HYGROTECH

SUSTAINABLE SOLUTIONS

FORUM

SUMMER OPEN DAY

Autumn 2014

R19-75 VAT inclusive BTW ingesluit

HYGROTECH TURNS 30

CUCUMBERS IN AUTUMN & WINTER

QUALITY OF IRRIGATION WATER - PART 2 OF 2

EDITORIAL

Dr. Mari Furter — EDITOR
Justin Conradie — SUB EDITOR, DESIGN
Theo Schoonraad — PROOF READER

COVER

Summer Open Day 2014

Johan Stassen (left) discussing beans with Luhan Swart (right) and Pieter Smith (Farmwise) (middle back) and Jaco Crafford (Farmwise)(middle front).

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REGIONAL TECHNICAL MARKETERS

Written by: Mari Furter, National Manager, Vegetable Seed

Hygrotech is constantly evolving to keep up with an ever changing Agricultural market and to ensure that we give the best possible service to our clients, the farmers. Up to now Hygrotech used a model of Product Managers where specific people, based at Head Office in Pretoria, were responsible for specific product groups nationally. This made it difficult as every region had different challenges with regards to every crop and being responsible for the whole of South Africa also involved a lot of travelling.

We decided to narrow the focus and restructure to a Regional model. This means every one of our seven regions will have a Regional Technical Marketer who is responsible for vegetable seed in his/her specific region.

The Regional Technical Marketers (RTM) will focus on their specific regions' top seed products and will be knowledgeable with regards to growing practises, market movements, disease problems and the best varieties to plant.

They will visit farmers in their regions on a regular basis together with sales personnel to ensure that they have a good understanding of what their customers' needs are to communicate these requirements back to international suppliers and their vegetable breeding teams.

From phase 1 and 2 trials planted on our three main trial farms at Dewagensdrift (Gauteng), Stellenbosch and Letsitele they will identify varieties that have the potential to work in their specific area and plant on-farm trials on selected farms in their region.

This way every Regions' sales people will have their own "technical expert" within arm's length that will be able to help choose the best varieties for specific circumstance as well as be where they are needed the most: On the Farms!

PLEASE MEET OUR TEAM:

Please join me in welcoming this elite group to their very important role in Hygrotech.

PJ Fourie

At the head of this team will be PJ Fourie, the National Product Development Manager (Based in Pretoria)

REGION: National
SPECIALITY: Onions, Vine Crops
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Luhan Swart

Yes, he is back from his forays into deepest Africa! He will be the RTM for Gauteng with main focus areas Processing vegetables and Africa. He will also venture into other processing areas where necessary.

REGION: Gauteng, Africa
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Johan Stassen

The RTM for the Bushveld will be Johan Stassen who needs no introduction!

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Michael Pinto

Michael Pinto will be a Field Officer (based in Gauteng) with main focus on Leaf Crops, Brassicas and Vegetables under Protection.

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Fanie Verwey

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HYGRO-KINETIC
HYBRID GROWING MOTION

A NEW REVOLUTION IN PRODUCT DEVELOPMENT

Hygrotech is at the forefront of a new revolutionary trial Database system called **Hygro-Kinetic.**

WHAT IS HYGRO-KINETIC?

Hygro-Kinetic is a live statistically relational database. A mouth full but what does it actually mean? Hygro-Kinetic tracks all sample seed from received to trial results. As soon as all trial results are received of a specific variety, Hygro-Kinetic will generate a statistical report of the variety. The statistical report will tell us if this variety has the characteristics to become a full commercial variety or if it is a variety that will not work in South Africa.

Let us look at the process a new variety goes through before it joins the Hygrotech vegetable family.

VARIETY LIFECYCLE

All varieties go through a Product Development Lifecycle.

Variety Sourcing - Screening Trials - On Farm Trials - Statistical Analysis – Commercialisation - Quality Control – Training - Sales Support - Technical Support - Performance Statistical Analysis – Discontinue - Improved Replacement.

We can now build up a "pedigree" of each variety and go back in history of the varieties' past results.

No more endless spreadsheets, everything is digital and user friendly operated by iPhone and ipad handsets.

Be assured if you buy Hygrotech vegetable seed you buy the best.

Geskryf deur: Andre Bezuidenhout,
Veldbeampte, Wesrand.

SUPER RED*

WYS SY WARE KLEUR

In Week 44 en 45 is daar twee aanplantings van kopkool Super Red* op die plaas van Jan Mokken in die Tarlton omgewing geplant. Die plaasbestuurder, Ernest Hoffman en sy span was behulpsaam met die proef.

Die verskil tussen die kompeterende varieteit en Super Red* was baie duidelik sigbaar tydens die aanplanting in week 44 asook die aanplanting 'n week later.

MOOI DIEP ROOI KLEUR

Die koppe van Super Red* was meer eenvormig wat die oesproses vergemaklik, het 'n groter raam, die blare het baie beter vertoon, die kop word bietjie hoër van die grond af gedra, en die sterker wortelstelsel was duidelik sigbaar. Super Red* is al in week 2 van 2014 geoes en die gemiddelde kopgrootte was 1.7kg.

Super Red* is dus beslis die eerste keuse as die leweringspesifikasies groter koppe vereis.

Super Red* kan reg deur die jaar geplant word in die somer en matige winters. Hoë plantpopulasies is ook moontlik vanweë die regop groeiwyse.

SUPER RED SE RAAM EN MOOI KOP

ASEMROWENDE KOOL KOP

WORTELS LINKS IS DIE VAN SUPER RED*

IN DIE LAND WAAR SUPER RED* GEOES IS

Dankie aan Ernest Hoffman en sy span vir die goeie proewe en resultate.

DLF TRIFOLIUM
SEEDS & SCIENCE

Written by Theo Schoonraad

TRAINING SESSIONS A HUGE SUCCESS

DURING THE LAST WEEK OF JANUARY 2014, DLF TRIFOLIUM CONDUCTED A SERIES OF TRAINING SESSIONS HERE IN SOUTH AFRICA.

DLF is the world's leading supplier of grass seed, clover seed and turf seed. Hygrotech is fortunate to be this Danish company's first choice as distributor of top branded products in South- and Southern Africa. Milk farmers and producers of temperate grasses are very familiar with the well-known DLF brands like JEANNE, JIVET, LOLAN, CALIBRA, KLONDIKE, EMERAUDE, KORA, SPARTA and others.

The training kicked-off with a session in George on the 28th January, which was attended by our sales/ marketing personnel from the Southern and Western Cape.

OUR SOUTHERN CAPE MARKETING PERSONNEL WITH OLE GRONBAEK FROM DLF (FAR LEFT)

Our two DLF visitors, Soren Busk and Ole Gronbaek, then presented their training session to our KZN people in Pietermaritzburg on Thursday, 30th January.

MARKETERS AND BUSINESS UNIT LEADERS FROM OUR CENTRAL AND NORTHERN AREAS, WITH THE TWO DLF VISITORS, SOREN AND OLE (BACK ROW, FAR RIGHT)

The week was concluded with a training session at our Head Office, Pyramid on Friday, 31st January 2014. Sales/marketing personnel from the Free State, Northern Cape, North-West, Gauteng, Bushveld and Lowveld attended and were exposed to an excellent presentation by our DLF friends.

All in all the week proved to be a huge success and worth our while to gain expertise, information and knowledge first hand. Product information files were also presented to all participants for later referral.

Paddy de Vries: National Technical Manager: FertAgChem & VUP
HYGROTECH SA (Pty) Ltd

LET CUCUMBERS GROW IN AUTUMN & WINTER

GREENHOUSE CUCUMBERS, ALSO KNOWN AS LET OR LONG EUROPEAN TYPES ARE NOT THE EASIEST OF CROPS TO GROW ESPECIALLY IN WINTER. DURING WINTER, PRICES ARE GENERALLY HIGHER THAN THE REST OF THE YEAR, BUT THEN THE VOLUMES SUPPLIED TO MARKETS ARE ALSO LOWER DUE TO THE MORE CHALLENGING GROWING CONDITIONS.

The Cucumber is a "warm weather" crop. This should immediately tell us that they prefer warmer conditions with lots of light. Both of those factors being in shorter supply during winter.

FIGURE 1: GOOD HYGIENE, A PROMISING START

PREPARE FOR WINTER:

PLANT SPACING / POPULATION

A winter oriented plant population cannot be overemphasised. Cucumbers thrive on good light and a too high density may decrease the incident (production and life giving) light below the optimal. High plant densities and low light often result in over-vegetative plants with large (light trapping) leaves, poor ventilation and higher disease pressure. Understandably, and from a practical point, the entire irrigation lay-out cannot be changed every time the seasons turn. The proposal would be to keep the population at no more than 2 plants/m^2, and as close as possible to 1.6 plants/m^2 for best results.

PREPARE THE STRUCTURE

HYGIENE: Once all the plants of the old crop have been removed (to a safe distance from the production area), the entire structure should be cleaned and disinfected. A registered disinfectant e.g. Sporekill™ should be used to thoroughly wash all surfaces of the house. This will dramatically reduce the disease inoculum. Broad spectrum insecticides, including an acaracide (against red and 2-spotted spider mites) must be applied to ensure that all insects hiding in the nooks and crannies (including between the plastic and roof arches) are killed.

THE ROOF PLASTIC AND SIDE WALLS SHOULD BE WASHED to remove light reducing dust and dirt built up over summer. This dust will, if still present, depress the photosynthetic potential, and therefore production.

FIGURE 2: DIRTY PLASTIC WILL HAVE A "COST" IN PRODUCTION

Cultivar Choice

A production reduction of around 25% (or more) can be experienced during winter (vs summer), even under reasonable greenhouse conditions. This reduction can be roughly equated to the light difference between summer and winter (lower light quality and day length). Winter or cold tolerant cultivars must be selected since summer varieties grown during cold conditions will have less cold vigour, produce smaller, thinner fruit, and be more easily attacked by diseases and pests.

Most true winter cultivars do not have a good resistance against Powdery Mildew *(Podosphaeria xanthii)*. This must be factored into the disease prevention and control program. Preventative actions such as the application of registered (Act 36, 1947) contact products such as Sporekill™ should be employed.

Figure 3: Powdery Mildew must be controlled early with preventative actions such as Sporekill™ (+ Nufilm-P)

Two winter cultivars, Azabache and Liberne have proven themselves as trusted winter performers.*

Good cold tolerance and winter vigour make these cool varieties an easy choice. Both cultivars produce fruit with practically no winter neck and an average fruit length of 30cm. Liberne* has the added benefit of a wide anti-virus package (CMV, CVYV, CYSDV), especially for areas with white fly problems.

