduce the degradation of the Bt product by UV radiation. Study conducted independently by Dr. M.O. Gómez, Costa Rica.

TREATMENT	% DEAD LARVAE AFTER 24 HOURS OF FEEDING				% DEAD LARVAE AFTER 48 HOURS OF FEEDING			
Bt	40 %	40 %	30 %	30 %	60 %	50 %	60 %	70 %
	8 hours UV	6 hours UV	4 hours UV	2 hours UV	8 hours UV	6 hours UV	4 hours UV	2 hours UV
Bt + Nu-Film® P	80 %	60 %	60 %	70 %	100 %	100 %	90 %	90 %
	8 hours UV	6 hours UV	4 hours UV	2 hours UV	8 hours UV	6 hours UV	4 hours UV	2 hours UV

The second study is a good example of practical in-field conditions. The survival and viability of the foliar application of a commercial *Bacillus amyloliquefaciens* product – with and without Nu-Film® P – was evaluated on tomato plants 8, 14 and 21 days after application. Figure 3 indicates *B. amyloliquefaciens* survival and viability indexes on the crop surface for various treatments in relation to *Alternaria* establishment and infection index.

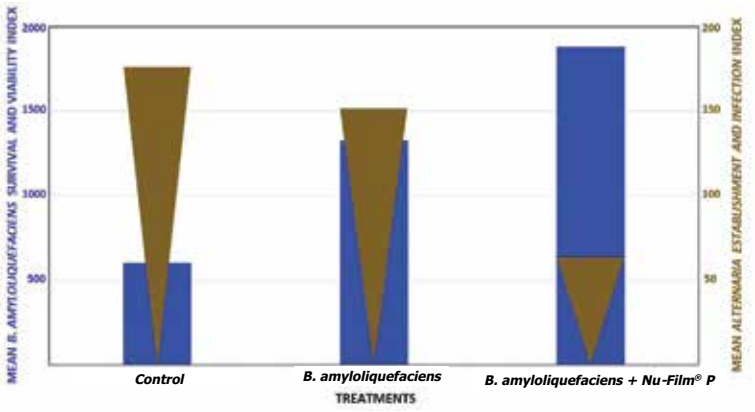
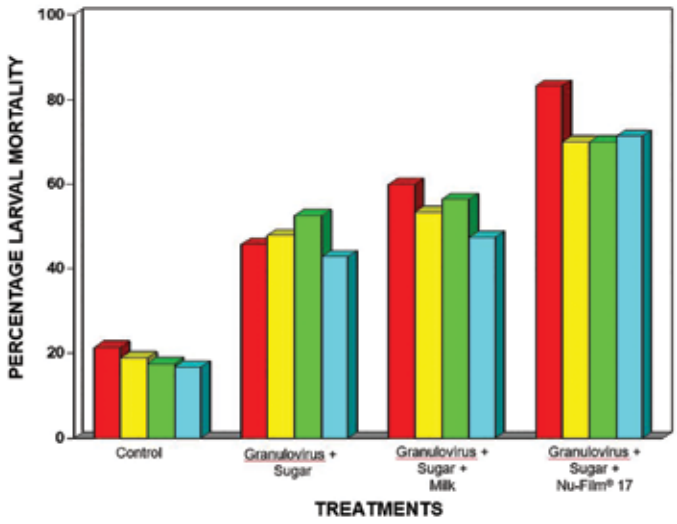


Figure 3: Summary of the effect of various treatments on the survival and viability of *B. amyloliquefaciens* on tomato plants 21 days after applying a *B. amyloliquefaciens* product vs Alternaria establishment and infection index at the same time of the tomato plants. Note the increased mean survival of *B. amyloliquefaciens* and the reduced mean *Alternaria* establishment and infection of the *B. amyloliquefaciens* product + Nu-Film® P vs *B. amyloliquefaciens* product only.

Many more examples in relation to above mentioned benefits exist. The true worth of Nu-Film®s inclusion is often exhibited when these benefits combine to improve the efficacy of a particular bio-control product (Figure 4).

Figure 4: Summary of the effect of a granulovirus containing product in combination with various products to control codling moth larvae (percentage mortality) on various apple types (🔴 Red delicious; 🟡 Golden delicious; 🟢 Granny Smith and 🔵 Ballarate). Note the increase in percentage mortality where Nu-Film® 17 was included. Study conducted by Department of Scientific and Industrial Research, New Zealand.

