**VI IPM Plan and Assessment. specialist horticulture crops.**

* *Please answer the questions as accurately as you can. Good data is needed to provide you with a realistic measure of the adoption of IPM by your business.*
* *Please note that the term ‘****pests’ relates to*** ***diseases, weeds and invertebrate pests*** *(insects, nematodes, slugs and snails).*
* *Similarly, ‘****plant protection products’ refers to fungicides, herbicides, insecticides, nematicides, slug control agents, plant growth regulators and elicitors.***
* *Please read question instructions carefully as the type of response required may vary from question to question.*
* *Please complete the survey in full.*

**Please email completed surveys to Spencer.Collins@nfu.org.uk**

**SURVEY**

**First Name:**

**Surname:**

**Email Address:**

1. **What sector do you grow in?** *Please tick all that apply*

 [ ]  Bulbs and outdoor flowers

 [ ]  Field vegetables

 [ ]  Hardy nursery stock

 [ ]  Protected edibles (including mushrooms)

 [ ]  Protected ornamentals

 [ ]  Salads and/or herbs

 [ ]  Soft fruit

 [ ]  Tree fruit

 [ ]  Hops

 [ ]  Organic production

 [ ]  Other (please specify)

1. **How familiar are you with Integrated Pest Management (IPM)?** *Please tick one answer only.*

 [ ]  Not at all familiar

[ ]  Somewhat unfamiliar

[ ]  Moderately familiar

[ ]  Familiar

[ ]  Very familiar

1. **How important do you consider the following elements of IPM to be?** *Please**place one X per row.*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Not relevant to my business | Notimportant | Neitherimportant orunimportant | Important | Essential |
| **Pest Prevention** |  |  |  |  |  |
| Considering site selection (factors such as pest burdens, altitude etc) |  |  |  |  |  |
| Adopting measures specifically to improve the health of soil/growing media (such as green cover, cover crops, addition of organic manures, incorporation of crop residues, amendments/enhancers, biochar etc.)  |  |  |  |  |  |
| Practicing good hygiene (such ascleaning equipment and storage facilities and implementing biosecurity measures etc.) |  |  |  |  |  |
| Following good phytosanitary practices (such as sourcing clean seed, certified plant material, timely incorporation of crop residues/removal of affected plant material etc) |  |  |  |  |  |
| Adopting biological approaches (such as sowing companion crops, sowing vegetation that host beneficial insects, beetle banks etc.)  |  |  |  |  |  |
| Adopting crop management measures (such as varying drilling/plant transplant dates, increasing seeding/planting rate to control weeds, weed competitive varieties, exploiting varietal resistance/tolerance etc.) |  |  |  |  |  |
| Use of a rotation |  |  |  |  |  |
| Use of pest repellents  |  |  |  |  |  |
| Optimising cultivation practices to improve soil health/structure (such as subsoiling, avoiding cultivation of saturated soils, no/min till etc) |  |  |  |  |  |
| Using cultivation practices for weed control (such as stale/false seedbeds, ploughing, inter-row hoeing etc) |  |  |  |  |  |
| Use of physical pest barriers (such as fine netting/enviromesh etc) |  |  |  |  |  |
| Use of biostimulants |  |  |  |  |  |
| Use of seed treatments |  |  |  |  |  |
| Use of elicitors |  |  |  |  |  |
| **Detection** |  |  |  |  |  |
| Monitoring and surveillance of invertebrate pests (and beneficials), weed and disease levels |  |  |  |  |  |
| Reacting to disease/insect pressure alerts and decision support systems etc (such as aphid surveys and disease forecasts/models) |  |  |  |  |  |
| **Intervention** |  |  |  |  |  |
| Using plant protection products only when justified (e.g. only once economic thresholds have been reached, or according to disease forecasts) |  |  |  |  |  |
| Use of biological pesticides (e.g. microorganisms, plant extracts) |  |  |  |  |  |
| Introduce biological controls, such as beneficials  |  |  |  |  |  |
| Choosing selective chemical controls to reduce resistance build-up, or to promote beneficial interaction |  |  |  |  |  |
| Introducing semiochemicals (e.g. mating disrupters)  |  |  |  |  |  |
| Introducing physical controls (such as flailing, mechanical/hand weeding, flaming/hot foam) |  |  |  |  |  |
| Destroying infected plant material |  |  |  |  |  |
| **Assess/revaluate** |  |  |  |  |  |
| Regularly reviewing the effectiveness of methods used and considering alternative approaches |  |  |  |  |  |

