National Action Plan

Goal 1 – Better Regulation

Question 1 – In the context of maintaining current high levels of protection for human health and the environment, what can we do to make the regulatory system for pesticides simpler and more efficient?

- Biopesticides and low risk substances are identified in the National Action Plan consultation as an area of opportunity. However, a recent check of the pesticide registers in GB and in EU showed that circa 20% of all the registered actives in GB are biopesticides compared to 40% in the European Union (EU). There are currently no low-risk substances registered in GB. Could regulatory requirements for biopesticides and low risk substances be adapted (particularly for efficacy) to a more proportionate system to reduce barriers to entry?

Question 2 – What could we do to increase transparency about the way that evidence is used to inform decisions on the regulation of pesticides?

- Publish registration reports as some EU countries do. As a third party AHDB can find it difficult to understand decisions Chemicals Regulation Division (CRD) of the Health and Safety Executive (HSE) have made on registrations. The publication of reports would reduce the potential for duplication of effort from subsequent submissions and broaden understanding of decisions amongst stakeholders.
- Produce a user-friendly general publication on process and timelines for registrations. Including information on which models are used, progression of an application, how and where decisions are made, to help those who are trying to engage with the regulatory process.
- Improve ability to track more easily where an emergency approval is in the system. This would reduce the need to constantly enquire as to the progress of time-critical applications.
- Enabling enquiry prior to an application as to whether an active is likely to pass a specific model, thereby making it easier to evaluate if an application should be considered in the first place. This would save both CRD and the applicant time. This would also reduce the risk for SMEs considering investing in GB product registrations.
- Resolve issues without the need for resubmission where possible and therefore reduce extended delays in authorisation.
- Increase clarity about the 'oversight' role of the Expert Committee on Pesticides (ECP), and where and when that oversight has resulted in a material change to the registration 'journey' of a particular active. Much of the work of the ECP is around operator/bystander exposure, fate and behaviour and ecotoxicology rather than efficacy. However, the current membership of the ECP has relatively little expertise in agriculture and horticulture which can make getting the right context for proportionate decisions difficult – there is a case for reviewing the make-up of the ECP to strengthen industry-related expertise.

Question 3 – How can we best ensure that our regulatory systems keep up with innovation and scientific development including new technologies?

- Increase regulator engagement with stakeholders with a view to understanding new developments and their rate of adoption in the industry. This can be achieved by attending grower group meetings, visiting trial sites, attending grower visits and industry events, making this part of your training programmes and CPD (AHDB is happy to facilitate these activities)
- Be actively involved in research around new technology, either with co-funding or partnering research projects, with a specific consideration of how regulatory models could be adjusted to reflect new technologies being adopted in crop protection.
- Providing those involved in research and innovation with opportunities to understand what the regulatory system is and how that might impact on novel products and technologies. Too often innovators leave regulatory implications until the last moment even though regulation might be a significant barrier to adoption. This could be done by CRD offering occasional workshops/webinars on how the regulatory system works.

Question 4 – What actions could we take to expand and improve the current Biopesticides Scheme, to increase the availability of approved biopesticide products and better support potential users?

- Ensure fees are kept low especially for very specific applications relating to one crop/one pest to ensure that SME biopesticide companies continue to bring products into GB.
- Reduce some of the efficacy requirements so that they are more proportionate, for example allowing for efficacy to be sufficiently demonstrated for each use but with less demand for a high number of trials for each use over multiple years.
- Ensure that training in the regulatory process can be provided to new entrants into the market so they are fully aware of regulatory requirements at an early stage – this may help weed out 'no hope' applications at an early stage or help focus early development work on ensuring that data is generated that is appropriate to registration requirements.

Question 5 – What are the priorities for research to better understand the impacts of changes in regulation?

- Understand the consequences and impacts of potential withdrawal of products/actives including agronomic and economic evaluation, as well as consideration of unintended consequences e.g., negative environmental impacts.
- Encourage and support replacement of products being withdrawn and ensure there are transition plans in place to help mitigate any adverse impacts.
- Support and encourage new technologies being developed to help prevent product withdrawal e.g., closed transfer systems, precision application, improved low-drift nozzles.
- Focus on measures that reduce the risk of resistance. The loss of active ingredients at a crop level contributes to the pressure for resistance development in remaining actives. Utilising the work of the Resistance Action Groups (RAGs) to identify key and emerging risk areas could help to guide research in this regard.
- Co-fund research on integration of biopesticides into Integrated Pest Management (IPM) systems, particularly in broadacre crops which account for the majority of conventional pesticide use.

Question 6 – What other suggestion do you have for improvements to the regulatory system for pesticides?