Figure 4



Should you require any more information regarding the use of Nu-Film® with these and other biological products, contact your nearest Hygrotech branch or johannvdv@millerchemical.com

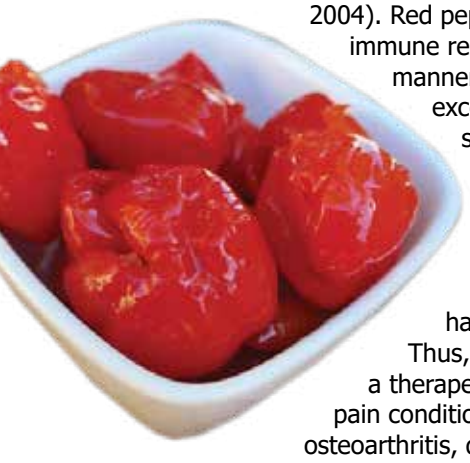
A Pinch of *Sweet*, a Pinch of Spice makes the taste Tantalisingly Nice...

This is what Red Bite is made of.

Chili peppers, members of the genus Capsicum, have been cultivated extensively, initially in the Americas and, after Columbus, around the globe. The five most economically notable species of chili pepper are Capsicum annuum, Capsicum baccatum, Capsicum chinense, Capsicum frutescens, and Capsicum pubescens. Although it is generally agreed that the genus Capsicum originated in Bolivia. The unique Capsicum baccatum (Red Bite) pepper is a recognised South African cultivar, indigenous to lowland of Bolivia.

Red peppers have been used for several thousand years as food additives and for a broad variety of medical applications in Indian, Native American, African and Chinese medical traditions (Govindarajan & Sathyanarayana 1991; Szallasi & Blumberg 1999).

The red pepper Capsicum baccatum is known popularly in Brazil as pimenta dedo-de-moça and it is the most consumed species in Brazil, mainly in South and Southeast regions (Linguanotto 2004). Red peppers have been claimed to enhance immune response, act in an anti-inflammatory manner, lower blood pressure, reduce excessive blood clotting and reduce blood sugar levels, but no formal examination of these claims has been published (Surh & Lee 1995, 1996). Capsaicin is the pungent component of red peppers and because of its analgesic and anti-inflammatory activity that has been used in clinical practice. Thus, topical application of capsaicin has a therapeutic value in a variety of neuropathic pain conditions, including rheumatoid arthritis, osteoarthritis, diabetic neuropathy, postmastectomy pain syndrome, psoriasis, burning mouth syndrome and herpes zoster (Group T.S.C. 1991; McCarthy & McCarty 1992).

