Life after linuron

> *“There’s no ‘one-size-fits-all’ herbicide strategy”*

Roots Potato weed control

Potato growers received an unwelcome, if not entirely unexpected, Valentine’s day present from CRD in Feb — the issue of a withdrawal notice for linuron. *CPM* investigates the alternatives.

By Lucy de la Pasture

The writing has been on the wall for linuron for a while, but for many growers its withdrawal means a step into the unknown. Linuron has been a mainstay of potato production for the past 25 years, with 65% of ware crops receiving treatment according to the 2014 Pesticide Usage Survey.

So while some growers may be buying linuron forward and stocking up before it disappears from the shelves on 3 June, the most savvy are also experimenting with mixes to find the best alternative herbicide programmes on their soil types.

It’s a sensible approach — no one wants to be left wondering what to do on 3 Jun 2018 when linuron can be used no more, says agronomist Dave Valentine of Chemical and Agricultural Services (CAS), part of Hutchinsons. Based in Lancs, he’s been looking at different mixtures and compatibilities since the approval of metobromuron in 2015 (sold as Inigo by CAS-Hutchinsons but more widely as Praxim).

No buffer zone

“Inigo benefits from having no requirement for a buffer zone and no variety restrictions, though it does need a residual tank-mix partner which could negate this advantage. But there’s always the option of applying it alone to the headlands where buffer zone requirements of partner products make it impossible to apply as a mixture,” he explains.

For habitual linuron users, the cost of herbicide treatments is going to increase in their programmes, but Dave Valentine points out that to get the best out of Inigo, don’t be tempted to claw back on cost by cutting the rate.

On light soils, he’s been getting good results using 2.5 l/ha Inigo with Defy (prosulfocarb) or with Gamit (clomazone) plus Stomp (pendimethalin) mixes where wild oats, cleavers or polygonums are present.

“On heavier land, the rate of Inigo needs to be kept up to 3 l/ha and the addition of 0.5kg/ha Shotput (metribuzin) makes it more robust. It’s a pretty soluble combination so also works well under reasonably dry conditions,” he says.

Making sure an adequate rate of metobromuron is applied is something potato specialist, Reuben Morris is in full agreement with after three years of testing at the Frontier Holbeach 3D demo site.

Dave Valentine has been investigating herbicide programmes using alternatives to linuron for the past two seasons.

“When Praxim was first introduced in our trials, there were a few issues around ironing out the rates but we found that when the rates were kept up (2.5-3 l/ha), weed control was most effective. The important thing in a Praxim tank-mix is to keep each herbicide partner at an effective rate,” he comments.

“Used at 3 l/ha, there’s a big difference in the weed spectrum covered by Praxim, which has less gaps. Tank-mix partners chosen need to cover any holes in the ▸

Herbicide treatments and costs applied at Elveden

Trt No.	Water Volume	Herbicide Application	Cost £/ha
1	300 l/ha	STANDARD **Afalon** (linuron 500g/l) 1.35l + **Stomp Aqua** (pendimethalin 455g/l) 2.2 l/ha + **Shotput** (metribuzin 70%) 200g/ha	£34
2	200 l/ha	**Praxim** (metabromuron 50g/l) 3l + **Shotput** (metribuzin 70%) 300g/ha	£63
3	200 l/ha	**Praxim** (metabromuron 500g/l) 3l + **Stomp Aqua** (pendimethalin 455g/l) 2.2 l/ha	£73
4	200 l/ha	**Praxim** (metabromuron 500g/l) 3l/ha + **Defy** (prosulfocarb800g/l) 4l/ha	£82
5	200 l/ha	**Praxim** (metabromuron 500g/l) 3 l/ha + **Artist** (metribuzin 17.5% + flufenacet 24%) 1 kg/ha	£83
6	200 l/ha	**Praxim** (metabromuron 500g/l) 2 l/ha + **Stomp Aqua** (pendimethalin 455g/l) 2.2 l/ha + **Shotput** (metribuzin 70%) 200 g/ha	£59
7	200 l/ha	**Praxim** (metabromuron 500g/l) 2 l/ha + **Stomp Aqua** (pendimethalin 455g/l) 2.2 l/ha + **Gamit 36SC** (clomazone 360 g/l) 125ml/ha	£63
8	200 l/ha	**Praxim** (metabromuron 500g/l) 2 l/ha + **Defy** (prosulfocarb800g/l) 3l/ha + Shotput (metribuzin 70%) 200 g/ha	£61
9	200 l/ha	**Defy** (prosulfocarb800g/l) 4l/ha	£26
10	200 l/ha	**Praxim** (metabromuron 500g/l) 4l/ha	£74
11	200 l/ha	**Stomp Aqua** (pendimethalin 455g/l) 2.9 l/ha	£23
12	200 l/ha	**Shotput** (metribuzin 70%) 500g/ha	£12

Treatments 5 and 8 were the stand-out mixtures at the Spot Farm demonstration.