Dreamliner, Hygrotech's all rounder cucumber has done extremely well in mild winter or heated conditions over the last two winters.*

Disease resistance includes Powdery Mildew, *Cladosporium*, CMV and CVYV.

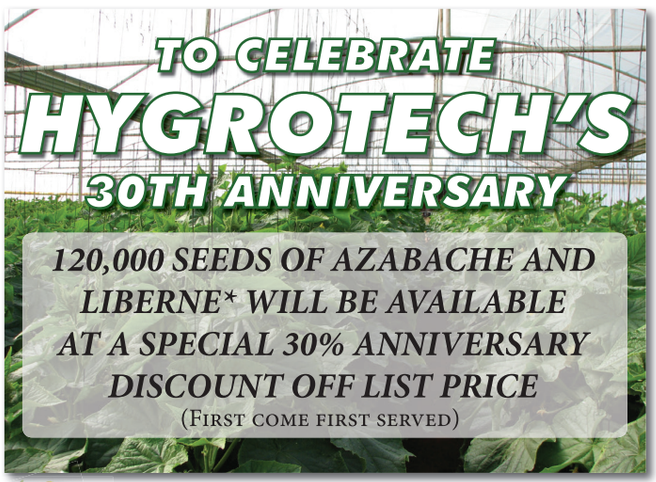
Fertigation

During cooler conditions, growers often forget that, due to reduced light and transpiration, plants use less water. Over-watering and "wet feet" are often found to be the source of reduced production during the autumn and winter crop.

Lower transpiration equates to less water and nutrient uptake. During these conditions the concentration of nutrients can be increased in the Fertigation mixture.

While the supply EC for mid-summer is around 1.6mS/cm, the winter regime nutrient conductivity can be as high as 2.5mS/cm. (NOTE: This will vary between areas, supply water EC, medium used and management conditions). A slight increase in Potassium may increase quality and production during cold conditions.

The nutrients supplied to the plants must be balanced and it is best to discuss your hydroponic solution for your particular situation with the local technical representative. ***Hygroponic*** hydroponic fertilizer, used in the correct ratio with ***Solu-Cal (Calcium Nitrate)*** will supply all the needed nutrients for most water sources. (Water must always be tested to confirm the nutrients already in the water prior to adding any fertilizer).



Growth Manipulation

Even winter cultivars will take strain under poor light, suboptimal temperatures or excessive fruit loads. Removal of alternate fruit (1 fruit every 2nd or 3rd leaf node) may save the future of good continued production and even the health of the plant.

Application of metabolic manipulants such as Vitazyme and Grotonic at specific points in the plants' growth phase (or stress periods) may help tremendously to put the plant and production back on track!

Contact your Hygrotech representative or nearest branch for advice or information on products and cultivars that will suit your special and individual needs!

CMV: Cucumber mosaic virus | CVYV: Cucumber vein yellowing virus
CYSDV: Cucurbit yellow stunting disorder virus

Geskryf deur: Hugo Burger, Streeks Tegniese Bemarker

PROCRAFT*

BETREE DIE SOETRISSIE MARK IN DIE WESKAAP

Na die afgelope plant-seisoen van soetrissie en proewe wat gedoen is in die Vredendal distrik teenoor bestaande kultivars, gaan ons `n nuwe era in met Procraft*. Die proewe is by strategiese produsente in die Weskaap wat onder beskerming sowel as oopland soetrissie produseer, gedoen. In beide hierdie verbouings-praktyke het Procraft* uitstekend vertoon.

Die kultivar het `n baie sterk groeiwyse wat mooi donkergroen, blokkige vrugte dra met `n dik vrugwand. Die vrugte weeg ongeveer 250g met 4 vrughokke. Die plant bied `n goeie blaar-bedekking sodat sonbrand tot die minimum beperk word. Die houvermoë van die vrugte was merkbaar beter teenoor die vrugte van ander kultivars in die proef.

Procraft* spog met `n siekte-pakket van TSWV, PVY en Bakteriële Spot (1-3). Met al hierdie eienskappe en resultate wat gelewer is, sal dit die moeite werd wees om hierdie soetrissie uit ons stal te probeer.

TSWV: Tomato spotted wilt virus (Kromnek) | PVY: Potato Virus Y (Aartappel Y Virus)

Written by: Fransie Roodt, Gauteng

TRAP CROPS

ONE LINK IN THE INTEGRATED PEST MANAGEMENT SYSTEM

Farming today is all about sustainability and a healthy balance. The balance is gained by an integrated pest management system. We can't look at just part of the picture, we have to look and manage the whole picture. Therefore: an integrated pest management system.

In the above mentioned system we look at costs, natural predators and biological control of pests as part of the system. Trap crops is a biological control method. This is not something new, we just sometimes forget about it. We do use traps in under cover farming daily. We use traps in fruit tree orchards for fruit fly and coddling moths. Trap crops is just an extension of these traps.

We use trap crops for early identification, control of the pest and cutting costs. A trap crop is not necessary a harvesting crop, it can be a sacrificial crop where it protect and enhance your commercial crop.

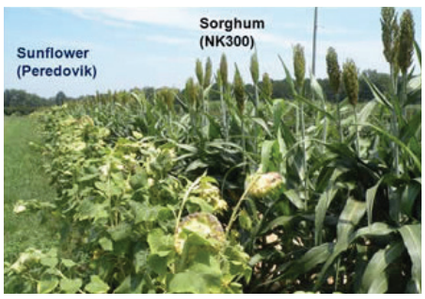


Fig 1: Sunflowers Used As A Trap Crop For Sorghum

Factors that need to be taken into consideration when planting trap crops are:

Different trap crops for different insects. You have to ensure that the insects prefer the trap crop over the production crop.

Placement of the trap crop. When deciding to plant a trap crop the layout/ placing should be right. There are different strategies here. You can replace 20% of the productive crop with the trap crop, with between row planting. There can be border placing of the trap crop as well. The main crop plays a role in the placement selection.

Time of trap crop. When planning to plant a trap crop the infestations periods of the insects should be known. Over a season the infestation percentage differs and the trap crop should be for the time with the high infestations. Normally the trap crop should be planted at least two weeks before the main crop. This is to ensure that the pest still prefer the trap crop. This is influenced by the crops and the preference of the insects.

Natural predators and beneficial insects. Trap crops form part of an organic pest control method. The trap crop can be planted with a companion crop to attract beneficial insects for pollination and natural predators as well. This can happen with just one trap crop as well. The insect infestations will attract natural predators. This is then further part of biological control.

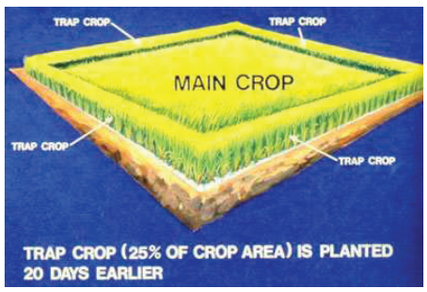


Fig 2: A Trap Crop As A Border Around The Field.

There are concerns that the trap crop is a breeding ground for the insects that it traps and that the insects will then move onto the main crop. This could have some truth but REMEMBER a trap crop is not the Alpha and Omega for control of insects. It is just part of an integrated system used for scouting and prevention. When the insects are seen on the trap crops different routes can then be followed. If the infestation is still low you know you have to keep an eye on the population. When the population is higher and there are enough natural predators to still just keep an eye on the population. If the population is high and you prefer biological control it is time to inoculate with natural predators. In open fields where the population is high you can start with chemical control, softer chemicals, on just the trap crop. This approach will save you money. Normally when the infestations are just over the acceptable level it is not necessary to treat the whole field.

Well known example with trap cropping: in Hygrotech and our client's basis there are Caliente (mustard) and Nemat (rocket). These two crops are part of our green manure and soil fumigant range. The synergy with Caliente and Nemat is in the control of nematodes. The Nemat is a perfect host or in this case a trap crop. Nemat actually attracts the nematodes into their root zone. Then the crop reaches the desired biomass and is utilized. After the mulching and incorporating the crop in the soil the Caliente contains glucosinolate that fumigate the soil and controls the nematodes. (If you want to know more about this application or practice, contact your nearest branch.)

Advantages of rap cropping

Lowers the use of pesticides
Lower the pesticide costs
Preserve the natural predators
Improve the main crops quality and marketable yield
Help with biological control
Help restore the balance of the insects
Help conserve the soil and the environment

Tips for successful trap cropping

Make a schematic plan of the farm to guide the positioning of the trap crop.
Know your pests and you must be able to identify them
Choose a trap crop that is more attractive to the pest than the main crop
Regular monitoring and scouting is essential
Immediate control when the first pest infestation is noticed. Pruning, ratooning and removal may be an option of the trap crop. There is also the option of light chemical control or of biological control.
Always keep farm records.

Written by: Jany Mathews
Regional Technical Marketer (Gauteng)

BACTERIAL WILT ON TOMATO

Ralstonia (previously *Pseudomonas*) *solanaceurum* is the causal agent of Bacterial wilt. It is a soil-borne disease that can stay dormant indefinitely without a host plant present. The particular strain that occurs in South Africa is Race 1 biovar 2.

Fig.1: Bacterial wilt: later stages http://mobilebotanicalgardens.org

The disease usually occurs in warm humid areas. High soil moisture and temperatures above 24°C are ideal conditions for the bacterium. Some soils may be more or less conducive to Bacterial Wilt as the presence of antagonistic organisms found in the soil help suppress the disease. A fertile soil and a balanced pH can also help to reduce incidence.

Symptoms of Bacterial Wilt include a sudden onset of wilting without spotting and yellowing. Later whole plants die, this occurs in patches and can spread throughout the field. An easy fool-proof way of diagnosing the disease is by cutting a stem of the tomato plant and placing it in a glass of water for about 15 minutes, if present a milky stream of bacteria will ooze from the section.

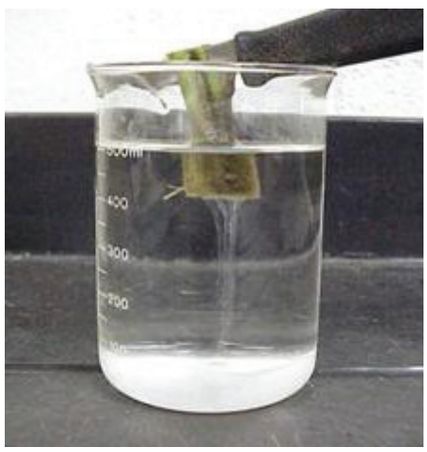


Fig.2: Bacterial cells flow from xylem into the water (www.clemson.edu)

LIFE CYCLE

The pathogen enters the roots through wounds that are made from planting, through cultivation or from nematodes or insects. When inside the plant the bacterium multiply and clogs the vascular system restricting water uptake. This causes the sudden wilting and eventual death of the plant. After the plants die the bacterium is again released into the soil from decaying roots and stems.