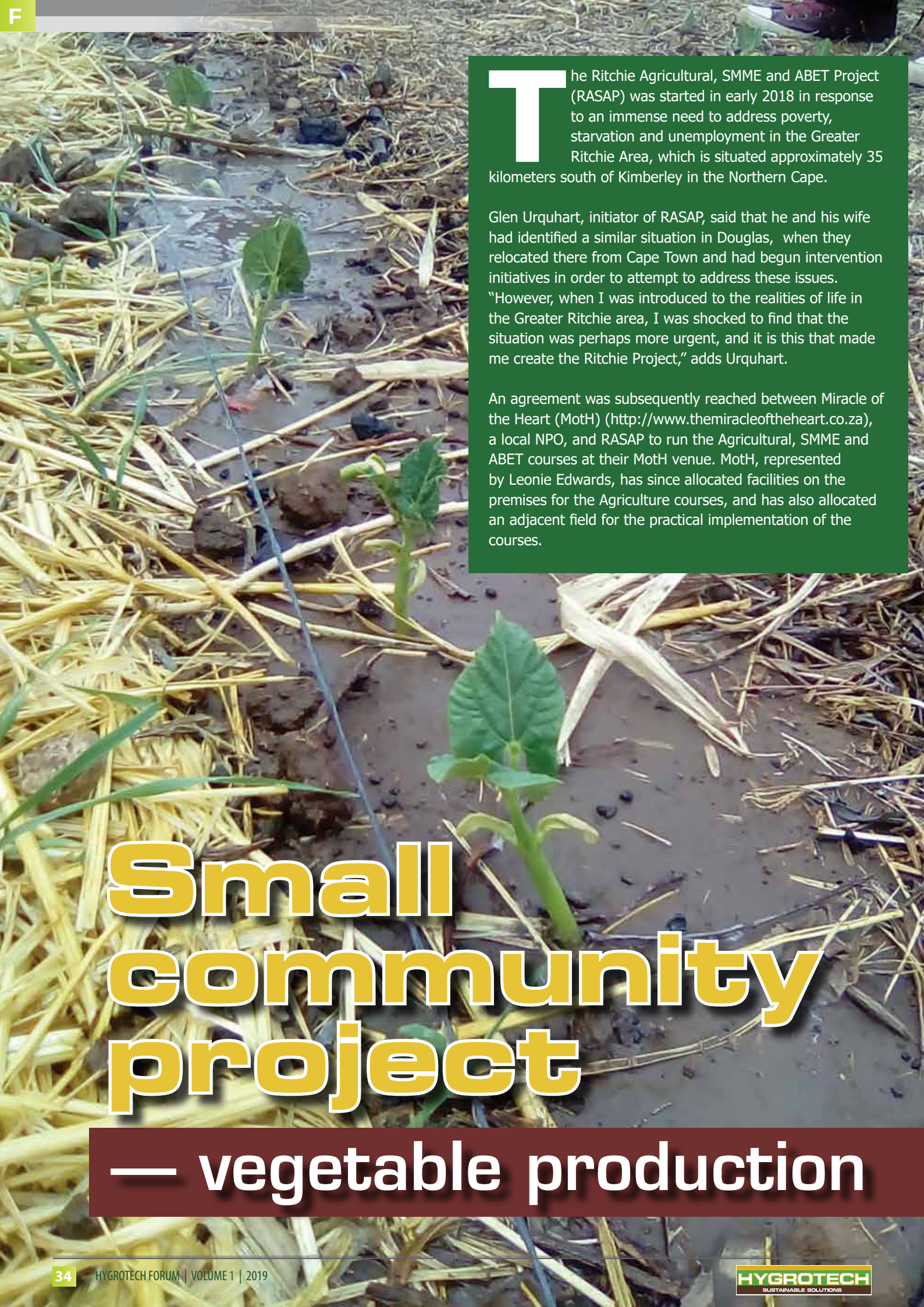


Hygrotech acquired some sample seed from a home gardener in Southern Africa after he requested Hygrotech to produce more seeds so that he can continue his venture. This led to seed production and semi-commercial activities of Red Bite, after a single plant selection with the desired properties of large, uniform, long bearing, heart-shaped fruit was made.
Red Bite is commonly used as a processing pepper that is pickled and used in various recipes.

Hygrotech has been granted Plant Breeder's Rights for Red Bite (ZA 20114767).

DAYS TO MATURITY: 120-150 days from transplant
FRUIT MASS: 20-30g
FRUIT SHAPE: Large heart-shaped
CHARACTERISTICS:

- **Thick fruit walls, resulting in excellent shelf life.**
- **Special taste, with the pungency of a hot pepper and the sweetness of a ripe sweet pepper.**
- **Ideal for pickling and stuffing.**
- **Strong vigorous plant.**



Small community project

— vegetable production

The Ritchie Agricultural, SMME and ABET Project (RASAP) was started in early 2018 in response to an immense need to address poverty, starvation and unemployment in the Greater Ritchie Area, which is situated approximately 35 kilometers south of Kimberley in the Northern Cape.

Glen Urquhart, initiator of RASAP, said that he and his wife had identified a similar situation in Douglas, when they relocated there from Cape Town and had begun intervention initiatives in order to attempt to address these issues. "However, when I was introduced to the realities of life in the Greater Ritchie area, I was shocked to find that the situation was perhaps more urgent, and it is this that made me create the Ritchie Project," adds Urquhart.

An agreement was subsequently reached between Miracle of the Heart (MotH) (http://www.themiracleoftheheart.co.za), a local NPO, and RASAP to run the Agricultural, SMME and ABET courses at their MotH venue. MotH, represented by Leonie Edwards, has since allocated facilities on the premises for the Agriculture courses, and has also allocated an adjacent field for the practical implementation of the courses.

The RASAP Agriculture students also receive training in the "Farming God's Way" (https://www.farming-gods-way.org) principles of planting, that focus on environmentally friendly, non-harmful and limited requirements of tools and other implements, to enable a cost-effective option. The principles of the course have been adapted from a "farming" focus to that of the creation of home and small community "gardens".

In fact, RASAP students are planning the establishment of vegetable gardens at a middle and high school as well as a school for the disabled in the Greater Ritchie area in May 2019, using the Hygrotech seed.

"The RASAP initiative is a marvellous opportunity offered to members of our community to move out of dependence on employment, as the SMME courses teach the creation of small businesses," says Edwards. The Agriculture course allows the choice of a healthier eating lifestyle and even the creation of individual small businesses, selling surplus vegetables, which offers substantial benefits to our "people," she continues. MotH has provided the funding for the seed supplied by HYGROTECH.