- Allow for advice on solving a problem such as a short-coming on a risk assessment instead of rejecting an application.
- Fees for minor use applications need to be discussed and kept as low as possible. Is there a possibility of capped hourly charges for minor uses and EAMUs?
- Would CRD consider providing information on a list of suitable products for a specific crop/ target and which active would be preferable (present the least regulatory risk) before an application is made?
- Provide early advice to the industry on potential changes to Maximum Residue Levels (MRLs) that may affect the ability of growers to export GB produce.

Goal 2 - Promoting the Uptake of IPM

Question 7 - How can we best develop and support management and advisory services to deliver an increase in the uptake of IPM?

- Ensure consistency of messages with advisory services and other information providers. This requires promotion of a common understanding not just of the principles of IPM, but how they can be applied in practice. Information at this level should focus on signposting to consolidated and trusted centres of information on IPM such as the AHDB IPM Hub.
- It is important to realise that while the principles of IPM can be defined in a variety of ways, it is more difficult to say whether or not an individual farmer/grower is actually doing IPM as it covers a spectrum of activities that may be very specific to an individual farm situation. IPM messages given at an advisory service level must therefore be linked back to local practices and conditions, ensuring that IPM is seen as being responsive to individual crop and field situations.
- Integrate a greater degree of specific IPM content into the BASIS qualification for agronomy and increased the amount of IPM specific CPD required on a yearly basis for those on the BASIS professional register.

Question 8 – What else could we do to ensure that pesticide users are fully informed about the benefits and practicalities of IPM approaches?

- Support the development and use of evidence-based digital centres for information like the new AHDB IPM Hub that can be effectively promoted as trusted and impartial centres of knowledge.
- The National Action Plan consultation rightly identifies the role of demonstration farms for showing best practice, but this should extend to other forms of local learning as well, particularly via farmer-led networks (e.g., the AHDB Farm Excellence Platform network, Innovative Farmers, Yield Enhancement Network (YEN), Agri-EPI instrumented farms) and other local agronomy discussion groups. These are ways that help to ensure practical engagement with IPM at a local level as they allow farmers and growers to evaluate the impact

of their actions in a way that is most relevant to their enterprise and its local geography. They can also act as test beds for innovation and consolidated incremental improvement.

- Link activity to benefits when providing information for growers so that they can see a direct and evidenced benefit to an action. The National Action Plan consultation does not seem to reference economic productivity at all. The economic viability of their enterprises is fundamental to growers' decisions, and the use of pesticides is seen as an economically sound way of managing threats and maintaining productivity. A failure to address the economics around IPM will create a barrier to progress.

Question 9 – How can the promotion of recognised standards be used to encourage the uptake of IPM, in amenity, agriculture and more widely?

- The National Action Plan consultation indicators demonstrate continuing increase in the uptake of BASIS and NRoSO as a means of supporting best practice. The professional awards for BASIS for agronomists and NRoSO for spray operators support Continuous Professional Development on an annual basis as a means of facilitating industry change. The provision of IPM training and information through the BASIS professional register and NRoSO can help to improve the uptake of IPM and encourage safe pesticide use. The opportunity to support additional IPM-specific courses in both BASIS and NRoSO is currently being developed.

Question 10 – What suggestions do you have for a communications campaign to encourage more uptake of IPM?

- There are many 'players' in IPM and it is vital to ensure consistent messaging and to eliminate timing conflicts between different organisations running similar campaigns at the same time. There is therefore a clear need for Defra to facilitate an IPM Forum (not dissimilar to the Pesticides Forum) to ensure commonality of messaging and cooperation on relevant campaigns.
- Recognise the different chains of knowledge transfer across each sector in arable cropping and horticulture. These knowledge chains should be mapped to ensure that existing networks are utilised and trusted information providers engaged in the delivery of the campaign messages.
- Use of practical case studies, benchmarking, demonstration farms should all be considered as important tools in the delivery of any campaign message, ensuring adequate geographical representation across all the devolved administrations.
- The scope and period of an IPM campaign is not defined in the National Action Plan consultation, but it is likely that a singular short campaign on IPM will not be sufficient to achieve sustained and effective change on a wide basis. Consideration needs to be given to the need for several campaigns aimed at promoting key elements of IPM.
- Knowledge transfer is not necessarily the only barrier to uptake of IPM and a campaign will need to consider other influences that affect behaviour and decision making.

Question 11 – How could we use financial support schemes to offset risks associated with IPM?

