River Waveney Catchment Partnership

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Issue 2

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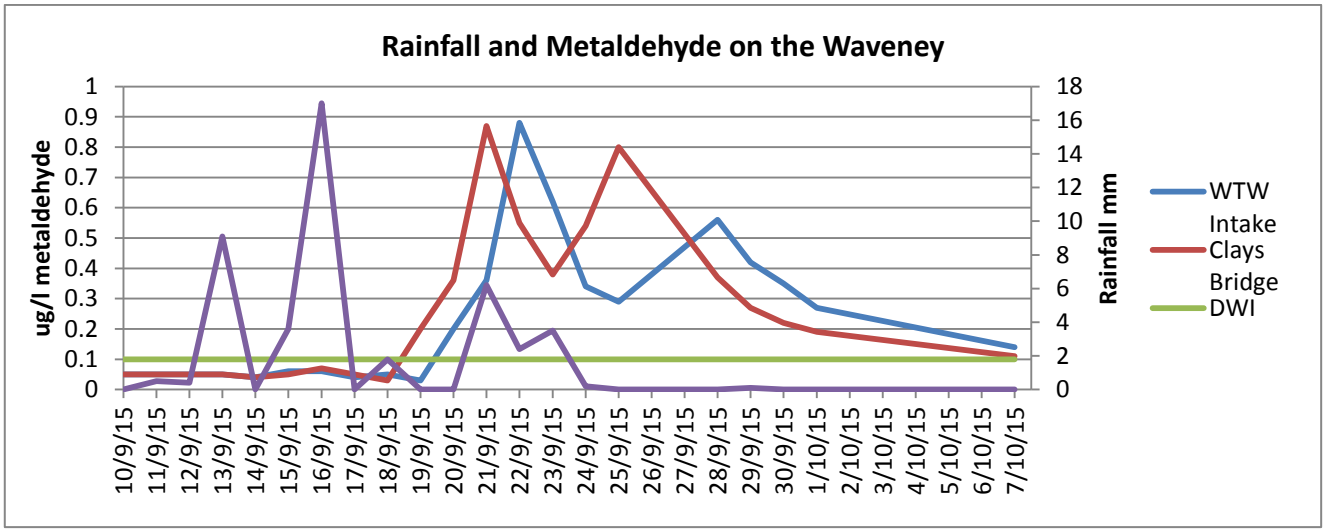
Welcome to the second edition of the **River Waveney Catchment Partnership** newsletter. As the new cropping year progresses and many of next years crops are drilled and already emerged it's time to think about how you look after them and the soils that sustain them. Remember - what you do may have an effect on the River Waveney so please apply products carefully and choose methods that keep them, and your soil in the field and not on the roads or in the ditches.

Metaldehyde – high levels in the Waveney

For Essex & Suffolk Water, our abstractions from the River Waveney usually make up 60% of the water that we treat at our local treatment works and supply to our customers. The remainder is groundwater from boreholes. As metaldehyde is hard to completely remove from water, we mix or 'blend' river and borehole water (which contains no metaldehyde) to ensure that the water leaving the treatment works complies with the legal limit of 0.1µg/l. From the 22nd September until the 2nd October metaldehyde concentrations in the river were too high to blend so we had to replace the river abstractions with water from an emergency borehole and redirect water into the area from another treatment works.

Blending water and/or moving supplies between treatment works is part of the routine of supplying drinking water. Choosing not to take river water due to its poor quality is known as abstraction management. Making up this shortfall with water from other sources is expensive and supplies from the emergency borehole are tightly controlled by its abstraction licence. Monitoring metaldehyde concentrations in the river upstream of the abstraction point allows us to identify peaks early, so we are ready to either alter the blend and/or prepare to bring other sources of supply on-stream.

The graph below shows that between 13th and 16th September we had 26mm of rain (purple line) and the levels of metaldehyde in the river at both the bridge at Clays printing works (red line) and at our abstraction point (blue line) remained below the maximum allowed by the Drinking Water Inspectorate (the green line) .



Five days later the levels at Clays increased by 900% and one day later this water had reached our abstraction point near Geldeston. This highlights the link between rainfall events and metaldehyde and other pesticides entering watercourses, albeit with some significant time lags, especially early in the season.