Limpopo strikes gold, NEW ONION prospect for the future

Written by Christo le Grange
– National Product Development Manager, Hygrotech

Limpopo has been riddled with drought and onion production got the short end of the stick the last two years. Looking for material suited for these harsh conditions is a difficult task, but there is light at the end of the tunnel. This last season we had the opportunity to trial and test some new material and one of the entries, we believe, could fit the bill for the Limpopo area. HY1376 is classified as an Intermediate type onion and was planted in the first week of December 2018. It stood tall throughout the growing season.

Outstanding strong plant from the start. One can see the green leaves standing out in the field. Closer to the growth stage, up to 13 leaves were counted.

Normally everything above 8 leaves is an indication of possible good bulb formation and reasonable bulb sizing. This particular site did receive some hail in the first part of the growing season, but the recovery was better than expected.

Bulbs harvested 2 weeks earlier than original falling date. Already good uniformity and rock hard bulbs without any curing involved. Medium to large in size mainly

In this picture one can see the differences between HY 1376 (left) and the standard cultivar (right).

Once again more strong vigorous growth from HY1376 is shown. Light green shaded leaves also differ from the std cultivar with its blue-green shade (right).

Excellent leaf growth shown is this picture. Uniformity in bulbs.




This planting was done the first week of December 2018 and harvested around the end of April 2019. We pulled some bulbs two weeks prior to the harvesting date and the curing of the bulbs was remarkable. We believe that the cultivar could be producing good brown scales with curing time permitted. Although one can't say that an onion cultivar is 'working' after one or two trials in one season, HY 1376 is already on the fast track to become a cultivar of note. The following two seasons will determine its fate, but we believe it will rise to the challenge.

Look out for this exciting variety!

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SeedCor
It's all about seed

METRO F1

- Late maturing Nantes type.
- Produces long cylindrical roots.
- Very healthy, tall tops.
- Roots are slightly longer than that of Bengala.
- Metro has good Alternaria dauci tolerance.
- Ideal for the pre-pack market.
- Very smooth.

Suitability	Pre-pack Market
Type	Nantes
Population/ha	1.2-2.2 million roots
Fruit Length	16 - 18 cm
Fruit Shape	Cylindrical to conical
Disease Resistance	Good Alternaria tolerance

BENTLEY F1

- Bentley has very good Alternaria tolerance.
- Good hardiness , well suited for conservation .
- Can be used for pre-pack and bunching.
- Slightly earlier maturity than Bengala.
- Strong leaf attachment with medium leaf size.
- Shape cylindrical to conical.
- Gives excellent length under difficult conditions.

Suitability	Pre-pack, bunching
Type	Nantes / Flakee cross
Population/ha	1.2-2.2 million roots
Fruit Length	17 - 19 cm
Fruit Shape	Cylindrical to conical
Disease Resistance	Good Alternaria tolerance

BENGALA F1

- Bengala has round orange shoulders.
- Leaf attachment is strong.
- Very uniform.
- Bengala has medium disease tolerance.
- Is ideal for the pre-pack market.
- Leaf size is medium.

Suitability	Pre-pack Market
Type	Nantes
Population/ha	1.2-2.2 million roots
Fruit Length	16 - 18 cm
Fruit Shape	Cylindrical to conical
Disease Resistance	Good Alternaria tolerance

