

Inta-Ag Mag

SEPTEMBER 2021

A farmers thought in 2021

*What a great morning...
Went to bed an environmental criminal and
woke up an essential service to the country.*

**SATURDAY OPENING
FROM 18TH SEPT**

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Inta-Ag 

**UNDERSTANDING
POTATOES**

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Hit Potato weeds hard with BOXER GOLD® Herbicide

IMPORTANCE OF WEED CONTROL IN POTATOES

Each 10% increase of weed biomass in potatoes can incur a 12% decrease in yield (Nelson and Thoreson 1981). The critical period for weed control in potatoes is 4 to 6 weeks after planting. After this time, the crop helps to shade out competing weeds.

BOXER GOLD® HERBICIDE

BOXER GOLD® is a soil applied, pre-emergent herbicide containing 800 g/litre prosulfocarb plus 120 g/litre S-metolachlor in an emulsifiable concentrate (EC) formulation. It controls a wide range of grass and broadleaf weeds, including annual ryegrass and nightshade, which are difficult to control effectively with existing herbicides.

MODE OF ACTION

BOXER GOLD® herbicide is absorbed by the roots and shoots of germinating weeds, causing inhibition of growth in the meristematic region. Foliar uptake is possible but has a lesser effect.

Best results will be achieved when BOXER GOLD® herbicide is applied before the germination of weeds. If any weeds are present at the time of application the addition of a knockdown herbicide is required (prior to crop emergence).

BEST USE ADVICE FOR BOXER GOLD® HERBICIDE

- Apply BOXER GOLD® herbicide after planting and before crop emergence.
- Apply to moist soil and when at least 5 mm of rainfall (or irrigation) is forecast within the next 7 days.
- Avoid application if very heavy rainfall is expected within the next 7 days (5 mm to 30 mm of rainfall or irrigation is optimal for efficacy and crop safety).

- Use the 5 litres/ha label rate of BOXER GOLD® herbicide for the best residual control and the broadest spectrum of weeds.
- Apply in mixture with metribuzin (or another approved pre-emergent herbicide) to control additional weeds if required.
- If any weeds are present at the time of application, add glyphosate or PREEGLONE® herbicide to BOXER GOLD® herbicide (prior to crop emergence).

APPLICATION AND NOZZLE ADVICE

Apply a maximum of one application of BOXER GOLD® herbicide per crop, in a minimum of 200 litres of water/ha to achieve good soil coverage, using coarse spray droplets to reduce the risk of spray drift. Syngenta DEFY® 3D nozzles are recommended for BOXER GOLD® herbicide operating at 2 to 3 bar pressure. DEFY® 3D nozzles should be fitted alternating forwards and backwards facing across the boom to maximise coverage on any soil clods.

FREE NOZZLE OFFER

Purchases of BOXER GOLD® herbicide qualify towards the Syngenta free nozzle offer, including DEFY 3D nozzles. Contact Inta-Ag for more details.

PACK SIZE

BOXER GOLD® herbicide comes in a 20 litre drum, which can be recycled through Agrecovery.

For more information or to order BOXER GOLD® herbicide - call Inta-Ag now on 09 237 0430.

Understanding Potatoes!



Potatoes are living breathing entities and when you receive your potato seed it already has a history profile with age and attributes different from other seed lines.

At this point we can't change any off these attributes as it's too late. But it is possible and we will discuss this in later instalments. So for now we have to deal with what we get!

It arrives and it's a little roughed up with a few sprouts starting, so how do I get a handle on what's the history of my new born seed? First port of call is the seed supplier and asking them the following:

- When was it planted - date?
- When was it desiccated - date?
- When was it harvested - date?
- Was it cool stored or just ambient stored?

Once you have this information you can begin to get a picture about the life of your new born seed.

Seed in the South Island is planted between 1st October and the 1st January.

So to keep things simple keep in mind when it was planted? October seed is old, November seed is midlife and December seed is young.

Next when was it desiccated? This tells you how long it grew for, 70, 80, 90, 100 days. Again, this is painting a picture, did it grow

in hot dry conditions and take 100 days to get to seed size, or did it have moisture and good conditions and only take 80 days. This information is again telling us its age and vigour.

Then we come to the harvest date, did the seed sit in the ground for 1 month or 4 months? Were these months hot and dry or cool and wet, indicating again more aging or less and giving us more information about possible disease issues?

Lastly, did my new born seed go into cool store or was it just in the shed? Cool store less aging, ambient store more ageing.

Potatoes are a complex crop so the more information we have the better our chances are of optimising the yield and quality potential of our seed.

So my new born seed was planted on the 1st October and emerges on the 20th October. This date is when my new born seed clock starts, tick tock tick tock. It takes 90 days to grow to maturity before being desiccated, so a pretty normal growing period to 20th January indicating normal ageing.