CONTROL MEASURES

Remove infected plants immediately to avoid returning pathogen to soil.
Unfortunately crop rotation is not that effective as the pathogen can stay in the soil for years.
Avoid physical damage to the roots.
Control Root knot nematodes in soil.
Soil amendments such as organic manures have shown to suppress the disease.
If possible use tolerant/resistant varieties.

Hygrotech is currently doing various screening and on-farm trials with Bacterial Wilt resistant varieties.

REFERENCES

www.clemson.edu
www.infonet-biovision.org
www.tomatodiseasehelp.com

HOW MANY PEAS IN THIS POD??

Written by Leon Grundlingh
Product Manager:
Brassicas, Leaf crops, Legumes & Sweetcorn

PEAS *(PISUM SATIVUM)* BELONG TO THE LEGUME GROUP AND ARE AN IMPORTANT SOURCE OF FOOD AND FIBRE FOR MAN AND ANIMAL.

Back in 1865, Gregor Mendel used the pea plant to study and understand the principals of heredity. That illustrates the importance of peas in our history. Peas and beans are even today used in school projects to teach pupils how plants grow and develop.

Peas are mainly used in two forms, dried edible peas and fresh peas for freezing, canning and fresh use.

IN THIS ARTICLE, THE FOCUS WILL BE ON THE FRESH USE OF THE DIFFERENT TYPES OF PEAS.

When the fruit pods are formed, about 7-10 days after pollen shed, they are flat, young and very tender. The "berries" or peas as we know them start to develop and reach maturity after 25-30 days. Thereafter the once sweet, tender and succulent peas become starchy and tough. As the pods mature, the pods develop and differ in dimensions and uses.

FRESH, SHELLING PEAS

These pods are picked after the peas have fully developed and berries are still green and sweet. The peas are shelled and consumed raw or cooked. Varieties like Ambassador and Bolero Select are used as shelling peas.

SHELLING PEA (WAVEREX)

Some varieties are known for their sweet taste and are picked as a very young pea and shelled. These are known as baby peas or "Petit pois" - French for very small, green pea. Waverex is a specific variety for this use.

SNOW PEAS

Better known as *Mange Tout* or flat peas: The pods are picked at a very early stage of development. The pods are flat and the seeds (peas) are very small. The pods are consumed raw or blanched for snacks, salads and stir fries. Varieties include Oregon Sugar Pod II, Kennedy and Sugar Snow.

MANGE TOUT (KENNEDY)

SNAP PEAS

Snap peas are also picked before fully developed. The pods of these varieties, like Cascadia, are fleshy and sweet. A distinctive "snap" sound are heard when these pods are broken. Snap peas are also consumed raw, like Snow peas.

SNAP PEA (CASCADIA)

New trends include the use of Pea shoots, young developing leaves, in salads.

Geskryf deur: Braam van Niekerk
Chemiese Adviseur, Weskaap

DIS NIE 'N "DONSSKIMMEL JAAR" NIE

DIT IS DIE STORIE WAT ONS ELKE JAAR IN DIE WYNDRUIFINDUSTRIE HOOR EN EK KAN DAARVAN GETUIG UIT VORIGE ONDERVINDINGS UIT. MAAR TOE DIE DONS DIE JAAR TOESLAAN EN ALMAL BEGIN WAKKER SKRIK WAS DIT AMPER TE LAAT. GELUKKIG HET DIE MANNE **SPOREATTACK** IN HULLE ARSENAAL GEHAD...

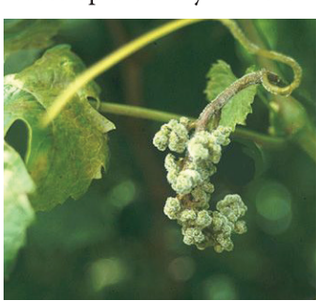
Plasmopara viticola val die groen deel van die wingerd aan, veral die blare. Dit is als afhanklik van die inkubasie periode en die ouderdom van die blaar. Bo op die blaar vorm 'n geel "oliekol" (Fig 1) (Boere sal baie keer na die oliekol verwys) , en aan die onderkant van die blaar, waar die sporulasie plaasvind, 'n digte, wit, wolagtige groeisel (Fig 2).

(Fig 1) Die oliekol aan die bo kant van die blaar. (Ash, G. 2000)

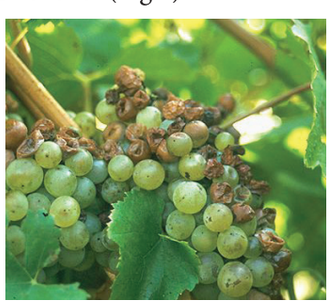
(Fig 2) Die wit, wolagtige "dons" aan die onderkant van die blaar. . (Ash, G. 2000)

Jong vrugte is hoogs vatbaar vir donsskimmel (Fig 3), wanneer die vrug geinfekteer word, word die vrug heeltemal bedek met 'n donsige wit sporulasie. Geinfekteerde vrugte sal 'n grys/bruin vrot ontwikkel en dan afspeen van die tros (Fig 4). Daar is niks wat 'n boer kan doen as die patogeen in die druiwe is nie, dus moet donsskimmel vroeg gemonitor en behandel word, sodat die korrekte behandeling toegepas kan word. (Ash, G. 2000)

Wees op die uitkyk vir die "Oliekolle" (Fig 1)



(Fig 3) Geinfekteerde jong druiwe. . (Ash, G. 2000)



(Fig 4) Geinfekteerde druiwe tros. . (Ash, G. 2000)

SPOREATTACK EN DONSSKIMMEL

SporeAttack + Mancozeb het 'n registrasie teen donsskimmel. Die dosis wat ons gebruik het in die Breederivier area om kuratief teen donsskimmel te spuit

was 100ml SporeAttack + 200g Mancozeb per 100L water.

Op figuur 5, 6, 7, 8 kan gesien word dat daar 'n hoë infeksie-druk was op 'n digte blaaroppervlak, dus is daar 'n hoë volume van 1000L water/Ha gespuit.

7 dae later op figuur 9, 10, 11, 12 kan gesien word hoe goed die donsskimmel infeksie "uitgedroog" het, agv die SporeAttack + Mancozeb bespuiting.

Gelukkig kon die druiwe gered word voordat donsskimmel in die tros inbeweeg het. Op fig 13, 14, 15 wys die onbehandelde kontrole dat die infeksie toegeneem het. SporeAttack + Mancozeb werk. Dit is waarlik 'n produk waarsonder die wyndruifboere nie kan nie. Die resultate is verstommend.

Donsskimmelinfeksie tydens SporeAttack + Mancozeb toediening (Fig 5, 6, 7, 8) :

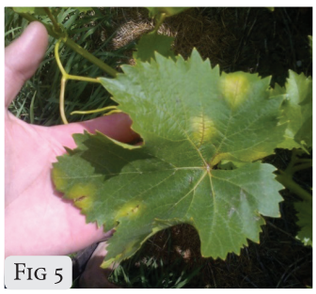


Fig 5


Fig 6

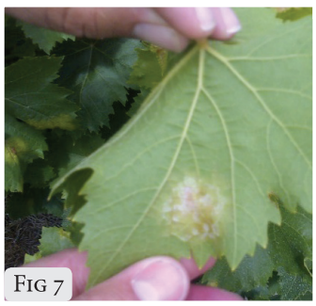


Fig 7


Fig 8

Donsskimmelinfeksie 7 dae na SporeAttack + Mancozeb toediening (Fig 9, 10, 11, 12):

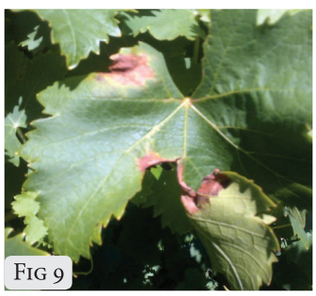


Fig 9


Fig 10

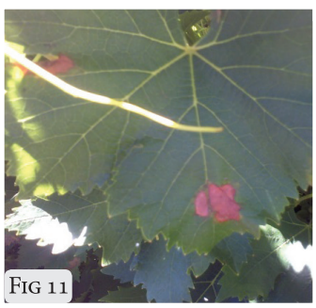


Fig 11


Fig 12

Donsskimmel, onbehandelde kontrole (Fig13, 14, 15)

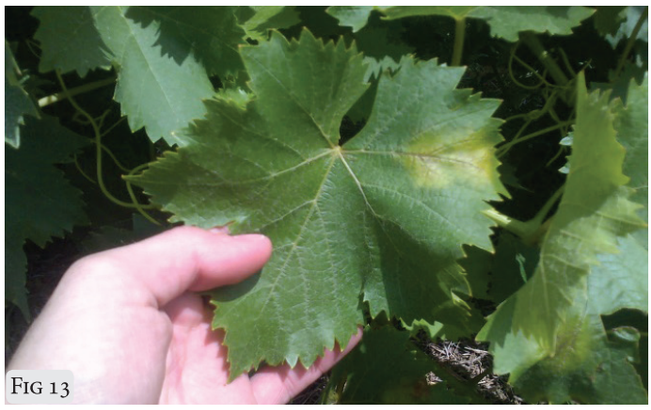


Fig 13


Fig 14


Fig 15

Ter opsomming:

Hierdie resultate is na slegs 1 bespuiting verkry. My voorstel is om SporeAttack teen 100ml/1000L water saam met elke swambespuiting neer te sit. Die saniterende werking van SporeAttack sal ook help om die innokulasie van *Botrytis Botrytis cinerea* en Witroes *Uncinula necator* 'n "knockdown" effek te gee.

Direk na die oes af is kan die wingerd gesaniteer word met 'n Coppercount N 5L + Swael 3kg + Boor 3kg + SporeAttack 1L/ 500L water vir 'n na-oes behandeling om enige patogeen wat dalk mag oorwinter op blare en lote te saniteer.

HYGROTE TURNS 3

INDULGE US IN A SHORT TRIP DOWN M

1966

Hygrotech had its roots in the Roode-Lyon Seed Company that was started by Habe Roode's (our current CEO) father, Chris Roode in January 1966.

1984

In February 1984 Habe Roode established Hygrotech Seed Pty Ltd with two investors, Bertie van Zyl Pty Ltd and W.L. Ochse & Co and started operating from the Silverton premises.