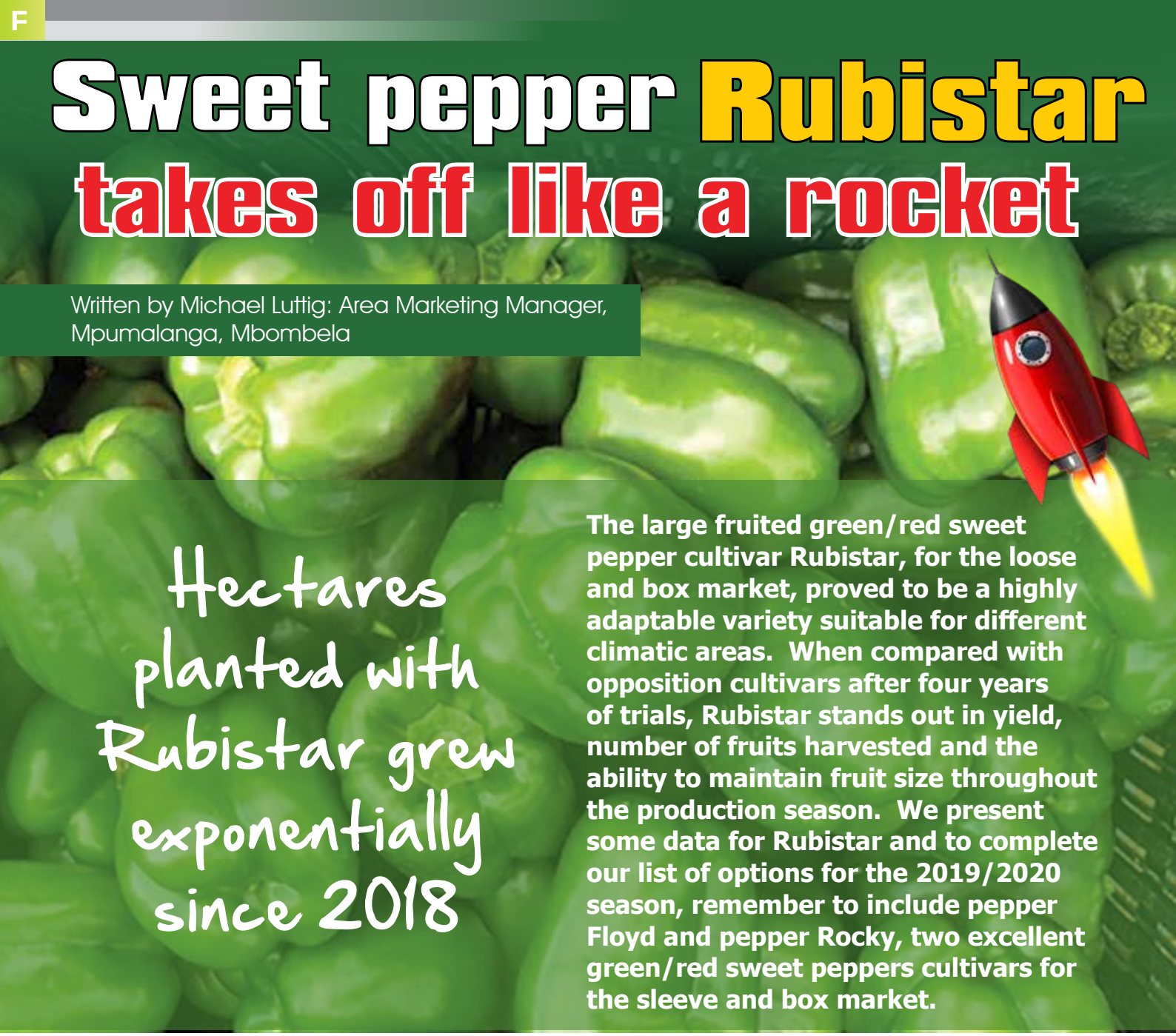
BRAVO F1

- Bravo has round orange soulders.
- Leaf attachment is strong.
- Very uniform.
- Bravo has medium disease tolerance.
- Ideal for the pre-pack market.
- Leaf size medium

Suitability	Pre-pack Market
Type	Nantes
Population/ha	1.2-2.2 million roots
Fruit Length	16 - 18 cm
Fruit Shape	Cylindrical to conical
Disease Resistance	Good Alternaria tolerance

Sweet pepper Rubistar takes off like a rocket

Written by Michael Luttig: Area Marketing Manager, Mpumalanga, Mbombela



Hectares planted with Rubistar grew exponentially since 2018

The large fruited green/red sweet pepper cultivar Rubistar, for the loose and box market, proved to be a highly adaptable variety suitable for different climatic areas. When compared with opposition cultivars after four years of trials, Rubistar stands out in yield, number of fruits harvested and the ability to maintain fruit size throughout the production season. We present some data for Rubistar and to complete our list of options for the 2019/2020 season, remember to include pepper Floyd and pepper Rocky, two excellent green/red sweet peppers cultivars for the sleeve and box market.

Sweet peppers were tested by Hygrotech personnel in the different pepper production areas of South Africa. Pepper producers can choose their pepper cultivar or combination of cultivars according to their market demand. Based on our data, Hygrotech sweet peppers were divided into categories namely loose, box and sleeve market applications (Table 1):

Table 1. Hygrotech sweet peppers suitable for loose, box and sleeve market

Cultivar	Description	Application	Disease package
Rubistar	• Rubistar produced the biggest fruit on average throughout the harvest period • Large fruited, open field, bell sweet pepper • High yield potential. • Fruit are mostly four lobed with thick walls • The plant is a bush with good leaf protection • Tolerance to Phytophthora capsici (Pc)	Loose and box market	TSWV, Xcv 1-3, PVY, Pc
Floyd	• Have a high yield potential • Produces large blocky peppers with a dark green colour turning into red.	Loose, box and sleeve market	TSWV, Xcv 1-3, Bs, TMV
Rocky	• Have a high yield potential • Produces large blocky peppers with an intense dark green colour turning into red. • Average fruit weight slightly heavier than Floyd • Commercial seed available during 2019	Loose, box and sleeve market	TSWV, Xcv 1-3, Bs, TMV