Remember – the limit of 0.1µg/l applies to each pesticide. It is the same as 1 grain of wheat in 370 tonnes! As we move into autumn and you begin to use other pesticides such as Propyzamide and Carbetamide, please take care to minimise the risks to watercourses:

- Don't leave spreading equipment outside in the rain where run-off from it can enter farm drains
- Take extra care near headlands, especially if buffer strips have been reduced or removed this season
- For slug control consider using non-metaldehyde pellets (at least on headlands) or metaldehyde pellets with less active ingredient
- Don't apply if heavy rain is forecast and don't dig trenches from wet spots to ditches if you have sprayed recently

For information on Metaldehyde in the Waveney - contact Ian Skinner on 07919 496949 or ian.skinner@nwl.co.uk

Riverside tree planting

There is increasing evidence of the role trees and woods on farms play in helping us meet water quality standards. Trees and woodland do this by intercepting pollution pathways (e.g. spray drift or overland runoff, such as soil erosion with its associated nutrient loss), increasing water infiltration rates to reduce and slow runoff as well as providing shelter for livestock, pasture or arable crops.

The carefully planned and evidence-led planting of appropriate native tree species in the right place on watercourses also brings huge benefits to fish populations and the wider ecological health of our rivers. Trees can help stabilise river banks, the dappled shade cast by riverside trees lowers water temperature helping to improve dissolved oxygen levels, as well as reducing the growth of often dominant river plants and therefore the need for river maintenance work. The underwater root systems of riverside trees provide critical habitat for fish and invertebrates, trees provide nesting sites for birds and cover and food for a wide variety of mammals, birds and invertebrates.

Suitable species include Alder, Crack willow, Grey willow, Black poplar, Hawthorn, Field maple, Blackthorn and Hazel.

We are advocating the planting of scattered trees along our watercourses, not dense tree coverage. The photo shows a good example of a well designed planting scheme taken on the River Wensum in Norfolk.

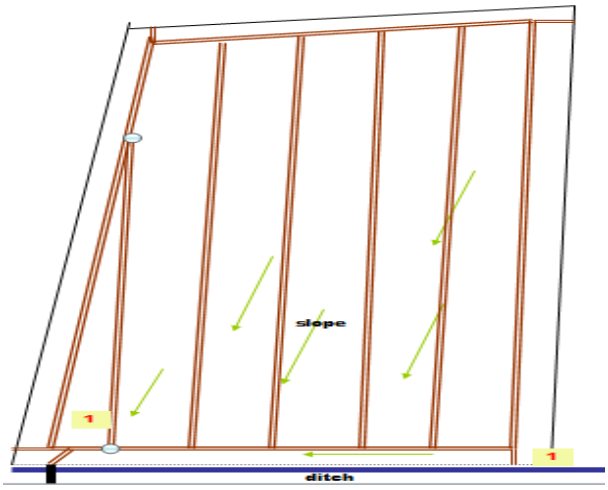
If you would like more information or are interested in planting trees along watercourses on your land please contact Will Akast, Catchment Delivery Manager - Suffolk, Environment Agency will.akast@environment-agency.gov.uk

Ways to reduce Propyzamide (Kerb), Carbetamide (Crawler) & late Metaldehyde reaching the river.

Standard advice is not to spray when rain or drain flow is imminent. However, Propyzamide needs low soil temperatures =<10^{o} C - which generally do not occur until soils are pretty well back to field capacity, drains starting to run, and into November when the spraying windows between showers are short. So, other measures are needed:

Surface run off – the means by which perhaps 50% + of pesticides get into rivers? We don't know exactly, but it is certainly very significant and when spraying late in the year it is a very major source. The expression 'surface run off' conjures up images of sheets of water running down steep slopes. As this is rarely seen in this part of the world, many dismiss it as not being an issue. However the term also includes the tiniest trickles that run down tramlines even on the most gradual of slopes, and find their way into a ditch at a low corner or gateway. Research has shown that 80% of run off is via tramlines, and you won't even notice it unless you happen to be in the field during a very heavy shower! Tramlines are, in effect, mini

