

aab news

Left out in the cold. What is the future for the Somerset Farmers?

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Welcome to Issue 80...

Council met on Wednesday 20th November 2013 at the Conference Centre, Warwick Enterprise Park, Wellesbourne

The November Council is the meeting at which the budget for the year ahead is agreed and is often the final meeting for some trustees, who will hand over their responsibilities at the end of the year. This year Council expressed its thanks for the work of Jon Knight who was handing over the work of Treasurer (to Mike May) and to Trevor Hocking who was handing over the role of Publications Officer (to Roy Kennedy). Council also thanked Jon Pickup who had reached the end of his term as Convener of the Nematology group committee. Council looks forward to working with all the new trustees in 2014.

Council welcomed Richard Binks as Convener of the Food Systems Group to his first Council meeting and were pleased to meet John Andrews who has taken on the role of Conference and Editorial Administrator in the AAB office. Council also approved applications for membership from 85 new applicants and noted the breadth of interest amongst applications for membership. We look forward to working with these new members in the months and years to come.

Council thanks all members who attended the AGM at Innovation Farm, NIAB, as well as those who sent apologies, proxy votes and especially those who contributed to discussions via Email. The full Annual Report for members including Accounts was approved and so we were able to fulfil our legal requirements through reports to the Charity Commission.

The overall aim of the budget for 2014 is to achieve a balanced budget on operations before investment in the Food and Energy Security journal. The Strategy and Budget sub-group had reviewed the budget in detail ahead of the Council meeting and worked through the assumptions underlying the decisions made about cost allocations. To the treasurer's relief no flaws were found in the assumptions or calculations and Council approved the Budget for 2014.

The AAB is involved as a member organisation of the UK Plant Sciences Federation and as part of our meeting Council had a presentation from Jackie Caine on the current key activities of the PSF. The PSF is convened as a special interest group of the Society of Biology and currently has 31 member organisations (currently not including research institutes). Its overall aim is to bring together the range of disciplines and organisations involved in plant sciences and provide a single voice to influence policy and funding and to provide outreach and support for early-career researchers. You can find out more at <http://www.plantsci.org.uk/>

Council discussed the range of possible approaches now available for engaging with members and the public more widely on topics relevant to applied biology. It was considered very appropriate for the AAB to engage with these routes of engagement especially associated with conferences at relatively little additional time/cost requirement. Council is very interested in supporting the development of innovative approaches to information sharing and would welcome ideas from members on how we could achieve this most effectively as part of our "conference" programme. A working group is beginning to look at the use of Aspects as an on-line resource and it will also take a preliminary look at other ways to capture and share information – if you want to get involved in its work or just want to share some good ideas you have seen work in practice, please contact me at gensec@aab.org.uk

Elizabeth Stockdale, General Secretary

The incessant storms and rainfall the past few months made this the wettest winter since records began in 1910

According to the Met Office's provisional figures, the UK received 486.8mm of rain between 1 December 2013 and 19 February 2014. This beat the previous record of 485.1mm of rain - set in 1995. Furthermore 632.5mm rain fell in south west England - beating the 1990 record.

The UK government is discussing new rules to stop farmers contributing to flooding through poor land management.

Experts say careless farming has made floods worse as some upland farmers have caused soil and water to flush into rivers by leaving fields bare and compacting land with cattle and heavy machinery. Environmentalists say grants should be withheld if farms are managed in a way that encourages floods - but farmers don't want more regulations. Scientists are particularly concerned about maize, the crop that creates most rainfall run-off, some want maize to be banned from steep slopes because its bare rows contribute so much to flooding and silt.

Scientists at Cranfield University are testing a range of soils. The regulations are being discussed at informal consultations, run by Defra, over what farmers should do to qualify for the £3.6bn grants they receive from the taxpayer. There is pressure for landowners to capture more rain where it falls in upper catchments of rivers by causing localised mini-floods so the water can seep into the soil instead of flushing into the rivers. In a related project on Exmoor, South West Water is working with landowners to restore peat bogs to improve water storage. In the past, farmers have been paid to dig drainage channels in peat to improve its productivity for sheep and cattle. Productivity did not increase, but flooding did as water flushed off the moorlands to swell river systems.