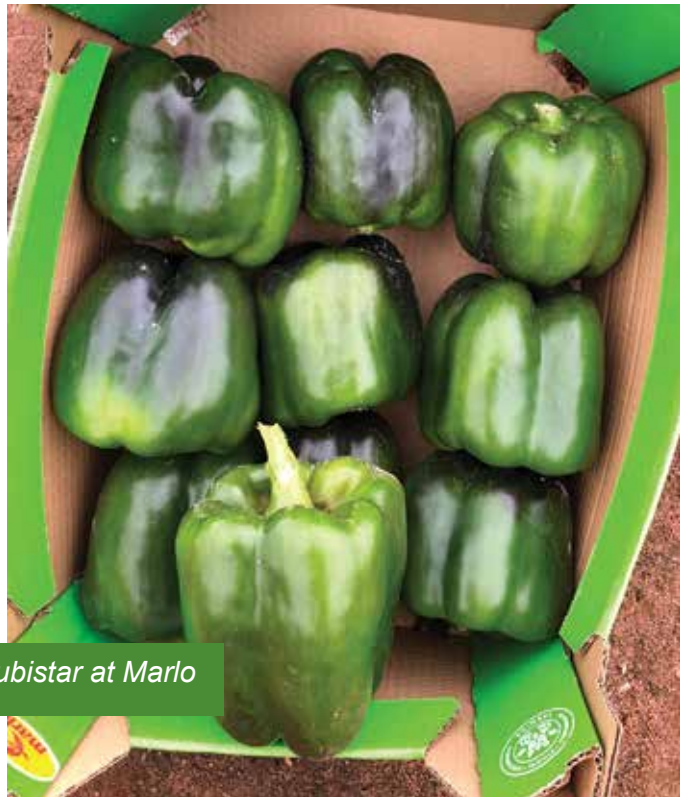
Repetitive data after four years of trials in Komatipoort at JF Steyn Boerdery explains why Rubistar is taking the loose and box market by storm. In open field trials Rubistar not only performed the best in keeping its size throughout the season (Table 2), but also gave higher cumulative yield data compared to the standard cultivars (Graph 2). Rubistar also produced the most number of fruit in comparison over a season (Graph 1).

Table 2. Average weight in gram per picking of Rubistar (weight devided by number of fruit) in comparison to two opposition cultivars in a comparative pepper trial, JF Steyn, Komatipoort, 2018.

Average weight (gram) of peppers per picking									
	Pick 1	**Pick 2**	**Pick 3**	**Pick 4**	**Pick 5**	**Pick 6**	**Pick 7**	**Pick 8**	**Season average**
Standard 1	0	255	286	243	198	140	164	150	208
Standard 2	245	273	260	238	231	180	160	151	215
Rubistar	303	295	319	266	242	126	168	176	224