- It is important to note that IPM must be applied at a field level and needs to work within the context of a dynamic natural system in which the risks from different pest, weeds and diseases can vary considerably from year to year in an individual crop/field. Thus, any financial system that offsets risks may need to recognise that the risk level is not the same every year. The implication of this is that the financial outcome of the risk taken will only be known after the event. In this scenario, payments would need to be retrospectively based on what happened during the season (i.e. the outcome of the IPM management tools applied) combined with a measure of the 'riskiness' of the IPM-based management tools used. For example, a decision to grow a wheat variety with high resistance to yellow rust but forego the use of prophylactic fungicides could be regarded as high risk but consistent with IPM principles. However, this may or may not be a successful strategy in terms of maintaining crop yield depending on the severity of the disease in that particular year and/or the races of yellow rust in circulation. Alternatively, as applying 'after the event' risk assessments could be very complex, it may be possible to construct a form of 'risk banding', where different IPM techniques could be assigned a 'risk level' with higher compensation paid for higher risk approaches regardless of the actual outcome.
- If IPM is to be linked to environmental payments under ELMs, it must be considered what actions by the farmer/grower are required to access this payment and how this is evidenced. There should be a suitable evidence base for an action triggering an ELMs payment to be undertaken, taking into account its relative value as an IPM measure in terms of efficacy and wider (environmental) benefit versus the cost, ease of implementation and speed of impact of the measure. These factors all influence whether a farmer or grower will be prepared to implement a particular action to achieve payment.

Question 12 – What should government do to facilitate research on the availability of effective methods of pest control?

- In the context of encouraging the wider implementation of IPM, research work which examines 'crop systems based' approaches to crop protection (rather than necessarily concentrating on particular pest/disease/weed issues) is currently lacking and is urgently needed if farmers and growers are going to gain confidence in adopting more IPM-based methods.
- Nonetheless, it will still also be necessary to identify the highest risk scenarios for crop protection. AHDB has spent a considerable amount of time working with growers and stakeholders to identify scenarios of greatest risk using its risk registers and horizon scans which could be utilised as the basis for prioritisation of collaborative research.
- Support/collaborate with the existing applied research and knowledge transfer base, ensuring there are pathways for new entrants who specialise in IPM to ensure that the industry is well supported into the future with sufficient and relevant expertise.
- Recognise that all measures when used singularly create selection pressure that over time increase the risk of yield loss and research accordingly e.g., weed populations adapt to cultural controls and the nature of the weed threat evolves in response to environmental pressures. Research needs to support integrated sets of measures and interventions to address major issues in the cropping system, these sets of measures need to include genetics, cultural controls, mechanisation, digital, monitoring, diagnostic, chemical, biological, and biochemical.

Question 13 – What other suggestions would you make to improve uptake of IPM approaches?

The IPM triangle presented in the National Action Plan consultation presents economic thresholds as a key part of the decision-making process in IPM. Whilst this can initially seem like a good way to help reduce the use of pesticide applications, the confidence and research base behind thresholds is inconsistent and with very few exceptions, largely completely out of date. Traditionally, thresholds have been mainly applied to pest populations, and yet insecticide use accounts for a relatively small proportion of overall pesticide use. The knowledge base for applying thresholds to disease and weed management is very under-developed and may in any case have limited utility. For instance the study commissioned by AHDB on economic weed control 'Cost Effective Weed Control in Cereals' concluded that the reduction of herbicide inputs by applying comprehensive herbicide treatments each year in a preventative manner at optimised rates was preferred to any of the economic threshold approaches tested. Equally the case for use of thresholds for some key diseases such as late blight (*Phytophthora infestans*) in potato, and Septoria leaf blotch (*Mycosphaerella graminicola*) in wheat are not satisfactory as a means of deciding if and when to spray.

There are nonetheless scenarios where economic thresholds can be effective. A good example of this is the use of economic thresholds for pollen beetle (*Meligethes* spp.) in oilseed rape, where pollen beetle infestations are rarely high enough to require application of an insecticide, so the existing threshold has a high tolerance for monitoring error.