We are paying again to reverse the failed policy and fill in the drainage channels. The scheme costs £2.2m. "It's having huge impact," said Dylan Bright of South West Water. "By the time the restoration of the catchment is completed, the moor will be able to hold the equivalent of more than 6,000 Olympic-sized swimming pools of water. It'll hold back rainfall from flowing down to places like Exeter."

Exmoor is rich in peat bogs, the sphagnum moss that forms peat holds up to 20 times its dry weight in water. Preliminary trials on Exmoor by Professor Richard Brazier, from Exeter University, show that blocking drainage channels has allowed the moorland to hold a third more rainfall - this can make the difference between flooding and not flooding. Prof Brazier concerned about land management on farm fields, said "Too many farmers leave vulnerable soils bare and allow soil and water to run off"

Roger Harrabin (Environment analyst) looked at how Exmoor peat bogs are being restored to their natural state to help soak up water, he claims that current government rules on soil management are often ignored by farmers, who face a 1% chance of an inspection to check that they are earning their grants by adhering to the regulations. Maize farming in the wet west of England is a particular problem, he says, as there are no rules for producing the crop. Three quarters of the maize fields in the south-west contribute to flooding, a report in the journal Soil Use and Management says.

Farm vehicles tend to compact the soil of maize fields, causing massive run-off. "Personally I think the best thing would be simply to ban the cultivation of maize on steep fields," Prof Brazier told BBC News.

Farmers reject a ban on maize on slopes: "We don't need any more regulations on farmers," Mark Humphry told me on his part-flooded farm near Taunton. "We are working with local Defra officials to get advice on vulnerable soils; that's the best way of doing things." The NFU is trying to reduce the number of rules on farmers. Mr Humphry agreed that farmers should do more to protect soils from run-off but said housing, roads and airports were also responsible for making floods worse in Somerset. Farmers like Mark Humphry reject a ban on growing maize on slopes. But experts say more needs to be done to protect vulnerable soils, like those around the River Parrett which flooded the Somerset Levels. Professor Bob Evans from Anglia Ruskin University in Cambridge told BBC News: "The National Soil Map makes it clear that some soils on the Parrett catchment are vulnerable to run-off". Erosion probably increased in the 1970s-80s because of the change in cropping to winter cereals around that time." He too is especially worried about maize: "The possibility of erosion occurring in winter cereals is one field in 42, in maize it's one field in seven."

Professor Jane Rickson from Cranfield University measures the impact of rainfall on different crops and soil types using an indoor rain simulator to look at how smarter land management could help reduce flooding "We have to be much smarter about the way we manage the land," she said. "If we manage soil properly it can absorb a lot of rainfall. We can't prevent flooding but we can certainly inhibit flooding by good land management."

Furthermore the government's desire to make farming more profitable by encouraging high-value crops like maize, potatoes and asparagus has tempted farmers to plough up grassland that previously used to bind fragile soils together.

Capturing water where it falls was one of the key objectives laid down in the Pitt Review of the 2007 floods and Defra is hoping to expand that work as part of its response to this year's

flooding. Scientists fear that the government will be diverted from the task by the political clamour to increase dredging. "Dredging will only solve part of the problem," said Prof Rickson. "If you get dredging wrong, you can make matters worse by making it flood somewhere else. Dredging is an endless expensive commitment year on year. "It would be better to keep as much soil out of the rivers in the first place." A Defra spokesperson said: "We are currently seeking views on the rules that farmers need to follow, including soil management and erosion prevention, in return for the CAP funding that they receive."

by Roger Harrabin Environment Analyst from BBC

The action plan - commissioned by Environment Secretary Owen Paterson - was compiled by Somerset County Council, the Environment Agency, residents and other interested parties. It aims to prevent the sort of flooding which has affected Somerset's Levels and moors over recent months. Asked where the remaining money to fund the proposals would be found, Mr Paterson said 'money no object' was a reference to the immediate recovery from flooding. "But what I am launching today is the 20-year plan," he said. Mr Patterson welcomed the £20.5m already put forward as an "extremely good start" and said there would be "significant national money". But he added: "I also think it is right there should be a partnership with locals raising money locally, doing further work which is not currently being done, and all that together will make a very good package that really will make the levels a much more stable place over the next 20 years."