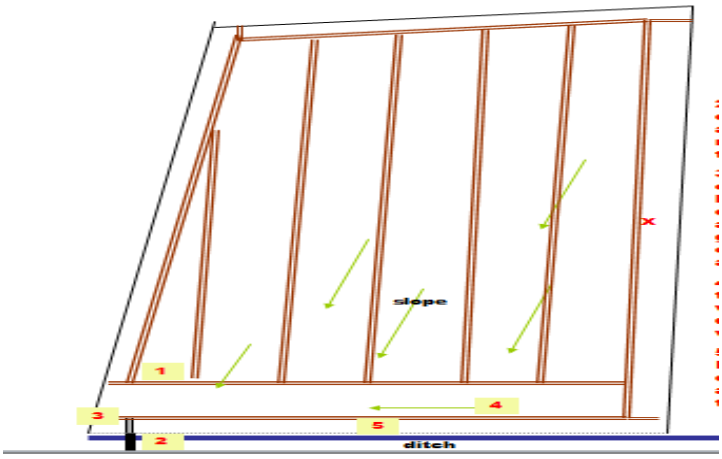
ditches and will collect and transport water, sediment & pesticides in the same way – especially when the soil is wet and compaction and smearing inevitable. The deeper they are the more water they will carry, the more water, the more sediment and pesticide – so it is stating the obvious that anything that can be done to reduce this is a positive e.g. LGP tyre equipment at the right pressure! What else can be done? Well, the application of a little field craft would go a long way to helping!



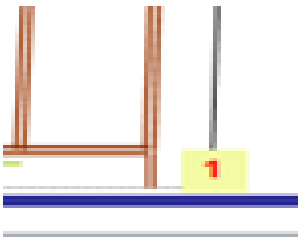
Conventionally we use our tramlines thus:

Water collects in and runs down the tramlines, into the headland tramline and along even the shallowest slope. Large volumes accumulate at one point where it will find its way into a ditch either over the surface, or because of saturation of the soil via the sub surface. Alternatively the water will run out onto the road and ultimately to a ditch via a road gully

There is a very simple way to stop most of the water from the tramlines accumulating in the headland tramline and that is to put in a second headland tramline on the low side:

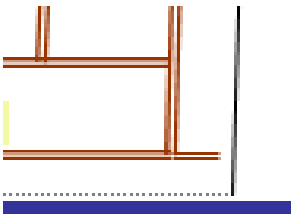


As long as the two are not driven between at the lowest point then you have in effect created a wide buffer strip. This may stop 80% or more of the water reaching a critical area. A little inconvenience perhaps – but come spring time and dryer conditions, say for the second top dressing when it requires more fill ups, using the inner tramline can be dispensed with – by harvest time you won't even notice it was there!



The way you choose to go round the headland can be significant: For example in a low corner sloping south east to the ditch (labelled 1 in the diagram) - going **anti-clockwise** means that you swing round and reverse back down the slope – this means you take the wheelings very close to the ditch = high risk!

A better alternative is to go round **clockwise** – this means that you "reverse up" to a differnet headland and your wheelings stay well away from the ditch = low risk



I accept that convincing some spray operators to change habits of a lifetime and use a little forethought might be difficult – but which is better – to take that little more trouble, or risk more pesticides being struck off the approved list?

For further advice on this – contact Robert Camps on 07711 432932 or robert.camps@naturalengland.org.uk

Protecting Propyzamide: to spray, or not to spray?

Now harvest seems like a distant memory and the winter crops are drilled up (hopefully), we turn our thoughts to post-emergence weed control in oilseed rape. One of the key active ingredients for autumn/winter weed control in OSR crop is propyzamide, found in both Kerb Flo 500 and AstroKerb.

Propyzamide provides control of a number of grass and broad-leaved weeds, however, it is particularly important for the control of blackgrass and managing the development of herbicide resistance. OSR as a break crop provides the opportunity to use alternative active ingredients, such as propyzamide, that wouldn't be used in a cereal rotation. This reduces the over-reliance on active ingredients in cereal crops which can cause herbicide resistance, as seen in products such as Atlantis (iodosulfuron/mesosulfuron) over the last 20 years. Therefore, it is fundamental to protect active ingredients such as propyzamide, which are under threat of their use being restricted.