Then it sits for a month to cure skins and is dug on 20th February and placed in a cool store. Again, this is all pointing to a good age/vigour potential. At this point the seed has aged 150 days approximately since emerging on the 20th October.

For the average variety, sprout dormancy breaks at 150 Days so if you now plant this seed in March, it will have 1-2 Sprouts low tuber of numbers which should grow for 150 days. This means a great opportunity to maximise yield and quality.

This however is not the normal life of a seed piece planted in NZ. This is because there are so many more variables in play, weather! Cool store space, Onions in stock? Shipping delays? Etc.

The crop above will be easy to manage with less inputs required but will still reach a good potential.

If we look at the other extreme my seed was planted 1st October emerges 20th October it grows for 100 Days before its desiccated and then sits in the ground 4 months before being harvested and placed in an ambient store. So at this point our seed is approx. 210 days old and by the time we receive it could be 240 days (8 months).

So most likely I will plant my seed it will have an extra sprout for each month after 5 months plus one so 5-6 sprouts and will likely grow for 3-4months greatly reducing my potential yield and to get this potential more management and more inputs.

Buy the youngest seed so you have control of your crops potential yield and when you get to plant it!

Shane Smith – CEO
Inta-Ag Ltd



Pre-Emergent Herbicides see them at work!



SEE AN INTA-AG TEAM MEMBER FOR YOUR PRE-EMERGENT ADVICE



Tried and Trusted Activator Adjuvant

Effective delivery of crop protection products contributes to their cost effectiveness and performance. Adjuvants are essential in improving this delivery process by helping get the crop protection product exactly where it is needed. Arma™, a multi-purpose adjuvant, extensively field tested on a worldwide scale is designed to strengthen the performance of insecticides, fungicides, plant growth regulators, post-emergent herbicides and foliar fertilisers in a wide range of crops. Arma is ideal for use on crop types such as cereals, arable crops, pasture and vegetable crops.

Containing a specific blend of a modified amine polymer, a sugar based surfactant and also an organic buffering agent, Arma delivers excellent performance with both contact and systemic crop protection products.

Globally tested and proven, Arma;

1. Enhances the effectiveness of crop protection products under adverse conditions, for instance when used on resistant weeds species, in severe climatic conditions or with late treatments.
2. Increases the penetration of systemic products resulting in faster uptake.
3. Improves rain fastness due to this faster uptake through the leaf wax and cuticle layers.
4. Assists with droplet spread on and adhesion to the leaves allowing for more consistent results with crop protection products, which are active at the leaf surface.
5. Reduces spray water pH, preventing agrichemical breakdown at high pH.

Arma product information

Rates of use: 0.1% - 0.15% (i.e., 100 - 150 mL/100L) of the final spray volume

Mixing: Add to the spray tank first before adding crop protection products

Pack size: 3 litre

For more information on how Arma adjuvant can assist your crop protection program talk to your Inta-Ag agronomist.

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Why soil measurement is a key challenge for carbon farming

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Establishing a trusted measurement method is going to be critical if carbon markets are to take off for arable farmers, enabling them to earn money in return for capturing and storing the greenhouse gas in soil.

Any company or individual paying for carbon credits will want to be assured that the agreed level of carbon has been stored permanently, and probably that sequestration wouldn't have happened anyway without the credit being issued.

Within that seemingly simple statement lies the crux of why carbon credit markets for arable farmers are currently somewhat controversial. Measurement is challenging, how do you guarantee permanence, and what counts as a new activity?

Let's start with measurement. Tradeable soil carbon credits are usually generated through either using models to predict the amount of carbon sequestered, or physically measuring differences over time from an initial baseline, explains Sam Duncan, founder of Australian startup FarmLab, which provides data support for soil carbon projects.

Models such as Australia's Full Carbon Accounting Model (FullCAM) and the USA COMET-Farm tool use recent and historic farm management practices,

such as cultivation methods, fertiliser use and cropping history, with the help of underlying research and soil, weather and remote sensing data, to calculate the likely change in soil carbon.

"They are a low-cost way for farmers to commit to changes in practice and be rewarded for it, with only a small amount of

verification required that the farmer is carrying out agreed changes."

That makes them easy to use and scale, and means farmers can enter into carbon projects quickly without having to provide much direct proof, Mr Duncan says.

In the US, companies such as Nori and CIBO are selling carbon credits based on models quantifying reduction in emissions from using practices such as cover cropping and no-till.

"The downside is if there is a flaw in the model, the entire market and credits under the model might be at risk, and we're still in the early phases and lack many of the large-scale training datasets for these models."

He adds that they also lack flexibility. If a new technology comes along, for example a seed inoculant that will help sequester carbon by encouraging fungi to grow in the soil, it won't be accounted for in the model.