Source: AHDB Potatoes.

Reuben Morris advises growers to use an adequate rate (2.5–3 l/ha) of Praxim (metobromuron).

▸ Praxim spectrum if you adjust its rate down. With metribuzin as a partner, a safer mix to use is 3 l/ha Praxim plus 0.25kg/ha Shotput on more sensitive varieties and lighter soils, though 2.5 l/ha plus 0.5kg/ha will provide robust control in most situations," he advises.

There are no variety safety issues to consider when using Defy (prosulfocarb) as a partner to Praxim, but tank-mixing can be problematic if rates are too high, he comments.

"With prosulfocarb, it's best to keep rates as high as possible without compatibility becoming an issue, otherwise weed control drops off. That means using 2.5-3 l/ha Praxim with 3 l/ha prosulfocarb, which is a very safe mix and can be used right up until near emergence," adds Reuben Morris.

Paying much closer attention to the weed spectrum present in fields is going to be the key to getting successful weed control, believes independent potato agronomist Graham Tomalin, VCS Agronomy.

Three-way mixes are likely to be the way forward, believes Graham Tomalin.

"There's no 'one-size-fits-all' herbicide strategy for potato crops and three-way mixes are most likely to be the way forward to provide a broad spectrum of control," he comments.

Herbicide performance

Graham Tomalin has been leading the herbicide work at AHDB Potatoes Spot Farm East at Elveden, where the performance of combinations and individual active ingredients has been compared to standard applications containing the three standard herbicides — linuron, metribuzin and pendimethalin — on a medium sand soil type.

Part of the demonstration looked at crop safety, highlighting the phytotoxic effects metribuzin and clomazone can produce.

"If you increase rates of these actives this is something you need to be aware of, particularly on light soils," he notes.

The weed screen that took place at Elveden last season provided some useful insight into the activity of different mixtures on the weeds present — groundsel, small nettle, cleavers, flixweed, annual meadowgrass (AMG) and cranesbill — though disappointed in that weeds that had been expected, including fat hen, black bindweed, knotgrass and mayweed, failed to put in an appearance.

"The demonstration has been modified this year and hopefully the host field will provide a weed spectrum to fill in the gaps where no information was gleaned last year," he says.

Providing the best overall control in the demonstration, two tank-mixes stood out. One contained 3 l/ha Praxim and 1kg/ha Artist (metribuzin+ flufenacet) and the other a three-way mix of 2 l/ha Praxim, 3 l/ha Defy and 200g/ha Shotput.

"These programmes cost more than the standard treatment, 1.35 l/ha Afalon (linuron) in combination with 2.2 l/ha Stomp Aqua (pendimethalin) and 200g/ha Shotput, that was applied at the site," he comments.

Agrii agronomist Matt Alford confesses to not having been a big linuron user, having mostly used Artist as the foundation of his weed control programmes in recent years. So it's very much business as usual for him and he's not overly concerned about the loss.

"There's definitely life after linuron. It's going to cost a little bit more but it's possible to get as good or better weed control — something you can't afford to get wrong in potatoes," he says.

With a significant number of early potatoes under his wing in the south-west of England, he has crops on a range of soil types, from a herbicide-problematic sand on the North Devon coast to sandy-clay loam in Somerset.

For the past two seasons, he's moved towards basing his programmes around Praxim at 2.5 l/ha on the majority of his spuds, increasing to 3 l/ha on occasions, and adding other actives according to the weeds present and variety being grown.

"We can't afford to cause a check in growth on early crops so the crop safety aspect of Praxim is a plus. Last season I used Artist as a bolt-on to Praxim and got good results, and it's especially useful where AMG is a problem. I also used Praxim in combination with clomazone and intend to try further tank-mixes this spring, including Praxim with Defy and also with Artist in ▸

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Matt Alford says life after linuron is going to cost a little bit more but it's possible to get as good or better weed control.

▸ combination with clomazone or linuron.

The future for diquat is widely expected to follow the same course as linuron, though a definitive statement has yet to be made on its future. With nearly every hectare of potatoes receiving a diquat treatment at one or other end of the season, its loss would be a major blow. There are alternatives in Gozai (pyraflufen-ethyl) and Shark (carfentrazone-ethyl) for early season weed control but both products have gaps in their weed spectrum, says Matt Alford.