The plan includes looking at extra permanent pumping sites to clear water off the Levels more quickly.

Somerset County Council Leader John Osman said: "The plan contains some firm ideas for what we can do now, but also some broad ambitions such as a sluice or barrage for the River Parrett and long-term projects to prevent water entering the area in the first place. We listened to local people in drawing up the plan and we will spend a lot of time now talking and listening to them again to ensure the plan is fit for purpose and supported by local people. I am particularly pleased that the DFT has made such a significant contribution. We are very grateful." Among the first to see the plan was the Flooding on the Levels Action Group (Flag) Chair Heather Venn, who said the group was "cautiously optimistic". "We need to keep a careful eye on this and it is absolutely crucial that the funding is there, but it is a very positive first step and we welcome much that is in it".

In addition to essential measures, the plan suggests considering a further £203.78m of flood management work; efforts to help one of Britain's most flood-prone regions will cost "tens of millions of pounds", according to the Environment Agency.

A plan to safeguard the Somerset Levels is due to be unveiled. Parts of the area have been underwater for more than two months with many homes, roads and farms still affected. One measure announced is a scheme to clear a stretch of waterway where two key rivers meet, dredging the first 8km of the Rivers Tone and Parrett to the 1960s river profile. Computer modelling of that proposal shows that dredging could reduce the height of flooding and its duration. Local people have long demanded dredging, arguing that the floods have been exacerbated by silt clogging the rivers. Further steps are expected to include installing bigger pumps and providing better protection for villages. A long-standing proposal to build a new barrier to hold back high tides may also be brought forward. In a winter of extreme weather, the sheer duration of the floods in the Somerset Levels has made the plight of this area highly sensitive politically.

The Agreed strategy

The plan comes after the Environment Secretary Owen Paterson visited Somerset and called on local organisations to pull together an agreed strategy within six weeks. The Government has already promised an extra £10m to assist the area. One major cost accounted for is £4.1m for the dredging operation along the rivers Parrett and Tone. Officials estimate that to increase the capacity of the Sowy King Sedgemoor Drain & upgrade the artificial river, the Sowy, could cost £4-8m and the plan for a tidal barrier or sluice at Bridgwater - to keep the highest tides out of the River Parrett with the objective of achieving delivery by 2024 priced at nearly £25m back in 2009, understood to be higher now. David Rooke, head of flood risk management at the Environment Agency, refused to put a price tag on the overall cost of the proposals. But, in a BBC interview, he said: "It would be tens of millions and it would need to be sustained for the next 10-20 years."

Mr Rooke warned that if the Somerset Levels were protected to a far higher standard, other areas may demand the same level of defence too - current funding will not cover

that. "To avoid the sort of extreme event that we've seen, if we replicated that standard right across the country you'd be talking many billions of investment to give people the same standard of protection, at the moment Government policy is not to do that."

That involves officials estimating the benefits of any scheme in terms of economic gain or households protected - and until recently, the Somerset Levels have fared badly in that calculation. The plan to start dredging has been assessed in detail by flood risk specialists from the consultancy Black & Veatch. Principal engineer Andy Wallis, who has long experience of the Somerset Levels, said research into an earlier flood in the same area in the winter of 2012 showed that dredging could bring benefits. "Flooding is all about risk and you can never eliminate risk but you can very much reduce the risk and what dredging does is reduce the volume of water ending up in these areas." We know the current event is more extreme than last year and we know that dredging in this area would have had a benefit - it certainly wouldn't have eliminated flooding but it would have affected the duration of the event."

by David Shukman Science Editor from BBC

Over the last six years, the Environment Agency have protected over 220,000 properties in England from flooding, through building flood defences. They have spent over £962 million on developing these schemes.

On Thursday 20 February, Prime Minister David Cameron announced details of flood support packages for homeowners and businesses. This support includes: Support for communities, businesses and farmers

Support for businesses - Businesses that have been flooded since December 2013 will qualify for 100% business rate relief for three months, government will guarantee to reimburse councils' costs of providing 100% rate relief, the initial funding allocations to councils in flood affected areas from the new £10 million Business Support Scheme have also been set out today.