1989

In 1989 a fully fledged Technical Department was established at Hygrotech. breaking new ground in the industry and raising the mission of the company from mere distribution, to a one stop, all inclusive service centre.

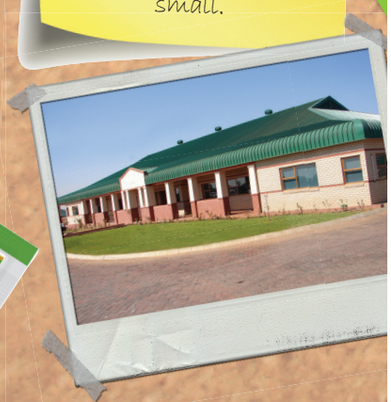
CELEBRATING 30 Years 1984 - 2014

2013

Hygrotech launch a modern new look Garden Pack range consisting of open pollinated and hybrid vegetable seed, herbs and flowers distributed by freelance sales people.

2011

We build a new office block to house our technical staff and our new Co-op type one stop shop for the grower – large and small.



2014

And here we are in 2014 with a range consisting of 40 vegetable crops, Forage and green manure crops, lawn and turf grass, a wide range of chemicals with 15 different categories covered, seedling growing systems including growing mediums and seedling trays and mechanical implements offering the farmer a one stop shop to ensure a healthy bumper crop!

ECH
30!!!!
MEMORY LANE:

1991

We are proud of our quarterly in-house technical publication, the Hygrotech Forum, which evolved from a 4 page black and white publication in April 1991 to our current 36 page full colour edition. The Hygrotech Forum is edited and published for all our national and international customers with a circulation of 4000 copies.

1992

Business was expanded into Southern Africa with Subsidiaries in:

Namibia (1992), Zimbabwe (1996) Zambia (1998), East Africa (1998) & Mozambique (2000)

1999

Hygrotech moves to the new offices at Pyramid, Pretoria.

2000

Hygrotech starts with a small breeding programme with selected species at on-site breeding facilities. Our original breeder Joe van Zyl and his assistant Nicolette Gilfillan are still working actively with an ever growing group of crops.

2003

We venture into the Forage crop market to expand our ever growing range of products and to also offer the grower a range of green manure products to improve soil health the natural way.

2009

Hygrotech starts to sell a turf grass range for golf courses, sports stadiums and home garden use. Our turf grass range was one of the mixes selected to plant all the stadiums for the soccer World Cup in 2010.

SUM OPEN DAY 2014

Written by: Mari Furter, National Manager, Vegetable Seed

It started with three hail storms early in the season (14, 19 and 24 November 2013) – just as the little seedlings were transplanted! And then the rain late February and March 2014…

Our season started with 656mm of rain from July to December 2013, 53mm during January 2014, 329mm during February 2014 and 272mm for March 2014! The average for Pretoria is normally in the range of 110mm for February and 80mm for March. We also had a little hail on the 21 February 2014.

Farming in Africa has never been for sissies and we just got up after every lashing and started again – producing some of the most successful crops in years! All hail to PJ and Hennie and his team who bent over backwards to make this years' Farmers Days happen. Some crops were late because of the non-stop rain and overcast weather but there were still more than enough to see during the week.

Most beautiful of all were probably the tomatoes. We all know how tomatoes feel about wet feet and -leaves. And no, we did not overdose on the fungicides - Hygrotech is preparing to get Globalgap accreditation for its trial farms so everything is done by the book!

It is difficult NOT to be proud of one the first tomatoes out of our own stable! Degas, a determinate fresh market tomato – high yield and excellent quality fruit.

GRANADERO*

SYLVIANA*

An indeterminate round (Sylviana*) and saladette (Granadero*) from our main supplier, ENZA. Definitely not just a pretty face. Both have disease packages to be proud off.

And then our fresh market tomato team: Paddy de Vries (far right) and Jany Venter (far left). Michael Pinto, responsible

for vegetables under protection could not be torn away from his greenhouse!

Processing and hawker market tomatoes are Luhan Swart's expertise. Here he is explaining the finer detail of a successful crop to our Mozambican subsidiary Rui dos Santos and his customers.

Another crop that was comfortable with the cooler weather was the green beans. Here Johan Stassen is proudly showing off the latest Hygrotech and Seedcor varieties to Parvershree Pillay from McCain.

Our explosive butternut range need no introduction by now. Attractive fruit of TNT*, Atom*, B52* and Torpedo*.

Hot pepper, Ascent who is the highest yielding, tastiest chilli available for the sauce market.

The brave Pick & Pay group did not want to believe us so they tasted for themselves.

And then of course no army can march on an empty stomach! Dennis Lange and his team made sure the meat got Prepared and that there were sufficient pap and sous (fresh from the land!).

Written by: Mari Furter, National Manager, Vegetable Seed

30TH BIRTHDAY CELEBRATION

"30 YEARS SEEM A LONG TIME BUT IT FEELS LIKE YESTERDAY WHEN WE STARTED UP IN SILVERTONDALE" – HABE ROODE, CEO AND FOUNDER

On the 15th of February Hygrotech celebrated its 30th year in the Agricultural business with a dinner at our Head Office in Pyramid. Present were local and International suppliers, customers, subsidiaries, consultants and staff from near and far.

Although we did not have a full staff contingent present on this particular night, Habe dedicated the past 30 successful years and the event to our loyal and hardworking personnel. Any agricultural company can trial, develop and market good and unique products but to be successful you need committed, dedicated and quality personnel to make things happen and work.

HABE ROODE, OUR CEO, WHO ESTABLISHED THE COMPANY HYGROTECH 30 YEARS AGO.

SINCE IT WAS THE NIGHT AFTER VALENTINE'S DAY WE KEPT TO A ROMANTIC SETTING IN OUR GARDENS!

REWARDS WERE GIVEN IN TWO CATEGORIES:

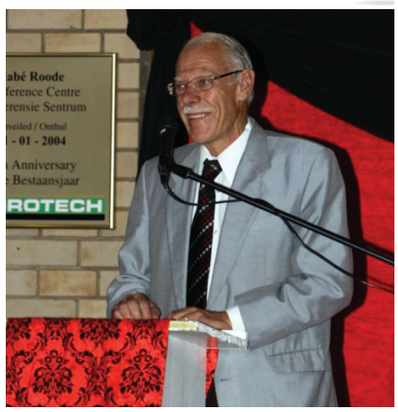
To Henry van der Voort, Regional Manager for the Western Cape (Who has been with the company 25 years) for **Marketing and Sales Supported by Technical Acumen and to**

Marek Sekular, Import & Export Manager (Who has been with the company 16 years), for **Administration Finances and Operations (Manufacturing & Logistics)**

An unique achievement in our personnel portfolio are the "stayers". In 30 years Hygrotech had a remarkably low personnel turnover. The records show that 82 personnel members have been with the company for 10 years or longer, comprising of executive and senior management, financial and administrative staff, technical staff, Product Development staff, manufacturing and production, salesmen and business unit managers, personal assistants, secretaries and factory workers.

10 YEARS AND LONGER: 37 people
15 YEARS AND LONGER: 20 people
20 YEARS AND LONGER: 16 people
25 YEARS AND LONGER: 8 people

The guest speaker for the evening was Dr. Wynand van der Walt who established and managed SANSOR from 1889 to 2002. He is a plant breeder by trade with a PhD in genetics and plant physiology from the University of Wisconsin as well as a MBL in business from the University of South Africa. He is currently an independent consultant, serving on 10 agricultural committees for grains and oilseeds. SANSOR is celebrating their 25th year of serving the Seed Industry this year.



Written by Leon Grundlingh
Product Manager:
Brassicas, Leaf crops, Legumes & Sweetcorn

ICEBERG LETTUCE FOR WINTER

Winter in the Cape started very late last year. All predictions indicated that it was going to be a mild winter and some farmers even started sowing their spring lettuce varieties in the first week of July.

Then, the real winter came with rain and snow and lasted until deep in September.

Lettuce varieties used in the winter growing slot have to be very adaptable. It must be able to withstand the very cold, wet conditions in the Western Cape. Day temperature fluctuations ranging from 5 - 14°C and night temperatures dropping sometimes below 0°C, are common in the winter months in the Cape.

Evaluation and inspection done by Dukie (ENZA-left) and Leon (Hygrotech)

Seed were sown on 1 July and transplanted on 12 August 2013 at Johan Bock in Philippi (Cape flats area). The trail material were evaluated 70 days after transplant and compared to commercial varieties.

The varieties that did well in this trail, were Oriola, Juanola, Martinola, Camila and Alcala. Most of these varieties are new introductions and will be planted on commercial scale next season.

Alcala – notice the compact head, with weight of 730g

Camila weight of 978g

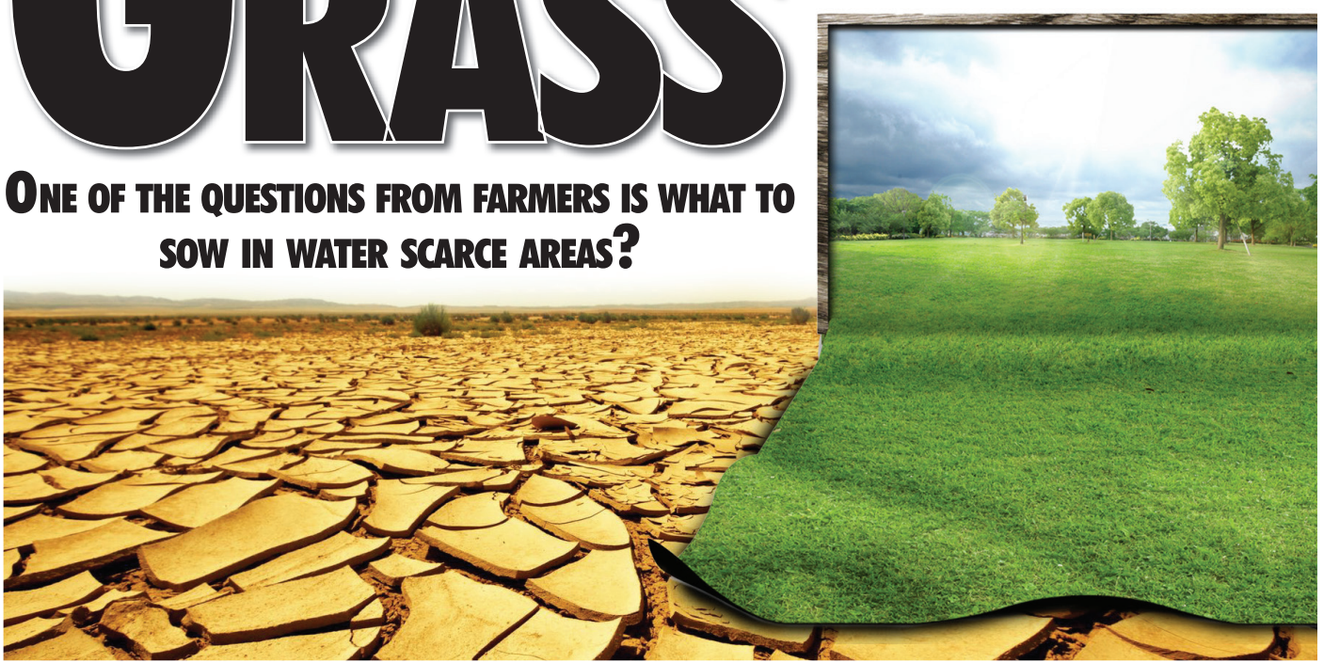
Martinola – excellent quality for prepack or box market

Juanola- good colour and head size for prepack market (610g)

Written by: Robert Young
Regional Manager
Southern Cape

PREFERRED GRASS FOR DRY AREAS

One of the questions from farmers is what to sow in water scarce areas?