- Overall, it is important to recognise that thresholds must be considered on a case-by-case basis. Thresholds are also often not appropriate for use in high value crops where high levels of control are required to ensure the crop quality demanded by customers. Where in some scenarios the risk associated with thresholds can be a single detection and any pest presence would result in harvest lot rejection e.g., weed seeds in a seed lot, slugs in a potato crop or aphid contaminants in lettuce).
- The IPM triangle used in the National Action Plan consultation can be interpreted to suggest the use of biological and chemical pesticides as a last resort. A pedantic interpretation of this stepped approach to IPM could lead to the use of biological and then lastly chemical pesticide only in a more curative/fire-fighting manner. The problem is that the availability of curative pesticides and biopesticides is very limited, and this could inadvertently narrow the focus down to a very small number of active ingredients. This would in-fact increase the risk of resistance because only a few actives would be suitable for use. In some scenarios no curative measures exist, for instance the control of loose smut in barley can only be accomplished using seed treatments applied before planting.
- The eight principles of IPM in the current National Action Plan have been strategized by AHDB into a three-stage process covering 'Prevent, Detect, Control, which works as a broad approach to deciding how to manage crop protection threats. This strategic approach encourages farmers and growers to go through a stepped process considering preventative measures at the start of an operation, then consider how they are going to monitor the threat and what options there are for control. The new Voluntary Initiative IPM plan is also structured as Prevent, Detect, Control as a principle of approach.
- It appears that the industry has begun to coalesce around the Prevent, Detect and Control message underpinned by the eight principles of IPM in the current National Action Plan. The

introduction of the IPM pyramid as presented in the National action plan consultation will confuse the messaging on IPM that is already promoted by key industry stakeholders and confusion of message would be detrimental to the effectiveness of any planned IPM campaign.

- We would therefore recommend that Defra maintains the eight principles of IPM in the current National Action Plan as a *strategic* statement of intent but adopts the *tactical delivery* of IPM based on the 'Prevent, Detect, Control' methodology. We believe the IPM triangle does not form a good basis for action and should be dropped to avoid a) the pitfalls of introducing a blanket approach to the use of thresholds; and b) the risk of using biological and conventional pesticides in a largely firefighting and unsustainable way.
- It is important to recognise that potential barriers to IPM uptake are not always knowledge-related, but maybe due to other factors such as confidence in a technique, previous poor experience, and time availability. It is also important to note that for some practices the benefit of IPM can be slower to see, for instance the management of weeds by cultural means. In any campaign to encourage IPM uptake there is a need to better understand the nature of barriers to uptake and how to address them and these barriers may differ depending on the specific action being promoted.

Safe and Responsible Use

Question 14 – How should we raise awareness of the health, environmental and legal risks of using professional products without having the correct training and certification?

Question 15 – What would be the benefits and challenges of introducing a legal requirement for certification of pesticide advisors?

Question 16 – What more should retailers be doing to inform amateur pesticide users about the actions they can take to control pests more sustainably?

Question 17 – How can we best target inspection and enforcement to prevent unsafe and environmentally damaging pest management practices?

Question 18 – What kinds of challenges need to be addressed in order to ensure safe disposal of unused pesticides and pesticide containers?

Question 19 – How can we best make sure that members of the public know what to do when pesticide products are withdrawn from sale?

Question 20 – What further actions are needed to ensure that equipment used for

application of pesticides complies with safety requirements.

Question 21 – What else should we do to ensure that pesticides are used safely and

responsibly?

Targets, Metrics & Indicators

Question 22 – What are the priorities for data collection and research on pesticide usage?

- The Review of Evidence on Integrated Pest Management (2020) commissioned by DEFRA identified that the use of increased levels of IPM resulted in the reduction of pesticides used.

It is important to say that interactions around pesticide use are complex and year-on-year variation can be considerable. This may be particularly true with regards to the management of diseases in a maritime climate where significant variability should be expected. So, there may need to be some caution about expecting a simple outcome in terms of consistent year-on-year pesticide usage reduction. It is likely that the impacts seen with more IPM use will be nuanced across crop sectors and geographies.

- Research should focus on evidencing the value of activities/actions that if adopted will be a good indicator of pesticide optimisation. The report 'The awareness, use and promotion of integrated crop and pest management amongst farmers and growers' conducted by ADAS for DEFRA in 2002 came to a similar conclusion - that future surveys should attempt to tease out key components of IPM, and should identify and target specific indicators that affect use of pesticides, e.g. factors relating to variety choice.
- Building confidence in preventative actions, monitoring services and diagnostic tools is vital to achieving the desired optimisation of pesticides. Research aimed at building the strength of and confidence in each of these elements by establishing a robust and trusted evidence base of what works in practice would strengthen the basis for their use in making sure that pesticides are only used in the most optimised way.
- The IPM plan developed as part of the Voluntary Initiative has recently been renewed to create more dynamic engagement with key elements of IPM. This may help to inform the baseline and measure uptake of IPM envisaged in the new National Action Plan.
- Currently most data we collect is focused on quantity of pesticide used and area treated. The prime source of data is the official Pesticide Usage Survey, but these data are indicative and although they can be used to show general trends, they are generally not thought to be an accurate representation of farm-level usage. There may be opportunities to collect more farm-level data along similar lines to the eMedicines Books developed for livestock production. This would give much more precise data than the current Pesticide Usage Surveys, and could also be tailored to collect qualitative data, e.g., on decisions made NOT to treat and the use of non-chemical interventions.
- If more detailed and specific metrics of pesticide usage are required, a number of qualitative and quantitative Pesticide Risk Indicators (PRIs) have been developed; some of these are already in use in some EU member states. The means of developing and assessing these measures is potentially more complex, costly and time consuming than simple measures of pesticide use. They also require careful consideration of the data required to calculate them and care is then also needed to interpret the outputs correctly. Most PRI suffer from the drawback that they calculate an indirect proxy measure of environmental impact (e.g. Environmental Impact Quotients, EIQs), rather than providing data on *actual* environmental impact. The approach outlined in the proposal for an Evidence for Farming Initiative (EFI) endorsed by the Food and Drink Sector Council would provide the evidence infrastructure required to underpin the future use of metrics for IPM at both farm business and national level.