Help for homeowners - as announced by the Prime Minister, the government will provide up to £4 million to councils to help provide people whose properties are flooded with a council tax rebate of at least three months, the new Repair and Renewal Grants will go live from 1 April and will provide financial support for households and businesses to contribute to work that improves a property's ability to withstand future flooding. Grants of up to £5,000 will be paid to flooded homeowners and businesses, once a survey to identify appropriate resilience measures has been completed; the cost of the survey is part of the grant.

Business Rate Relief Scheme - 100% rate relief for three months will be available to businesses that have been flooded, we expect local authorities to implement 100% rate relief immediately, businesses with a Rateable Value of over £10 million will not be eligible for rates relief & central government will reimburse local authorities for the costs of implementing 100% rate relief

Council tax exemption for flooded properties - DCLG has made £4 million available for this scheme to enable local councils to provide a council tax rebate to those whose homes have been flooded.

£5,000 Repair and Renewal grants - these one-off, time-limited grants are for up to £5,000 and are for flooded homes and businesses, measures funded by these grants must not duplicate repairs that should be covered through insurance policies: the funding is solely available for additional future resilience or resistance measures and the scheme will go live from 1 April 2014

Business Support Scheme - up to £10 million has been made available to provide emergency funding and support to businesses in flood affected areas - our guidance highlights equivalent schemes where the average grants were £2,500 per business.

The UK's winter floods have given the jobs market an "unexpected boost" as new staff are hired to cope with the clean-up, Manpower has said.

The recruitment firm estimates the repair work could be worth about £250m to the construction industry. Energy firms also hired more staff to restore power to homes affected by the bad weather, Manpower said. In its latest employment report, the recruitment company said all sectors of the economy intend to hire more staff. It is the first time that has happened since 2008. Mark Cahill Manpower Group UK Managing Director said "It's the first time Manpower's forecasts have been positive since the recession." The firm believes the government's help to Buy scheme is partly to thank, but that the bad weather could also be responsible. "With over 6,000 properties flooded, and an average repair bill of £30,000-£40,000, the beneficiaries of all this extra work will be builders who are already being called in to repair homes," Mr Cahill added.

*Russell Millman
AAB Office*

Conference Report - International Advances in Pesticide Application - Oxford, 8-10 January 2014

The latest "International Advances in Pesticide Application" conference organised by The Association of Applied Biologists was held at the Oxford Spires Four Pillars Hotel in Oxford, 8-10 January 2014. Despite closed roads, due to flooding, delegates enjoyed a full programme covering an extensive range of topics, from the use of unmanned aerial vehicles (UAV), precision application, orchard sprayers, application of treated seed, spray drift, human exposure to pesticides and to characterisation of spray nozzles. Many papers covered aspects of European projects.

Legislation aimed at reducing pesticide input recognises a need for innovative application techniques in integrated pest management (IPM) programmes being considered within the PURE project (<http://www.pure-ipm.eu>). This emphasised the need for more research if the ideal use of biopesticides and other control techniques can be integrated in economic sustainable farming systems that will maintain food production. Similarly, much more attention has now been given to human exposure to plant protection products so several papers covered the development of models to estimate potential exposure to operators, bystanders, residents and those who harvest treated crops as part of the BROWSE project.

Aspects of spray drift covered orchard spraying with assessment of the impact of airflows on droplet spectra, aerial spraying and development of a means of sampling droplets in the field using a new Phase Doppler Interferometer (PDI) instrument. As field assessments of spray drift are expensive, a new more rapid method of assessing potential drift from air-assisted sprayers was described. Drift reduction especially with targeted herbicide application in row crops was illustrated by a new inter-row band sprayer that utilises GPS and vision guidance to maintain accuracy at higher forward speeds. Problems associated with dust emissions when sowing treated seed became evident with death of bees in Southern Europe. Dust particles from seed containing chemical treatments behave quite differently to spray droplets due to their size and shape, but equipment to prevent the particles being released into the air now includes development of a cyclone system that captures in excess of 99% of dust put through a drill.

All the papers presented at the conferences, as well as the posters, have been published in full colour in *Aspects of Applied Biology* **122**, available from the AAB Office.