There are three winners available from Hygrotech's Forage range.

1.Tall Fescue : Kora (*Festuca arundinacea*)

For decades tall fescues have been associated with poor digestibility and lower yields. With Kora this is a thing of the past. Swiss official trails shows that Kora has a very high digestibility. Kora maintains high dry matter productivity, typical of tall fescues.

> "Kora is very drought tolerant and has a good winter hardiness."

2. Cocksfoot: Athos (*Dactylis glomerata*)

Athos is a leafy, medium tall growing type with many tillers. The leafy growth makes Athos more palatable to animals. Athos is characterized by a good production in spring, and a continued high production during summer and autumn.

> "Athos has proved to have good rust resistance and winter hardiness."

3.Bromus: Blizzard (*Bromus sitchensis*) (New)

During trials Blizzard has proven to be high yielding in dry and warm summers. Blizzard produces a lot of quality forage in Spring and has good regrowth in summer and autumn.

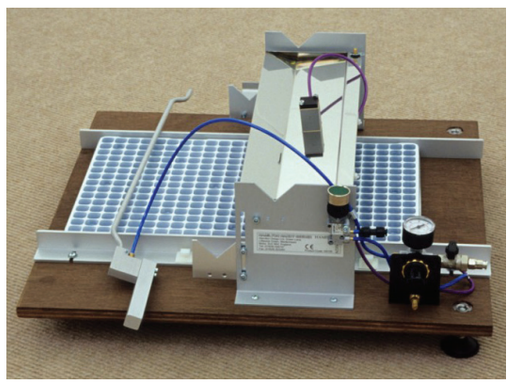
Blizzard has a superior tolerance to drought, giving the farmers grass production in a normally lean period.
The tolerance to drought and to cold periods gives Blizzard a high persistence of 3 to 4 years.

Blizzard delivers a high yield of energy and protein and it is a very good mixing partner for Tall Fescue and Cocksfoot.

Mechanical Implements

Written by: Dennis Lange
Manager: Mechanical Implements

Hamilton Handy Seeder

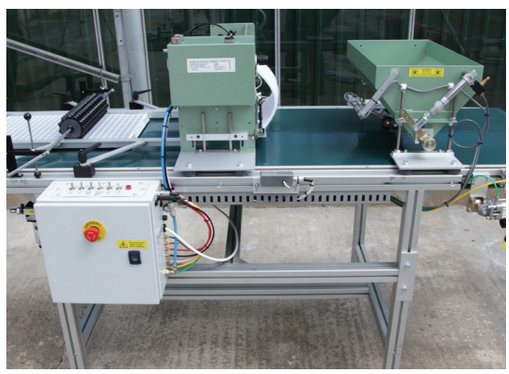


The Hamilton Handy Seeder is designed for the grower who wants to get started sowing their own plugs, but does not want the expense of an automatic seeder. Pickup tubes are drilled with holes to suit the spacing of the plug tray. The seeds are vibrated in a stainless steel seed tray and picked up by vacuum on the holes. The handle is then moved from the pickup position to the discharge position, just above the plug tray. A small hole in the handle is covered to release the seeds onto the surface of the growing medium. The tray is moved by hand to the next row, and the process repeated. The vacuum and vibration are adjustable for different sizes and weights of seed.

Three pickup tubes of your choice are supplied with each machine. Hole sizes are: 0.3mm for small seeds (lettuce to tomatoes size), and 0.5mm for larger seeds (peppers, broccoli, etc.). Multi holes can be drilled for clump sowing if required. A small compressor is required to operate the machine.

Hamilton Natural Seeder

Belt Conveyor & PLC Controls - (System 3)



This is the top-of-the-line Natural Seeder model, the fastest and most versatile of our systems. The Seeder and Coverer are controlled by a Microprocessor PLC to synchronize the tray with the Seeder. Set-up times when changing trays are exceptionally fast and this model will sow all types of tray from plug trays to thin plastic flats and packs. The height of the conveyor is adjustable to match up with most proprietary filling and watering lines. Another bonus with this model is the multiple sow feature which can be set to sow 1, 2 or 3 seeds per cell before the conveyor advances to the next line. A Dwell function is also incorporated. As with all models variable speed is standard. A complete range of nozzle bars are available to sow seeds from the size of begonia to squash. .

Hamilton Drum Seeder

The belt conveyor system has variable speed as standard, and is aimed at high production growers with an exceptional high capacity for continuous, accurate single or clump sowing. Accessories include dibblers, vermiculite coverer and a watering bar.

The sowing drum can be drilled to sow into 2 different seedling tray sizes or 2 different hole sizes for one model seedling tray. The Drum seeder is available in a 2.0m and 2.8m conveyor.
Typical speed: 740 seedling trays an hour.

QUALITY OF IRRIGATION WATER

PART 2 OF 2

Written by: DC Coetzee
Technical Marketing Advisor

Irrigation can be considered as a farming strategy to reduce production risks. The income from the crop(s) produced needs to justify the (usually high) investment made in the irrigation system.

The quality of available water for irrigation purposes is one of the key elements in the final investment decision. The chemical quality of water refers to the dissolved ions in the water. Some of the ions might be beneficial, others might be neutral, but most are deemed to be undesirable. Dissolved salts are mostly unwanted and in high concentrations could be damaging to the crop or have such an influence on the soil that it become unfit to grow crops.

In the previous articles the calculation methods to calculate key parameters:

RSC (RESIDUAL SODIUM CONCENTRATE)

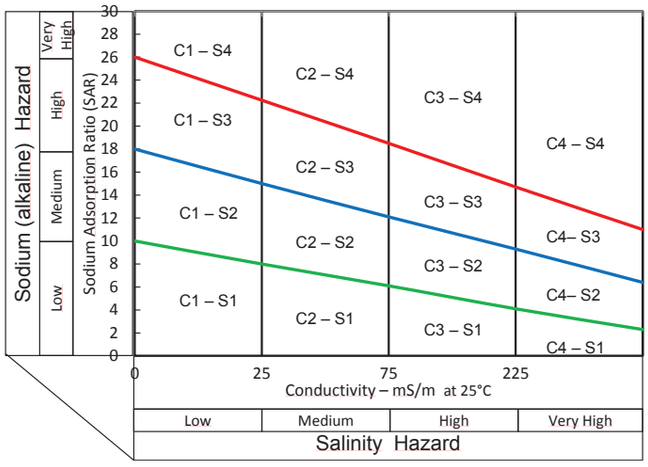
$$RSC = [HCO_3^- + CO_3^{2-}] - [Ca^{2+} + Mg^{2+}] \text{ me/}\ell$$

SAR (SODIUM ADSORPTION RATIO)

$$SAR = \frac{[Na]}{\sqrt{([Ca]+[Mg])}} \quad mmol/l$$

The third indicator of the suitability of water for irrigation purposes is the total dissolved salts as indicated by the electrical conductivity (EC) of the water. The EC can be measured with an EC – meter or can be determined by a laboratory. The unit of measurement is milliSiemens per meter (mS/m). EC is an indication of the salt or salinity hazard. See figure 1.

FIGURE 1: SALINITY HAZARD OF IRRIGATION WATER BASED ON THE SAR AND EC. (FSSA, 2007, P. 71)



Classes C1 – S1 and C2 – S2 can be considered to be good water for irrigation purposes, as it poses a low salinity hazard. Classes C1 – S2, C2 – S2, C3 – S2, C3 – S1 and C4 – S1 are considered to have a medium salinity hazard and can be used for irrigation purposes. This water should only be used on well drained soils and the irrigation frequency should be increased so that only a fraction of the stored water is used between irrigations. The idea is to add water to the soil before the soil solution become saturated with calcium- and magnesium carbonates. Enough water should be added so that the excess water leach the residual salts away before it can accumulate. The volume of excess water to be applied can be estimated by using the formula:

$$\text{LEACHING REQUIREMENT} = \frac{EC\ iw}{EC\ ss}$$

ECiw represent the EC of the irrigation water and ECss represent the maximum allowable EC for the soil solution. At least in theory it means that the excess water applied will flush the excess salts away. It is notwithstanding of paramount importance to take soil samples at least once per year and have it analysed to monitor for any changes. Water of poorer quality of those mentioned above should be avoided at all times.

Laboratory analyses are not always in the units required to do the calculations. Table 1 is a conversion table to simplify the management of your irrigation water.

Table 1 Conversion table

Ions in mg/ℓ	from mg/ℓ to mmol/ℓ	from mg/ℓ to me/ℓ	from mmol/ℓ to me/ℓ
Monovalent ions			
Chlorides (Cl-)	÷ 35.45	÷ 35.45	÷ 1
Bicarbonate (HCO3–)	÷ 61.01	÷ 61.01	÷ 1
Sodium (Na+)	÷ 22.99	÷ 22.99	÷ 1
Bivalent ions			
Calcium (Ca2+)	÷ 40.08	÷ 20.04	÷ 2
Magnesium (Mg2+)	÷ 24.31	÷ 12.16	÷ 2
Carbonate (CO3 2–)	÷ 60.01	÷ 30.00	÷ 2
Sulphate (SO4 2–)	÷ 96.06	÷ 48.03	÷ 2
1 liter = 1 ℓ = 1000 ml = 1 dm3			

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Hausenbuiller, R. L. (1985). Soil science: principles and properties (3rd edition). Iowa: WCB Publishers.