To prevent this, we need to take care to ensure propyzamide is not found in watercourses, as this will be the most likely cause of restrictions on this important active ingredient. Understandably, the control of difficult weeds in your OSR crop is the highest priority. However, if you and your agronomist decide to use a product containing propyzamide, there are some steps you should take to help prevent this active ingredient being found in watercourses.

Soil temperature and soil moisture are key to getting the best performance from propyzamide. It is best applied when soil temperatures have got down to 10^{o}C at 30cm deep and there is sufficient soil moisture for weeds to uptake. However, Voluntary Initiative advice suggests propyzamide should not be applied if heavy rain in expected within 48 hours or if field drains are flowing. Agreed, this is very much easier said than done at this time of year! It is best to find a compromise and plan the application accordingly - soils should not be completely saturated and keep an extra eye on the weather forecast!

The next factor to consider is dose rate. You should only use the full rate of propyzamide (840g ai/ha) where you have high populations of blackgrass. In other situations, a lower dose of 700g ai/ha will be enough to control all other susceptible weeds. This will significantly reduce the chances of propyzamide being found in watercourses.

The Voluntary Initiative also provides some basic guidelines to protect watercourses from propyzamide – I agree these are not always possible, but even if a few can be adopted we can help protect propyzamide for years to come:

- Take care when filling and cleaning the sprayer
- Use a 6m grass buffer strip, or 5m no spray zone, next to watercourses
- Manage soils and tramlines to avoid surface run-off and erosion
- Don't apply when soils are dry, cracked or saturated
- Importantly – discuss your cultivations, spray timings and all the factors above with your agronomist

More information can be found on the Voluntary Initiative website: www.voluntaryinitiative.org.uk

On the Dow Agrosciences website, there is a useful postcode checker, giving you an indication if the conditions are suitable for propyzamide application: http://uk.dowagro.com/oilseed-rape-to-spray-or-not-to-spray/

For further advice on this - contact Rory Galloway on 07773 089553 or rory.galloway@farmacy.plc

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Nitrogen – You've paid for it - Why lose it ?

Nitrogen is left behind in soil after harvest, and can be lost due to autumn and winter rains if the soil is left bare before a spring crop. Nitrogen in the soil is readily soluble and even typical autumn rainfall can move a large amount of nitrogen into the drains and then into a river like the Waveney.

This is not only a financial loss to the farmer, it is also a pollutant in any watercourse. If drinking water is then abstracted from the river, as it is from the Waveney, it can cause problems and increased costs for a water company,

as well as having an environmental impact on river life. The Water Framework legislation that came into force earlier this year now means that this topic is receiving more attention.

At Frontier we have tried to evaluate how much nitrogen per hectare is being lost and how farmers might reduce this financial penalty. The table below shows the results from trials at 7 sites across southern England during the autumn/winter of 2013-14. We measured the loss of soil mineral N from the top 90cms of soil between September and February. The average was 73 Kg N/ha but losses ranged from 42 Kg N/ha up to 130 Kg N/ha! Depending on the type of fertiliser used this can be like losing £47 per ha down the drains.

Nitrogen loss on bare soil between September 2013 to February 2014 — Average of 73 Kg N/ha loss

County location	Nitrogen loss – Kg N per ha
Lancashire	98
Norfolk	62
Suffolk	74
Essex	47
Kent	60
Hampshire	42
Dorset	130

Detailed DEFRA studies in the DTC project have recorded similar losses and show that bare land typically loses Nitrogen 5 times faster than land with a Cover crop. The studies identify how effective a Cover crop/Green manure can be at catching and holding the Nitrogen that is left behind, especially after a cereal crop. This is a key problem area because cereals often leave high amounts of N unused as they are not very efficient at capturing a high percentage of applied N fertiliser. The situation is worsened when this land is then left bare before being sown with a spring crop – usually of peas, beans, roots crops, cereal and maize.

In our Frontier trials during the last 2 seasons we have seen how effective cover crops can be at catching spare nitrogen left behind and preventing the large losses due to leaching. The brassica species like Radish and Turnip rape are amongst the more effective either alone or in mixtures with cereals like Rye and Oats that grow very fast. The table below illustrates the significant Nitrogen capture in an autumn period.