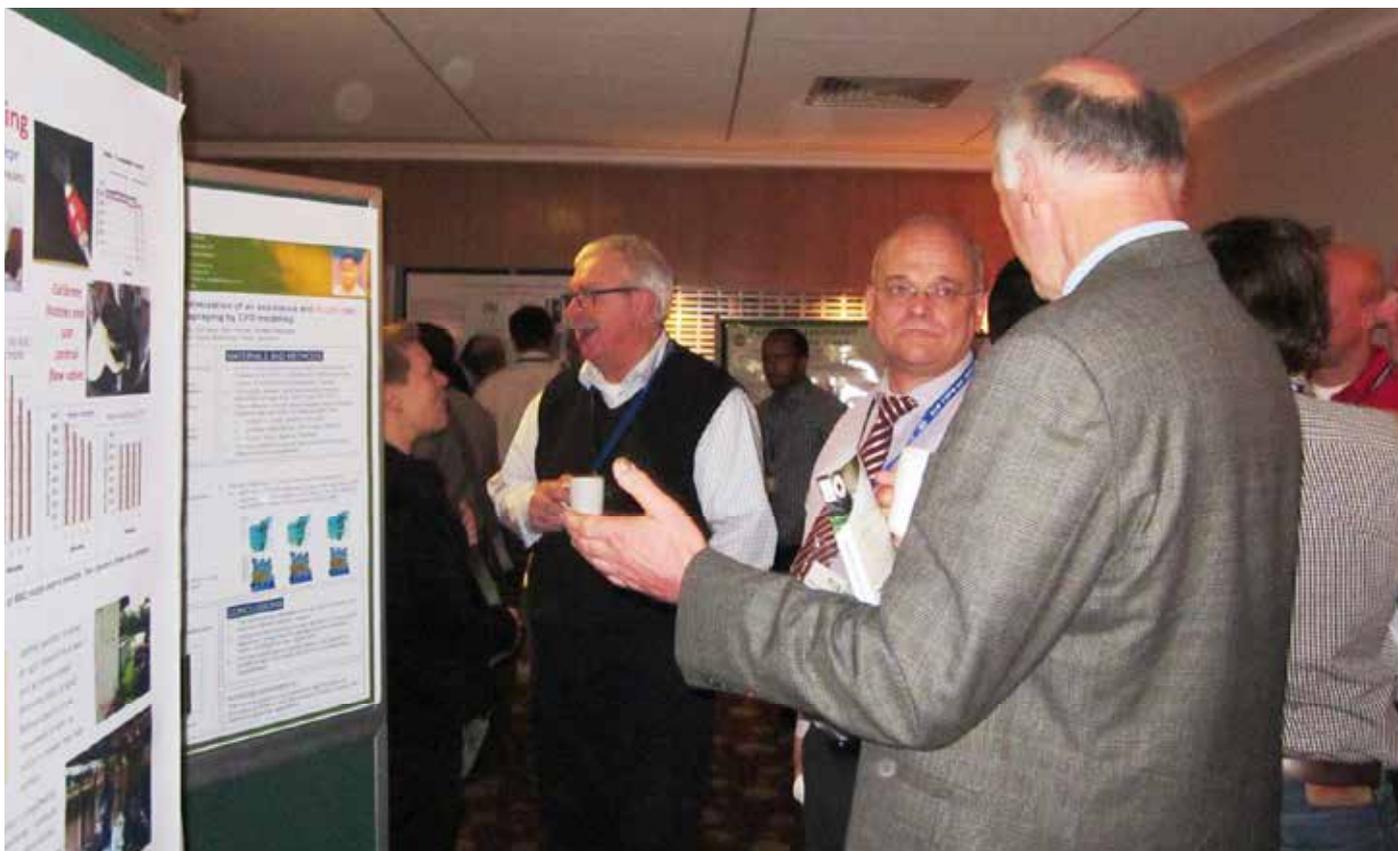
Graham Matthews
Imperial College



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Delegates awaiting the next speaker at the International Advances in Pesticide Application conference





Delegates viewing posters during the coffee break

Europe's Leading Congress on Biotechnology

The 16th European Congress on Biotechnology (ECB16), organised by the European Federation of Biotechnology (EFB), will take place in Edinburgh from 13 to 16 July 2014. The congress will be the focal point where research and innovation at the cutting edge of biotechnology meet.