HYGROTECH
NEEM WEEREENS DIE LEIDING
GEGRADEERDE UIESAAD

Herman de Beer – BEL Bosveld
Theunie Snyman – Tegniese Veldbeampte LTT

Hygrotech het weereens die voortou geneem met die gradering van uiesaad. Deur uiesaad te gradeer word die volgende voordele behaal –

- Eenvormige opkoms
- Onkruidbeheer word vergemaklik
- Plantdigtheid kan meer geredelik beheer word
- Plantspasiëring verbeter
- Bolgrootte meer eenvormig
- Besparing op saadkoste

Omdat saad grootte meer eenvormig is, is die gevolg 'n meer eenvorme opkoms. Sien meegaande foto's

Die gevolg van eenvormige opkoms binne 10-12 dae beteken dat onkruidbeheer meer effektief toegepas kan word sonder om uieplantjies dood te spuit. Die plantestand word dus nie beinvloed nie.

Aangesien die plantdigtheid nou beter beheer kan word, word plantspasiëring en gevolglik bolgrootte ook positief beinvloed wat bydra tot 'n groter wins vir die kliënt.

Hygrotech het weereens bewys dat die maatskappy vertrou kan word as raadgewer en ondersteuner van die boer.

ONE SPRAY

MILLER®

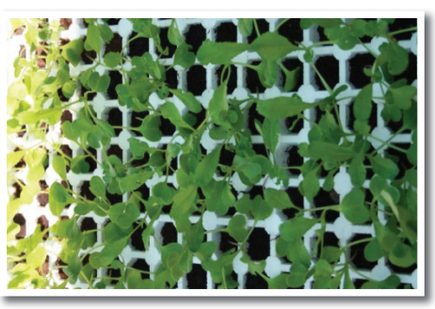
Written by Jeanine Hordijk
FertagChem Research Technician

One spray is a fertilizer seed treatment which contains plant hormone supplements: auxin, giberellin and cytokinins. Auxin stimulates root initiation and elongation, promotes shoot and cell elongation and the formation of adventitous roots. Gibberellin increases the germination of seeds and buds and stimulates stem elongation. Cytokinin stimulates growth of lateral buds, leaf expansion and chloroplast developments. One spray wil stimulate the overal germination of seeds and the growth of roots and shoots.

One spray was applied at 10ml/l to snow radish seedlings before emergence of the seed. The average root length and growth of the one spray treated seed was significantly higher compared to the control and product 1 after 2 weeks. One spray treated maize seed also show a higher root growth, shoot growth and result in bigger maize cobs. One spray is also applied to improve a good and even plant stand.

One spray could be applied as a seed treatment or could be applied directly in the plant furrow within direct contact of the seed and can also be applied as a foliar spray at the two to four leaf stage.

One Spray

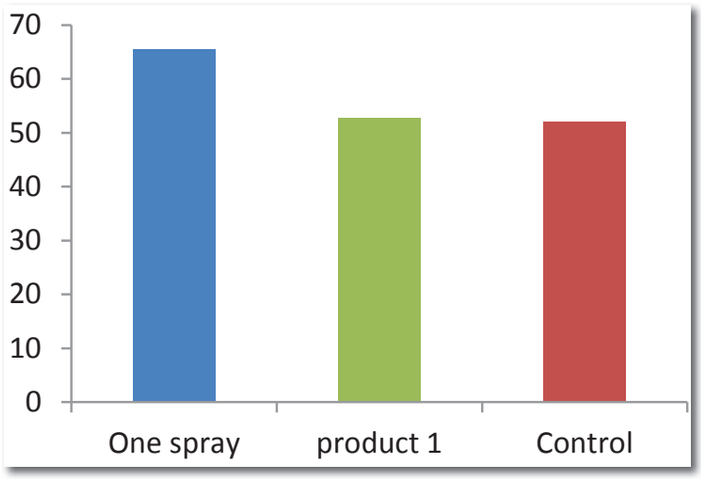


Control

One Spray(left) & Control(right)

One Spray(top) & Control(bottom)

One Spray (left) & Control (right)



Root length of seedlings treated with one spray and other products

Crop	Seed Treatment	In Seed Furrow	Start Application at 2-4 leaf stage
Maize / corn	4 mℓ/kg	75 – 150 mℓ/ha	250 mℓ /ha
Sweetcorn & Popcorn	8 mℓ/kg	75 – 150 mℓ/ha	250 mℓ/ha
Cotton	4 mℓ/kg	75 – 150 mℓ/ha	250 mℓ/ha
Peanuts	4 mℓ/kg	75 – 150 mℓ/ha	250 mℓ/ha
Beans	2 mℓ/kg	200 mℓ/ha	300 mℓ/ha
Soybeans	2 mℓ/kg	200 mℓ/ha	300 mℓ/ha
Peas	2 mℓ/kg	200 mℓ/ha	300 mℓ/ha
Sunflowers	7 mℓ/kg	75 – 150 mℓ/ha	250 mℓ/ha
Grain Sorghum	4 mℓ/kg	75 – 150 mℓ/ha	250 mℓ/ha
Wheat	2 mℓ/kg	200 mℓ/ha	300 mℓ/ha
Barley	2 mℓ/kg	200 mℓ/ha	300 mℓ/ha
Rye & Oats	2 mℓ/kg	200 mℓ/ha	300 mℓ/ha
Cucumbers, Melons, Cantaloupes, Honeydews, Muskmelons, Watermelons, Squash(all varieties)	12 mℓ/kg		300 mℓ/ha
Tomatoes, Peppers, Chilli	12 mℓ/kg		300 mℓ/ha
Cabbage, Carrots, Lettuce, Broccoli	12 mℓ/kg		300 mℓ/ha
Okra, Onions, Garlic, Spinach	8 mℓ/kg	150 mℓ/ha	300 mℓ/ha
Potato seed pieces	600 mℓ/250 ℓt water	200 mℓ/ha	300 mℓ/ha
All vegetable seedlings ONE week after transplant			250 mℓ/ha
All crops broadband / whole land	400 mℓ/ha	400 mℓ/ha	400 mℓ/ha

Dosage for application of One Spray

RISSIE CLAIR STAATMAKER

Fielies Nieuwoudt
BEL Laeveld

Dirk le Roux
Tegniese Veldbeampte
Tzaneen

Rissie Clair in Mooketsi omgewing wat in April 2013 geplant is onder skadunet. Na 10 maande word daar nog gepluk en is die vrugte nog medium tot groot.

Gedurende Desember 2013 het hierdie plante 180mm reën gehad en is die plante nog baie gesond en vrugkwaliteit goed.

Die September en Oktober 2013 dagtemperature was meestal oor die 35 °C.

Desondanks uiterste klimaatstoestande bewys Clair weereens dat hy 'n staatmaker is en vir lang periodes produktief is.

MAYOR OF ENKHUIZEN VISITS SOUTH AFRICA

Written by: Mari Furter
National Manager
Vegetable Seed

Enkhuizen is a municipality and a city in the Netherlands in the province of North Holland. Enkhuizen was one of the harbour towns of the VOC from where overseas trade with the East Indies was conducted. It received city rights in 1355. In the mid 17th century, Enkhuizen was at the peak of its power and was one of the most important harbour cities in the Netherlands. However, due to a variety of reasons, notably the silting up of the harbours, Enkhuizen lost its position to Amsterdam.

Today however, Enkhuizen is home to a number of seed production companies (of which our main supplier ENZA ZADEN is one) as well as tourism. The port is situated on the Zuidersee allowing a lot of water sports and for the history buff there is the Zuidersee Museum, the Dromedaris tower, several old period houses, and of course the Town Hall (Stadhuis) where the mayor, Jan Baas, has his office.

In 2008 a "technical hub" aptly named SEED VALLEY was established in Enkhuizen. This attracted 20 agricultural and horticultural companies which now have their home in Enkhuizen. Due to his involvement in establishing Seed Valley and his passion for agriculture, Jan Baas is visiting distributors worldwide of the companies which make up Seed Valley.

FLTR: Habe Roode, Maria & Jan Baas

Jan and his wife Maria spend the day with Hygrotech visiting the Sokhulumi Community project. The Sokhulumi community has a high unemployment rate and is located quite far from essential socio-economic services. Various departments are working together to uplift this community. Hygrotech are supplying them with technical back-up and a range of agricultural products.

Maria & Jan in front of the Sokhulumi greenhouses

Tomatoes being inspected and graded by hand at Sokhulumi

After a very interesting morning on a rural farm, Jan and Maria took a tour through the Hygrotech facilities and concluded their tour with a lunch at our Head Office. Here Jan presented Hygrotech CEO, Habe Roode, with a numbered Facsimile of the oldest share document in the world (9 September 1606) which came from the city archives of Enkhuizen. This share document was for shares in the VOC or the Dutch East India Company. In 1652, Jan van Riebeeck established an outpost at the Cape of Good Hope to re-supply VOC ships on their journey to East Asia. It is a small world….

Written by Marié Botha
Pyramid Branch Manager

SUPPORTING THE GARDENERS

Did you know that Hygrotech can provide the gardener with excellent products from our FertAgChem range in smaller quantities?

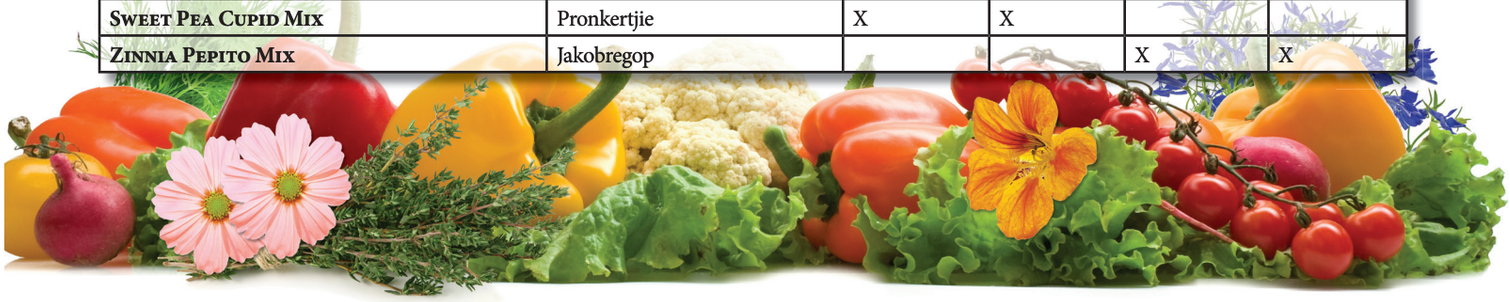
If you need a product for root development and seedling growth, try our 500ml Kic Start. A 250ml Sporekill (a broad spectrum disinfectant) will help with disease prevention/control. The plant's nutrients can be provided by our 500ml Nitrospray Plus and 500ml Calmabon Plus. Hygrotech's famous Terra Nova (organic fertilizer/ pelletized chicken manure) is now available in a 10kg plastic bag. Flower growers get excited about the 5kg Hyperfeed with all the micro-elements and the 1L Copper Count which is a fungicide solution.