Rubistar for loose and box market applications

Rubistar at Mooketsi



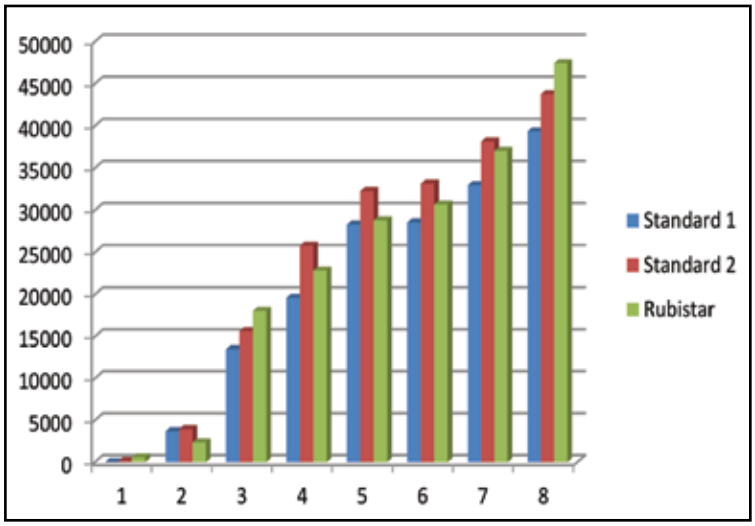
Rubistar at Marlo

Rubistar at Komatipoort

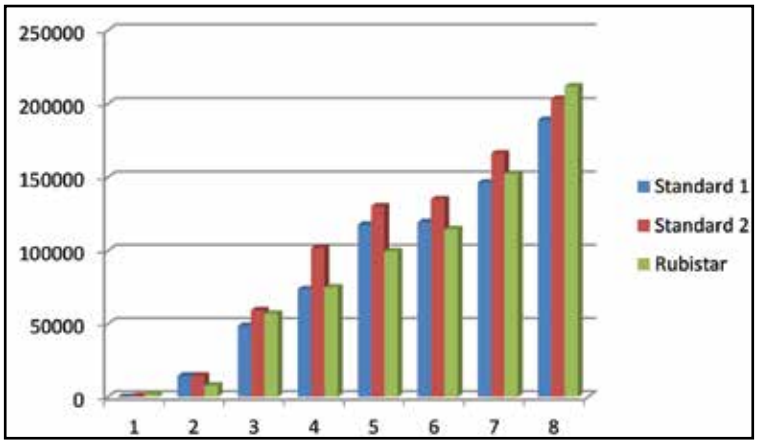
Outstanding characteristics of Rubistar:

- Disease tolerance against Phytophthora capsici. Therefore roots and plants stay healthier until the end of the production period. A profit for pepper production is mostly realized at the end of the production cycle
- Fruit with very thick walls
- Intense dark green peppers
- Keep fruit size well
- Produces a high number of fruits
- High yield potential
- The Rubistar plant is a bush with good leaf protection
- Rubistar is suitable for open field production as well as in net structures

Graph 1. Cumulative number of fruit harvested per picking per hectare in a comparative pepper trial, JF Steyn, Komatipoort, 2018



Graph 2. Cumulative calculated yield (kg) per hectare in a comparative pepper trial during 8 pickings, JF Steyn, Komatipoort, 2018



Floyd and Rocky for loose, box and sleeve market

Rocky

Investigating the effect of Asco-Gro on soya bean vegetative growth and yield

Written by Charl Kotze, Michael Luttig and Lodewyk van Staden. Hygrotech - Nelspruit branch.

Soya bean is a leguminous plant cultivated around the world as a major source of vegetable oil and protein. In South Africa the uses of soya beans include the production of oil and oil cakes, ingredients in animal feed and for human consumption.

Due to the increasing demand of this commodity there has been a sharp rise in soya bean production with almost 80% of the country's soya bean cultivation now being in the Mpumalanga, Free State, KwaZulu Natal and Limpopo provinces. In these areas cultivation occurs mostly under dry-land conditions which in turn makes yield totally reliable on the environment and fertilisation input. However, the expected yield when following a full fertigation programme during favourable environmental conditions should still range between 2.5 and 3 tons per hectare. Thus, to further increase yield or still produce a reliable harvest even when conditions are not ideal, all avenues should be investigated. Therefore, during the 2018-19 season Asco-Gro was evaluated as a foliar feed on soya beans using several different criteria. The criteria included vegetative growth, pods and beans per plant as well as accumulative bean mass per plant.

What is Asco-Gro?

Asco-Gro, from Miller Chemical and Fertilizer, LLC is a registered (Act 36 of 1947 reg. no. K6714) foliar feed consisting of a high concentration of amino acids, carbohydrates and kelp extracts which are combined with macro- (N, P and K) and several chelated secondary nutrients (Mg and Ca) along with molybdenum. Each of these play a significant role in plant physiological systems which then, among others, promotes bud, flower, fruit and plant development.

The Asco-Gro effect

Trial layout and methods

A trial site that has not received any fertigation or soil preparation previously was selected in the Ermelo region of the Mpumalanga province to conduct the investigation. Three neighbouring plots of equal size (11 ha) were each respectively treated with 2 L of Asco-Gro and a grower mixture while one plot was left without any foliar feed. Where foliar feeds were applied, a broad boom sprayer calibrated to 200 L/ha was used. The initial application of each treatment was

at full bloom with a follow-up application approximately 14 days later during pod formation. At harvest, 5 plants were randomly selected from 4 different areas from within each of the 3 experimental plots. The 5 plants were pooled, and each area served as a replicate. From the pooled plants the total number of pods were counted as well as the number of pods with beans 1-3. Thereafter, the approximate weight of each bean was calculated by weighing three different batches of 400 beans each from each of the treatments. Vegetative mass was determined by weighing the dry mass of each of the pooled plants from each of the replicates. The data was subjected to statistical analysis and the results can be seen in Table 1.

Results and Discussion

Just prior to the second application of the foliar feeds, 14 days after the initial treatment, a visual evaluation of the Asco-Gro and grower standard treatments were conducted by randomly selecting plants from each of the respective experimental plots. Although only subjective, it should be noted that in Figure 1 there is a clear difference in vegetative growth between the Asco-Gro (a) and the grower standard (b).