"We have to be careful with early lifting crops and don't want to hit the crop with diquat and set it back. We generally try and get it on before the ridges crack but spend our money on a good residual stack, as we always get enough moisture to keep tickling the residual activity up in early season.

"I've used Shark early and it has worked well but I tried Gozai last season to get some experience with it and thought it gives something over Shark, being stronger on difficult weeds like cleavers, black nightshade, field bindweed and knotgrass."

Dave Valentine has also been replacing some of his diquat usage with Gozai or Shark for pepping up contact activity on emerged weeds. He had good results on volunteer oilseed rape by adding 0.3 l/ha Gozai to his residual stack of Inigo and Sencorex (metribuzin).

"If a tidy-up is necessary just before plants emerge then 0.3-0.4 l/ha Gozai plus methylated rapeseed oil is in a very similar bracket to diquat in terms of both price and performance," he adds.

Given the old adage that 50% of good weed control is in the application, Matt Alford reminds that this is an area where improvements can often be made.

"Leave the ridges a week to 10 days to settle before applying a herbicide. I prefer Defy nozzles, facing alternately forward and back, to get good coverage over the ridges. They're a difficult target with steep sides and all our tests with water sensitive paper have shown the angled nozzles to be head and shoulders above the rest," he comments.

"Setting up the sprayer is important, with the boom height set at 50-60cm above the ridge and a forward speed of 10km/h. I tend to recommend a water volume of 250-300 l/ha, depending on the label, and it's important to remember that if clomazone is applied in the mix, the spray quality must be coarse."

Graham Tomalin adds that the worst conditions to watch out for when applying herbicides is when it's windy across the ridges.

"This will give uneven deposition on either side of the ridge which will result in poor weed control, so be careful," he warns.

"The addition of a drift retardant, such as Backrow, takes out the fines and by evening up the droplet size, coverage over the ridge is better. When conditions are a bit dicey, this can help get the best out of the herbicide," adds Matt Alford.

Of more concern to all agronomists than the herbicide losses at the early timing is the gap that would be left at the desiccation timing if diquat becomes another casualty of the EU's pesticide regulations.

"It would be a steep learning curve with just Spotlight (carfentrazone-ethyl) and Gozai available and neither capable of quickly burning down the foliage as diquat does. That means crops will likely need to be flailed to remove the leaves before desiccation. I'm planning on investigating the alternatives to this timing further this season," says Dave Valentine. ■

New Amistar approval adds alternaria protection

The new addition to the Amistar (azoxystrobin) label means foliar treatments targeted specifically at stopping infections of alternaria are now available, giving growers and agronomists a season long programme to help prevent pathogen strains from June through to harvest, advises Douglas Dyas, Syngenta potato field technical manager.

"Alternaria has been an increasing problem in some recent seasons. The increased area of varieties that are more susceptible to infection, combined with prolonged periods of stressful weather conditions, has led to serious outbreaks in some seasons."

He advocates that alternaria must be tackled preventatively, in conjunction with the late blight fungicide programme.

"Growers should look to start alternaria control as soon as conditions are conducive to infection, typically from the end of June, but remaining aware of risk factors for any individual crop."

He recommends using up to three applications of Amistar, aimed at protecting against alternaria, in conjunction with Amphore Plus, utilising its combination of a robust application rate of difenoconazole, to give effective prevention of *A. alternata* and *A. solani*, along with its built-in full rate of mandipropamid (Revus) for blight control.

"This approach should be sufficient to offer protection for crops throughout the season. Growers will have to add a blight fungicide with their Amistar treatments depending on previous treatments and within CAA and FRAC guidelines."

Alternaria control has been added to the Amistar label for 2017.

He highlights that best results will be achieved where growers use fungicide protection in an integrated crop management (ICM) programme, including variety selection and aiming to avoid high risk stress factors, such as soil moisture or nutrient stress.

A further change to the Amistar approval in potatoes has seen the removal of the overall treatment of seedbeds pre-planting at 6 l/ha. However the 3 l/ha in-furrow application remains unchanged for black dot and rhizoctonia.

Growers with stocks of old label Amistar can still use it to make the 6 l/ha overall application at planting, with a use up of old label material by the end of August 2018. Old label Amistar can also be used for the new foliar alternaria treatment, but a copy of the authorisation letter must be downloaded from the CRD website before use *(www.pesticides.gov.uk)*.