Our program for Cycads, Orchids and Clivias promotes root growth and stimulates and enhances vigorous growth of leaves.

Last year Hygrotech launched a new seed range for the home garden, called Garden Packs. You can choose from a variety of vegetable (open-pollinated and hybrid), herb and flower seeds. This range with smaller quantities seed makes an ideal gift for a gardener with limited space. There is an oppotunity available to all interested parties to distribute or sell this range. The products can be used as a donation for charity projects, sold as fundraising for schools, churches and non-profit organisations or sold for extra income at flea markets or to friends and family.

Have a look at the available flowers and the ideal planting seasons:

Name	Also known as	Autumn Mar, Apr, May	Winter Jun, Jul, Aug	Spring Sep, Oct, Nov	Summer Dec, Jan, Feb
African Daisy Mix	Namakwalandse Madeliefie	X	X		
Alyssum Magic Circle Mixed	Heuningblom	X	X	X	X
Antirrhinum Magic Carpet Mixed	Leeubekkie	X		X	
Aster Colour Carpet Mixed	Aster			X	X
Calendula Dwarf Gitana Fiesta Mix	Gousblom	X	X		
Candytuft Mixed	Skeefblom	X		X	
Dianthus Dwarf Persian Carpet Mix	Angelier	X		X	
Godetia Semi Tall Single Mixed	Satynblom			X	
Marigold Brocade Mixed	Afrikaner			X	X
Mesembryanthemum Pastel Mix	Bokbaaivygie	X	X		
Nasturtium Whirleybird Single Mix	Kappertjie			X	X
Penstemon Compact Mixed		X		X	
Phlox Cecily Mixed	Floksie	X		X	
Sweet Pea Cupid Mix	Pronkertjie	X	X		
Zinnia Pepito Mix	Jakobregop			X	X



REFLECTING ON 2013 HYGROTECH-MASSMART INITIATIVE

Written by: Peter S. Ngoma
Research Technician | Hygrotech

WITH THE FIRST OF THE FOUR YEARS OF OUR PARTNERSHIP WITH MASSMART HAVING COME TO AN END, WE HAVE TAKEN A LOOK BACK TO SEE HOW FAR WE HAVE COME.

Activities in our first year started in February 2013 with a trial training session in Pretoria where we tested the suitability of the training to emerging farmers. Following that, certain key changes were brought in to ensure that the following 5 trainings become the success that they have been. These five trainings were hosted in Tzaneen, Strydkraal, Inanda, Jozini and Hazyview respectively. Loyalty discount cards were given to the trained 200 farmers by Hygrotech, while Massmart gave some of the farmers financial assistance to purchase production inputs.

Green beans of Philip Marvatona (Tzaneen)

On the ground, companies like Technoserve and Lima Rural Development were appointed in different areas to mentor the farmers throughout the production season. This ensured that farmers acquire good quality production inputs, especially suitable seed varieties and chemicals and also that they implement farming methods that they learnt during training to improve yields and profits.

This tri-partied alliance (Trainer-Mentor-Market) ensured good service delivery for the 2013 beneficiaries of the project and the success in terms of production by farmers is proof of that.

Peppers of Philip Marvatona (Tzaneen)

Improvements in terms of yields produced have been noticed from our very first year. However, there has been cases of under production by a few of the individual farmers who were trained. These are expected to draw inspiration and learn from their counterparts who recorded massive success and profits last season.

Tomatoes in Samuel pasha's fields (Tzaneen)

Butternuts of Samuel Pasha (Tzaneen)

For instance, in Tzaneen, Phillip Marvatona of Mystic Blue produced Butternuts (1 ha), Green beans (2 ha), Tomatoes (1 ha) and Sweet pepper (2 ha). He harvested 71.6 ton/ha of butternuts, 5.3 ton/ha of green beans, 87 ton/ha tomatoes and 27.5 ton/ha of pepper. Such high yields that lead to high profits may be commonly achieved by commercial farmers but are rarely achieved by emerging farmers. For that reason, Phillip must be applauded for this. According to Moloko Semenya of Technoserve in Tzaneen, Phillip made a substantial profit after sale of his crops.

Healthy Tomato seedlings of Samuel pasha (Tzaneen)

At Inanda, the ever popular Gift of Service Farming Co-operative produced 6 hectares of butternut and harvested not less than 48 tons per hectare of "the best possible quality" that a farmer can

get. That is according to Hammilton Mazibuko, a Field Representative of Massmart in KZN. He further stated that this success enabled them to grow their operations from 6 hectares to the current 10 hectares.

On-field training practicals with Rajen (Hygrotech sales representative) Inanda KZN

In Hazyview, training was offered in November 2013 at SHDN Co-operative. The first production season after training is about to start and according to Percy Maja of Lima Rural Development, the training has led to the implementation of critical changes in the farmers' production planning for this upcoming season. These changes include fertilizer programs that are linked with soil fertility improvement, proper cultivar selection and correct irrigation practices. He further said higher yields are expected and timeous produce marketing will be done.

Rajen & students/farmers (Inanda KZN)

Since the release of our Autumn 2013 edition of the Hygrotech Forum, readers have been e-mailing us requesting that we bring the program to their provinces and regions. Well, to some, we have good news because this year (2014) together with Massmart, we are planning to introduce the program to new provinces, namely North West, Eastern Cape and Gauteng. Your province and region may be next in line, watch this space!

DO EMAIL US ON:

SOIL@HYGROTECH.CO.ZA

FOR ANY ENQUIRIES OR INPUTS

Written by: Liandra von Below

Assistant VUP Technical and Marketing Specialist - Gauteng/Central

The Best way to grow.... Sustainable Agriculture

Akwande Garden Cooperative owns a small piece of land in the rural town of Sokhulumi near Bronkhorstspruit. The Department of Agriculture & Rural Development financially supported the project. This investment is now beginning to pay dividends, thanks to hard work, correct propagation practice, training and technical assistance from Hygrotech.

The National Minister of Agriculture and Rural Development, Min. Gugile Nkwinti, personally attended the official launch of the project. His comment was that "these farmers love what they do; I can see that Petrus (the elected foreman and cooperative member) is passionate about his farm when he speaks." "They make it look so easy, I might become a farmer myself ". Mrs. Nandi Mayathula-Khoza, the MEC for the Gauteng Dept. Agriculture & Rural Development (GDARD) stated: "One day they will call Sokhulumi the ZZ2 of Rural projects".

Minister Gugile Nkwinti

Petrus, one of the shareholders and elected foreman of the cooperative, shared his feelings on the project:

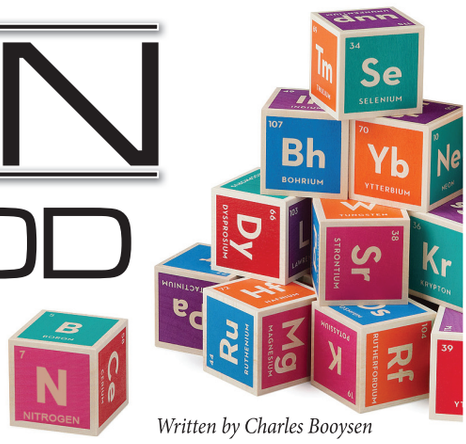
"We believe that in doing the basics right, it allows us to reap the benefits of a successful crop. We make full use of our technical people, and with their knowledge, gained from experience with other farmers, we can be assured that we will always have the best advice when we need it!

The Tomato seedlings were made by a nearby seedling nursery, we planted them out in the nets and open field, and as you can see, the plants in the nets are growing much better than the ones in the open field. This is because we also make use of the correct fertilizers in the nets, while the open field we use only the organic manures that we have always used in the past. We are blessed that Hygrotech has assisted us with their knowledge, we have learnt a lot, and we hope they will assist other cooperatives to reach similar success! "

Since the launch on the 15th November, the farm has been visited by many of the decision makers in the Dept. of Agriculture & Rural Development, whom have all been very impressed by the project and have stated that the future is bright for projects like Akwande. Due to the success here, more help has been promised, with the project due to grow in size and stature.

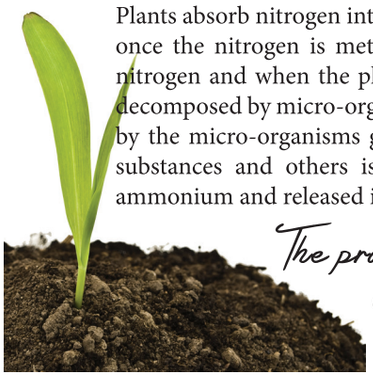
For assistance and more information regarding your own specialised fertilizer mix, please contact your nearest Hygrotech branch.

NITROGEN
NEGATIVE PERIOD EXPLAINED



Written by Charles Booysen
MCF, Director: Operations

Nitrogen Mineralization in Soils



Plants absorb nitrogen into their cells through various reactions, once the nitrogen is metabolized it is then known as organic nitrogen and when the plant dies, the dead organic material is decomposed by micro-organisms. Some of the nitrogen released by the micro-organisms gets stored in the decomposed humic substances and others is once again converted to inorganic ammonium and released into the soil.

The process that converts organic N to ammonium is called mineralization.

Immobilization

Immobilization is the temporary tying up of inorganic Nitrogen in the micro-organisms system that is decomposing the organic matter. Immobilization is not actually a loss of nitrogen. The immobilized Nitrogen taken up by the micro-organisms will eventually be released back into the soil as the decomposition proceeds and the micro-organism population declines.

As inorganic nitrogen is incorporated into the cells of living microorganisms, the total N levels in the soil are reduced. Immobilization can ultimately result in nitrogen deficiencies.

When nitrogen is immobilized in the soil, there may be little nitrogen available for crop growth. As a result, plants can suffer from nitrogen deficiency and develop a yellow coloration. This is the reason why organic materials with a high C:N ratios, such as fresh grass clippings or raw organic material, are usually composted before they are incorporated into the soil, but even composted material can still have a high C:N ratio. See the calculation below.