This can be supported by the data in Table 1, that show significant differences between all treatments when

comparing vegetative dry weight. With the Asco-Gro yielding 9 g more dry weight than the grower standard and 20 g more than the untreated plot. For all the other criteria there was no significant differences between the two foliar feed treatments, there was however significant differences between the Asco-Gro and the untreated plot except when comparing the number of pods which contained only one bean. It should however be mentioned, that although not statistically different, the Asco-Gro showed higher numbers in all the compared criteria. Not only were there more pods with 2-3 beans, but 23 and 73 pods on average more per 5 plant replicate (Figure 2) in comparison to the grower standard and the control respectively. The results thus indicate an overall trend that under severe conditions the Asco-Gro not only outperformed the untreated control, but the grower's current foliar feed regime as well. However, these are only initial results and further investigations into the perfect application timing are still required for this product to be used optimally on soya beans.

Table 1. Five different criteriums used to evaluate the effect of Asco-Gro applications on the yield and vegetative growth of soya beans planted under dry-land conditions without any soil preparation or fertilisation input in Ermelo, Mpumalanga.

TreatmentX	Number of Beans/Pod			Mean number of beans	Mean number of pods	Mean bean weight (kg)	Mean dry vegetative weight of 5 plants (kg)
	1	2	3				
Asco-Gro (2 L/ha x 2)	37,0aY	112,5a	50,3a	412,8a	200,0a	0,052a	0,048a
Grower Standard	36,8a	97,8ab	42,5ab	359,8ab	177,0ab	0,045ab	0,039b
Untreated Control	25,3a	70,5b	27,5b	248,8b	123,3b	0,031b	0,028c

[X] Each treatment consists of 4 replicates of 5 pooled plants each.

[Y] Means followed by the same letter do not differ significantly

Figure 1. *Plants were visually inspected 14 days after the first foliar feed application, a) plants randomly selected from the plot which received 2L of Asco-Gro showed a visual increase in vegetative growth when compared to the plot b) which received the grower standard.*

Figure 2. *Pods retrieved from 5 pooled plants for each of the three treatments: a) Untreated control; b) Grower standard and c) Asco-Gro at 2 L/ha*

Kindly contact Charl Kotze at our Nelspruit branch for further technical information.

High quality GREEN BEANS on offer

Written by Hannes van der Merwe – Technical Field Officer: Brits region

A large number of hectares green beans are planted each year in the Brits region of North West Province. Hygrotech and Seedcor have some excellent varieties and one variety that stood out in this area is **Douglas.** Because of its resistance to Rust as well as Halo Blight, Douglas was traditionally mainly planted from November to February during the wet season.
In the spring of last year some trial blocks were planted as early as the first week of August. Results from these trials not only showed that **Douglas** germinated quicker than competitive varieties, but also have excellent vigour in the cold. The yield was also more than 12ton/ha and with excellent quality pods.

From the past few year's trial results, it became clear that Douglas has a much wider slot than was initially thought. It has an excellent germination rate in the middle of summer when the daytime temperatures are usually more than 35 degrees… and it can also withstand the cold nights of spring.

It is clear that because of its high yielding abilities as well as its suitability to wide and varied climatic conditions, **Douglas** can be recommended to any farmer looking for high quality green bean pods.

Contact Hannes for more technical information:
082 903 0039

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- Cheapest green feed per hectare available!!!

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CREAM OF TOMATO SOUP

Crema De Sopa De Tomate

INGREDIENTS

- 30ml butter
- 1 onion, finely chopped
- 2 sticks of celery, sliced
- 6 tomatoes, peeled & diced
- 2ml dried origanum
- 3ml dried basil
- 1 bay leaf
- 30ml tomato paste
- 50g butter extra
- 60ml cake flour
- 500ml warm milk
- 300ml vegetable stock
- A little cream to serve
- Fresh basil to garnish

METHOD

- Heat the 30ml of butter in a saucepan, add the onion and celery and sauté for 2 to 3 minutes.
- Add the tomato, dried herbs, bay leaf and tomato paste.
- Simmer for about 15 minutes and then liquidize until smooth.
- In another saucepan heat the 50g butter, add the flour and stir for a minute.
- Stirring continuously add the warm milk gradually.
- Add the vegetable stock and stir until mixture has thickened slightly and is smooth.
- Stir in the tomato mixture and season.
- Pour into soup bowls, garnish with a drizzle of cream and a sprig of basil.
- Serve with fresh bread.

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