Cover crop performance - Frontier trial autumn 2014 – Essex, Chelmsford
Cover crop sown on 13th August 2014. Results below on 2nd December 2014
Fresh weight and Nitrogen content refer to the green material above ground level

Cover crop	Fresh weight Tonne/ha	N % in leaf /stem	Total N in leaf and stem Kg N/Ha
Oil radish	25	4.3	115
Turnip rape	20	3.1	88
Mustard	17	3.1	72
Rye /vetch mix	20	2.7	60
Oat /rye /radish mix	21	2.0	72

At first glance it might not make sense to save £40 - £50 worth of nitrogen, by spending typically £60 on a cover crop (seed and establishment). However, it is important to look at the whole picture of benefits that a cover crop brings to a whole farm rotation. As well as nitrogen capture, a cover crop can bring some or all of these benefits:

- Addition of significant organic matter to the soil – with soil structure and soil "life" improvements. Worm populations can increase in one autumn.
- Deep rooting radish and other brassica crops can help soil drainage, structure, especially valuable for peas and beans. The tilth that they can create over winter allows a review of spring cultivations with cost savings on many farms from minimal tillage, direct drilling or strip cultivations.

- In our trials on Blackgrass land we have seen good reduction in Blackgrass plants by Christmas with specific cover crops.
- Cover crops can bring very useful grazing plus the other benefits.
- Cover crops can help with EFA needs in the new BPS system and can fit options in the new Countryside Stewardship Schemes.
- Specific species and varieties of Cover crop can reduce Nematode and other soil pest problems.
- We often see yield improvements of between 0.25 t/ha to 0.5 t/ha in cereal crops that follow a cover crop.

Depending on the farming system, these benefits can be very financially attractive on top of the Nitrogen capture and retention. However, not all cover crops behave the same and managing them and the following crops will require the correct techniques to be used to maximise the "value". Do consult with an experienced agronomist to make the very best of this opportunity.

We are sure it makes sense to avoid bare land over the autumn and winter

For further advice on cover crops – contact Paul Brown at Paul.Brown@frontierag.co.uk

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Winter Events for you coming up:

4th November, Letton, Norfolk, **1st December** Wickham Mkt, **19th January** Thetford, – "**Managing Soils for profit & restoration**": Improving soil structure, Controlled Traffic Farming, In field practical soil structure i.d. & remediation session.
24th November, Westerfield, Ipswich. **20th January**, Diss "**Soil Health & Organic Matter**" the role of soil biology in soil function, nutrient cycling & pests & diseases, yield responses, practical session.
21st January- Dereham area – **Cover Crops**
For further details and to book a place on the above please go to: www.smartagriplatform.com/Events
4th November – CSF/Farm Advice Service/ Campaign for the Farmed Environment **"Making the Most of Your Assets"** Helmingham Estate, Hill Farm Framsden. Cross Compliance news and advice, getting the most from your soil, using your assets for stewardship to best effect. E mail bookings@farmingadviceservice.org.uk or call 0345 345 1302.
26th January Annual Farm Business Update Meetings – for the Waveney area **– Wortwell Village Hall.**
We will also be running Pesticide Handling Events tbc. – so if you are considering new filling areas/ Bio filters etc /applying for a grant to help then do please look out for invites – or contact Robert or Ian.

One to One Advice and visits are still available –as previously advertised. One **new one** available – particularly apt now, with many maize stubbles liable to cause run off issues overwinter, is **Soil Management for Maize growers.** Maize presents some unique soil management and nutrient problems beyond those encountered in general mainsteam cropping – have a visit to look at and improve your maize growing and soil management on your farm. Don't fall foul of the new **Cross Compliance GAEC 5!** Contact Robert for details.

The River Waveney Catchment Partnership comprises:

ESSEX&SUFFOLK WATER living water

RIVER WAVENEY TRUST

A clear solution for farmers
CATCHMENT SENSITIVE FARMING

AGRIVICE LTD

frontier

Farmacy plc
Advisors to Agriculture

Environment Agency