C:N > 25:1

Inorganic N ⇄ **Immobilization** / **Mineralization** ⇄ **Organic N**

C:N < 25:1

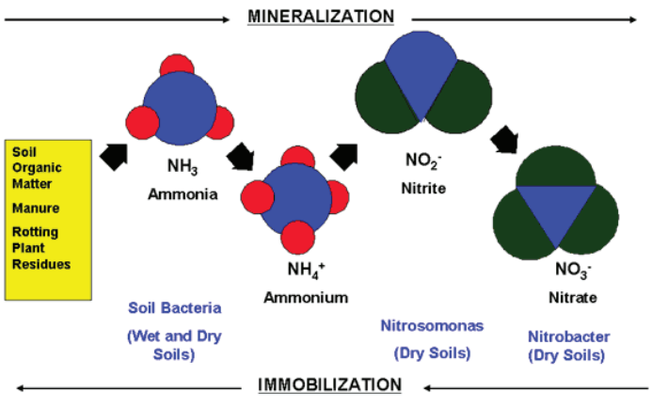
C:N Ratio of Organic Material Affects Rate of Activity

Residue with High C:N Ratio -	Residue with Low C:N Ratio -
Straw, Cornstalks	Alfalfa, Soil Organic Matter
Available nitrogen is tied up	Available nitrogen is released

Mineralization & Immobilization

The processes of mineralization and immobilization are constantly occurring simultaneously. As organic matter decomposes, inorganic nitrogen will be released into the soil. As both plants and microorganisms grow, they utilize the nitrogen in the soil.

Once plants and microorganisms die, they decompose and release inorganic nitrogen to the soil through mineralization. What we need to understand is that when we add organic matter to the soil, Nitrogen will be immobilized and then later be released back into the soil. We need to calculate the amount of nitrogen in the system in order to form a picture of what is happening with the nitrogen.



Conditions Affecting Nitrogen Mineralization

THE AMOUNT OF AMMONIUM THAT IS RELEASED TO THE SOIL THROUGH MINERALIZATION DEPENDS ON SEVERAL FACTORS:

Quantity of Organic Nitrogen:

The amount of organic nitrogen originally present in the organic matter determines the amount of N that can ultimately be mineralized.

Placement of organic matter:

Organic matter added to soils must be worked into the soil and not left on top of the soil. The organic matter must be in contact with the moisture and the micro-organisms.

Temperature:

More humid areas will respond more positive than colder areas or in summer optimal mineralization will occur where as winter mineralization will be low.

Oxygen:

Microorganisms need oxygen in order to release the Nitrogen, but too much oxygen or exposed organic matter will allow the oxygen to react with the carbon forming CO_2 stripping away the organic matter and Nitrogen. Moisture content: Ideally, water should be at field water capacity for maximum mineralization.

Moisture content:

Ideally, water should be at field water capacity for maximum mineralization.

Ratio of carbon to nitrogen (C:N):

The C:N ratio is a term used to describe the relative amount of total carbon in comparison to the amount of total nitrogen present in the soil and/or organic matter.

This ratio is very important in determining the rate of mineralization that should occur for a given type of organic matter.

Since the microorganisms living in the soil need both carbon and nitrogen, net mineralization occurs when C:N ratio is less than 20:1. This means for every twenty parts of carbon, there should be 1 part nitrogen for net mineralization. If you are applying organic amendments to your soil, it is important to become familiar with the C:N ratio to ensure N availability.

Calculations to determine the Nitrogen effect during the negative period.

Calculation Procedures of Carbon Nitrogen Ratio

Example:

A farmer incorporated 2560 kg of fresh organic matter into the soil. It contained 55% carbon with a carbon nitrogen ratio of 20:1. As this material decomposes, will there be a decrease (immobilization) or an increase (release) in soil nitrogen? And by how many kg? Let us calculate the soil nitrogen status.

Fresh organic matter added = 2560 kg
Carbon content of organic matter= 55%
Carbon: nitrogen ratio = 20:1

Step I

Calculate the Nitrogen in the organic matter added to the soil.
2560 kg x 55% =1408 kg carbon in organic matter
1408 kg ÷ 20 (C:N ratio is 20:1) = 70.4 kg

Step II

The amount of C and N required for the microbes to form new tissues: As fresh organic matter is decomposed, the microbes use 75% of the carbon for energy and, the remaining 25% of the carbon is used to form their new tissue.

To form their new tissue, microbes use nitrogen from soil or from the added organic matter.

Microbes require 1 kg of N for every 8 kg of carbon as the C:N ratio of microbes is 8:1.

Carbon content in fresh organic matter is 1408 kg. Of this 25% is used for new tissue.

The amount of carbon used by microbes is 1408 kg carbon x 25% = 352 kg ÷ 8 = 44 kg

Step III

Finally we compare the two nitrogen values. Fresh organic matter contained 70 kg of N, and microbes used 44 kg of N to form new tissue.

THE BALANCE NITROGEN AVAILABLE IS = 70 - 44 = 26 KG

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Written by Habe Roode
Jany Venter
Hennie Piennaar
PJ Fourie

INTRODUCING HAWKER TOMATOES

Informal Market buyers, known to us all as Hawkers started by using mostly processing tomatoes because of their superior taste to the normal fresh market, salad tomato. Personally I always take notice of what Hawkers sell at the various stalls next to the road – they buy and sell on taste and not appearance or shelf life.

The informal street hawker market created the gap for producers to sell directly off the farm to vendors eliminating transport costs.

A big demand for processing tomatoes for hawker use have directed Hygrotech's attention to focus on the ideal tomato variety that can be sold to the informal 'bakkie' market. Trials are currently being done on Hygrotech's trial farm.

The idea was born with myself and Habe Roode walking trials in California last year where we noticed very short determinate tomatoes grown on short poles. I asked Habe the question: Why don't we try this with some of our own determinate tomatoes specifically aimed at the informal market in South Africa?

He just looked at me and said politely: I don't know.... but let's do it!

That's how the idea came about and now Hygrotech is actively concentrating in product development for this market segment.

Actual picture taken in California. (Notice the baling twine to lift the plants from the floor)

We identified varieties that will fit this market segment perfectly and planted them out at Dewagensdrift trial farm. I have to mention that Dewagensdrift is a very difficult site to grow tomatoes and for the last 2 years we have never managed to properly grow tomatoes that has not been trellised up. Every year high disease pressure knocks them out.

This year we trellised on short poles and as you know, it has been a very difficult summer with lots of rain. We have to mention that all tomatoes grown were very healthy considering the weather.

By trellising the tomatoes we have now hit more than one target at the same time.

No plants on the ground (Less disease)
Higher yields from longer picking period.
Better uniformity
Ease of harvest with far less waste than planted without trellising.

HYGROTECH'S CONCLUSIONS ON TRELLISING HAWKER TOMATOES

Our profile for a hawker market tomato has been refined to the following:

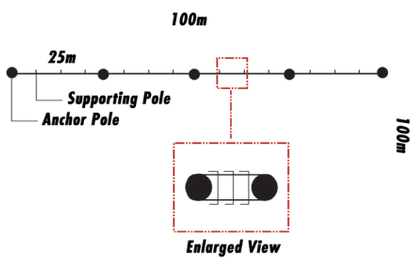
Better plant structure that would work well with trellising.
The fruit quality is excellent with bigger size and a firmer more attractive fruit.
New state of the art improved disease resistance packages

This should supply better quality tomatoes, higher marketable yield and easier harvesting thereby starting earlier. Fruit pickers can also get into the fields easier without stepping on produce.

What will be needed for trellising short determinate tomatoes?

Excellent quality fruit when trellised

See schematic representation of where anchor poles and supporting poles will be placed. Anchor poles (150-175mm) are placed at the very ends and every 25m within a row. The anchor poles at the side of the row are fastened with bailing twine and staked with iron poles to the ground. Three supporting poles (50-75mm) are placed between every anchor pole. 1.6mm wire or baling twine is used as the general trellising and hooks are made with the same wire in order to hold the plants upright.



COST VERSUS RETURNS

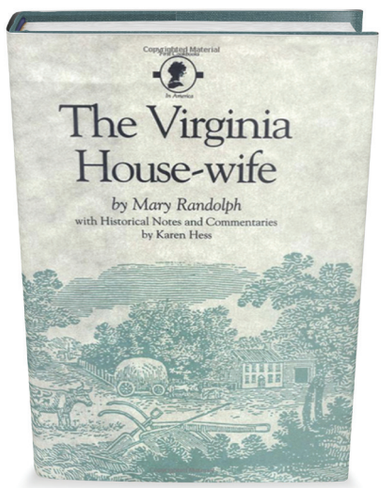
Yes, we all agree the cost of trellising is expensive but the yields, ease of spraying and length of the picking season will be extended, making your returns on you investments higher. Plant out a small trial and see for yourself the benefits of trellising your Hawker tomatoes.

Updated Choices For Hawker / Processing Tomatoes For Short Pole Growing Practice

Variety	Fruit Size	Disease Resistance	Fruit Shape
HTX 14	75 – 90g	VF2N	Square round
HTX 1 4 TURBO	80 – 95g	VF2NP	Square round
HTX 77*	85-95g	VF2NP	Square round
QWANTO	90-110g	VFN, TYLC, BW	Saladette
MAXIMO 1*	110-130g	V2F2N, TSWV, P, Bs	Square round
MAXIMO 2*	110-130g	VF2N, TSWV, TYLC	Square round

BEEFY VEGETABLE SOUP

It is getting cooler every morning, the sun sets a little earlier every day and we need more hot comfort foods instead of light and airy salads!



The original for this beef and vegetable soup recipe was published in the 1824 cookbook, The Virginia House-wife. I think this makes it a tried and tested recipe!

Ingredients:

240 ml dry large lima beans
15 ml vegetable oil
1kg bone-in beef shank cross cuts
2 medium onions, chopped
3 cloves of garlic, finely chopped
1ml ground cloves
4 large carrots, peeled and cut into 1cm slices
½ small head green cabbage, cut into 1cm pieces
2 stalks of celery, chopped
1L of water
1 beef stock cube
10 ml salt
2ml thyme
2ml coarsely ground black pepper
500g potatoes, peeled and cut into cubes
1 can diced tomatoes
240ml frozen whole kernel corn
240 ml frozen peas
60ml fresh parsley, chopped

Directions:

Soak beans overnight, drain & rinse.
Brown beef in oil in saucepot.
Add onions and cook till tender.
Add garlic & cloves and cook for 30 seconds.
Add carrots, cabbage, celery, water, stock, salt, thyme & pepper and heat to boiling.
Cover and simmer until beef is tender (about 1 hour).
In saucepan cook beans in water until tender (about 30 minutes) and drain.
Add potatoes and beans to saucepot, heat to boiling, reduce heat and simmer for 5 minutes.
Stir in tomatoes and simmer till potatoes are tender.
Transfer beef to cutting board and cut into cubes, discard bones and gristle.
Return beef to saucepot, add corn and peas.
Heat through.
Ladle into bowls and sprinkle with parsley to serve.

Servings:

Serves 6

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