"If that increases carbon more than the model says, you won't be rewarded for it because it won't be factored into the process, and you won't have done the baselining to begin with," Mr Duncan says.

With the interest in soil carbon there will likely be a lot of innovation in technologies to increase soil carbon in the next five to 10 years.

SAMPLING COST

The challenge is the upfront cost of sampling. Emissions Reduction Fund carbon projects in Australia must be registered with the Clean Energy Regulator, which typically costs around A\$10,000 (£5,430). On top there are planning costs for where and when to take samples and labour costs of sampling, as well as laboratory analysis.

"Depending on the number of cores needed to be taken, which will depend on soil variability, those costs can be up to A\$20,000 (£10,860), with about half of that the labour costs, for a 200ha project," says Mr Duncan.

After baseline sampling at the start of the project, sampling then needs to be repeated anywhere between two and five years later to check for differences.

The slow change in soil carbon is another challenge for measurement, notes David Powlson, a soil scientist at Rothamsted Research. "If you change

That's where physical measurement has advantages – creating a baseline, allowing flexibility for changes in practices and generating a high degree of trust in the credits.

In Australia, protocols state samples should be taken at a minimum depth of 30cm. Most farmers are recommended to sample two layers – 0 to 30cm and 30cm to 1m.

FIVE NEW MEASUREMENT TOOLS IN DEVELOPMENT

1. US startup Yard Stick is developing a probe attached to a handheld drill to calculate the amount of carbon in an area of soil using a combination of spectral analysis, resistance sensors, machine learning and data.
2. German company Stenon is using similar technology in its mobile FarmLab product, which can measure soil organic carbon as well as nutrients, pH and soil temperature, using a handheld device in the field in real time.
3. Canadian firm LaserAg is using laser-induced breakdown spectroscopy (LIBS) technology to analyse 15 soils samples in less than a minute in the laboratory. It comes with sampling support software to help determine sampling patterns and geopositioning of each sample.
4. Cloud Agronomics from the US is using plane-based hyperspectral imagery to measure carbon at a field level, although likely to only 30cm depth.
5. Regrow uses satellite imaging and modelling approaches to understanding how different farming practices influence soils, microbes, and greenhouse gas emissions to support carbon and ecosystem market development

your management practice, you won't measure a change to soil carbon in a year – it might need five years or longer.

"Scientifically measuring change over 10 years would be sensible, but for policy and payments that might not be possible, so I don't think it will be realistic to use traditional analysis of soil carbon."

Other tests, such as soil microbial biomass, which is the quantity of carbon held in cells of living organisms in the soil, respond quicker to changes in management practices so could be used as indicators of change, he suggests.

Ultimately, both suggest a hybrid system of modelling backed up by measurement might provide the best compromise between economics and carbon credit veracity.

"The feeding of a model using actual measurements could reduce future sampling requirements, while allowing farmers to generate credits in the short term without the limitations of a model," Mr Duncan suggests.

That approach seems to be closer to what some other players in the market are developing. Ecosystems Services Market Consortium (ESMC), which includes Cargill and Nestle among its members, is developing a soil carbon marketplace where soil samples will be taken at the outset and again every five years to calibrate its models.

Unlike Nori and CIBO, credits in this scheme, and others offered by Indigo and Truterra, are likely to be verified by a third party with a known methodology for soil carbon verification, such as Gold Standard, Verra or Climate Action Reserve.

ADDITIONALITY

If agreeing how to measure carbon is proving challenging, additionality is perhaps a whole new level of controversy. That's the principle that buyers only pay for activities that would not happen without funding.

But what counts as new? Some schemes require farmers show the practice is new to their farm, others that it is new based on regional averages, so a farmer can earn credits even if they have been using a practice for many years, if it is not widely used in their region.

And other verifiers have developed even more complex criteria based on both previous use on farm and in the locality.

is interpreted, it makes it difficult for early adopters of cover cropping and other qualifying practices to qualify for carbon credit schemes, unless changes can be grandfathered in.

While that might be correct on the basis that these changes were made for reasons other than carbon markets, it may well leave a

slightly sour taste for some early adopters, as well as potentially disincentivising those growers from sharing best practices to help encourage others adopt.

Permanence of sequestration is another potential issue. What stops a grower from ploughing up land where a credit has been received and releasing the stored carbon?

In most cases current contracts are for 10 years, and include clauses around what can and can't be done in future, so reading the small print will be important, but the uncertainty around all these issues shows just how far the market still has to develop.

"It is the Wild West currently," Mr Duncan admits. "There is more demand than supply. If you are a farmer generating soil carbon credits, you will be just as likely to sell them at the same price if you have used a model or measurement.

He concludes that as the industry matures and there is more competition for the availability of carbon credits, it will provide buyers more choice and likely to pay more for credits generated using a method they trust. ♦