Representatives from around the world will be in Edinburgh to learn, network and discuss the boundless potential for application of the ideas presented at the congress. More than 1,400 delegates are expected to attend this year. There will also be close to 1,000 scientific poster presenters, more than 150 speakers and 50 exhibitors.

Call for abstracts

The ECB16 features outstanding invited speakers, but at the heart of the congress are oral and poster presentations by the wider scientific community.

Please visit www.ECB16.com for instructions on how to apply. The deadline for submission is midnight (GMT) on Monday 31 March.

The scientific programme

ECB16 will break new ground whilst still acknowledging established areas of biotechnology. Whilst the 20 scientific symposia, plenary lectures and workshops will cover all aspects of biotechnology, but there will be topics which will be of specific interest to AAB members including a plenary lecture on bio-based productions of chemicals, fuels and materials by metabolically engineering microorganisms, as well as keynote lectures on plant genetic engineering, plants for production of high value chemicals, and the bioeconomy.

The congress will be opened by Prof Anne Glover, Chief Scientific Advisor to the European Union and Prof Jay Keasling of the University of California Berkeley. The full programme can be found on www.ECB16.com.

To get in touch please email on ecb16@tfigroup.com or by phone on +44 (0)20 7808 5609.



16th EUROPEAN CONGRESS
ON **BIOTECHNOLOGY**
13-16 July 2014 • EICC • Edinburgh • Scotland
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Conference Report - Positive Plant Microbial Interactions in Relation to Plant Performance and Ecosystem Function - 5-6 December

Plant pathology features strongly in many agronomy conferences typically with a focus on major plant diseases. Less obvious, perhaps, are the beneficial consequences of many microbes. The fourth AAB conference on Positive Plant Microbial Interactions held in December 2013 outlined a broad range of these benefits.

Example benefits presented typically involved soil microbiology and how its diversity affects plant health and productivity. In some cases this is a result of natural processes and variation and in others by deliberate supplementation with specific microbes. One overall hypothesis is that a broad profile of 'microbes' has direct benefits to plants and also may actively combat disease pathogens. Another is that specific microbes may be used to target crop protection and specific disease resistance.

To some extent this mirrors the prevailing experience of prebiotic and probiotic concepts in human and animal health whereby beneficial microbes counteract harmful microbes so minimising the propensity for disease. Maintaining suitable soil conditions to actively promote microbial populations requires appropriate management in providing suitable nutrient sources. Actively amending soil with microorganisms is a more targeted approach – and, like probiotic diets, may need to be attuned to specific soil conditions or regularly supplemented.

At the conference reports were presented covering these approaches and illustrating specific conditions which affect the diversity of soil microbes and of how targeted addition may manage disease and improve productivity. In some cases, as in the difference between conventional and organic soil management, microbial diversity may not guarantee positive benefit. Microbial profiles can, however, correlate with important soil indices such as nutrients and pH which may vary with past soil history, weather patterns or with hydration. The distribution of nematode pests in banana plantations in Nigeria is another example of how management regimes directly affect disease.

Application of selected microbes with the potential to enhance plant productivity and health was noted in a range of presentations. Examples were presented on how fungal root endophytes enhance barley growth and demonstrate biocontrol activity, how

endophytic bacteria associate with mycorrhizal fungi and how competition between species of *Fusarium* may reduce disease incidence. Identifying suitably effective microbes is not easy. Screening is difficult and time consuming and may need high throughput protocols to be commercially attractive. In some cases addition of by-product amendments may be effective and cheap but be less assured.

The mechanisms of positive microbial action were discussed at the conference and presentations covered a range of detailed molecular and cell biology applications including metagenomics of soil, control of ethylene production, transformation of apoplastic effectors and triggering procedures of plant immunology.

Knowledge of how specific microbes interact will allow targeted amendments to be made. Practical applications of specific microorganisms to commercial crops were reported at the conference for barley, wheat, strawberries, peanut, lettuce and broccoli.

A broad and general conclusion to the conference was that detailed studies and specific effects do need to satisfy an agronomic relevance test including rigorous trials at multiple sites and involving commercial partners to achieve acceptable rigor. This need has sound prospects for future development and, considering the work presented here, routes from academic study to practical application are visible and attainable.

-George McNamara

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AAB Conference Services are available to anyone in the scientific field.

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