Question 23 – What are the priorities for research on the environmental impact of pesticides?

- If DEFRA's prime motivation for encouraging IPM uptake is to reduce environmental degradation in the farmed environment, then collection of 'real world' data will be required

either to validate the output of indirect risk assessment methodologies such as PRIs, or to provide a quantifiable assessment over time of the impact of the wider adoption of IPM practices. This in turn would contribute to a growing evidence base of what works in practice.

Question 24 – What are the priorities for research on the health impacts of pesticides?

Question 25 – What suggestions do you have for ways of measuring our progress against the goals set out in this NAP?

- The IPM plan developed as part of the Voluntary Initiative has recently been renewed to create more dynamic engagement with key elements of IPM. This may help to inform the baseline and measure uptake of IPM envisaged in the new National Action Plan.
- The work of the AHDB Farm Excellence Platform may also help to provide some evidence for the National Action Plan as they could evidence the benefit of specific actions and their impact on pesticide use on commercial farms.

Goal 5 - Delivery of NAP

Question 26 – How can we best bring together stakeholders with diverse interests to support delivery of the NAP, working towards a common goal of sustainable pest management?

- It is important, to recognise the good work that farmers and growers are already doing, and at this point we do not really have a baseline to measure this, or a way of benchmarking relative performance. For farmers and growers to improve their use of IPM and optimise their use of pesticides there is a need to set a baseline of good practice and create an opportunity for benchmarking which can help recognise progress and aid buy-in.
- Using a strong evidence base for the actions to be undertaken in the delivery of the National Action Plan can help to drive agreement amongst diverse stakeholders. Evidence is necessary both in terms of a base line for existing IPM activity, as well as a clear recognition of a set of key measures that are evidence-based that can be implemented by farmers and growers to deliver effective IPM. The Evidence for Farming Initiative (EFI), currently being piloted by AHDB, proposes the mechanism to deliver an infrastructure for the capture, analysis and translation of data and evidence to inform a dynamic and growing evidence base of what works in practice.

Question 27 – Considering the National Action Plan consultation, what other comments and suggestions would you like to make in addition to those covered by previous questions?

- Pesticide resistance is a critical issue for continued sustainable control of pests. Reducing pesticide resistance is acknowledged as an important aspect of the National Action Plan consultation. A critical element in effective resistance management identified over many years is the availability of multi-site chemistry. The recent loss of chlorothalonil and the potential loss of other multi-site chemistry such as mancozeb will not aid us in the overall aim of reducing pesticide resistance. This threat should not be underestimated. There is a need to assess the impact of losing the remaining multi-site chemistry on the sustainability of the remaining chemistry.

- Some IPM interventions may have consequences for helping farming achieve net-zero carbon emissions. For example, the use of inversion ploughing to control weeds may increase because of the loss of/change in use of certain herbicides, which may in turn increase the potential for carbon emissions. It is also possible with increased focus on precise timing of applications based on monitoring/diagnostics that there could be a scenario of increased total number of spray applications, which would have consequences in terms of cost, labour, and emissions. It will be important to weight measures in the round to consider competing aims.
- Whilst the National Action Plan consultation makes it clear that eradication of a pest is not the intent, it is important to acknowledge that levels of control in some cases need to be extremely robust. For example, the level of control required to effectively manage blackgrass needs to be 97%. Similarly, high levels of control of seed-borne diseases such as bunt, ergot or loose smut are required to prevent complete loss of a whole seed lot.
- Sometimes an optimum approach to IPM is affected by availability of supply, for instance it may be desirable to utilise a resistant variety, but availability of seed/planting materials is limited so a grower may not be able to access a variety that could allow them to limit their application of fungicide. Approaches to IPM and any association with incentives need to recognise the potential interdependence on other elements of the production system.