1. **Please indicate what cultivations you do?** *Please tick all that apply*

[ ]  Cultivations are not relevant to my business

 [ ]  Ploughing

 [ ]  Non-inversion (minimum) tillage

 [ ]  Regular subsoiling/mole ploughing

 [ ]  Direct drilling (no tillage)

 [ ]  Rotational ploughing (every few years)

 [ ]  Strip tillage

 [ ]  Bedmaking

 [ ]  Other (please specify)

1. **What factors do you consider when choosing crop *variety*?** *Please select the factors you**consider for the three most economically important crops you grow. Please tick all that apply*

|  |  |  |  |
| --- | --- | --- | --- |
|  | Crop 1 | Crop 2 | Crop 3 |
|  |       |       |       |
| End market |  |  |  |
| Adviser recommendation |  |  |  |
| Gross margin |  |  |  |
| Price of plant material/seed |  |  |  |
| Yield potential |  |  |  |
| Quality potential |  |  |  |
| Consistency of performance |  |  |  |
| Local climate conditions |  |  |  |
| Soil type |  |  |  |
| Disease resistance |  |  |  |
| Weed competitiveness |  |  |  |
| Insect pest tolerance / resistance |  |  |  |
| Availability of healthy plant material/certified seed |  |  |  |
| None of the above |  |  |  |
| Other (Please specify) |  |  |  |
|  |

1. **Are there any crops that used to be a regular part of your business, but that you have stopped growing in the past 5 years due to plant health reasons and why?** *Please tick all that apply*

If this question is not relevant to your business, please move on to the next question

|  |  |  |  |
| --- | --- | --- | --- |
|  | Crop 1 | Crop 2 | Crop 3 |
|  |       |       |       |
| Loss of plant protection products |  |  |  |
| Invertebrate pest pressure (please specify pest(s)) |  |  |  |
| Weed pressure (please specify weed(s)) |  |  |  |
| Disease pressure (please specify disease(s)) |  |  |  |
| Climate conditions becoming unsuitable |  |  |  |
| Adviser recommendation |  |  |  |
| Unreliable yield  |  |  |  |
| Changing market requirements |  |  |  |
| Unreliable quality  |  |  |  |
| Other (Please specify) |  |  |  |
|  |

1. **Name the specific weeds, diseases, insect, nematode or slug pests which you see as being of the greatest concern to your crop production.** *Start with 1 = greatest concern. You do not need to fill in all boxes.*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Current threat |  |  | Future threat (5+ years time) |
| 1. |        |  | 1. |        |
| 2. |        |  | 2. |        |
| 3. |        |  | 3. |        |
| 4. |        |  | 4. |        |
| 5. |        |  | 5. |        |

1. **Which of the following statements best describes your relationship with your agronomists/crop protection advisers?** *Please tick one only*

[ ]  I rely on them and act on their recommendations

[ ]  I tell them what I want from them and they respond to meet my wishes

[ ]  We decide on the pest management strategy together

[ ]  I listen to their advice but will always consult other sources of information

[ ]  I listen to their advice but adjust recommendations if needed when in the field

[ ]  I don't use an agronomist

1. **Are you a member of an agronomy or crop discussion group?** *Please tick*

[ ]  Yes *(please specify)*

[ ]  No

1. **What, if anything, is preventing you from increasing uptake of IPM practices?** *Please tick all that apply*

[ ]  Lack of evidence for IPM

[ ]  Low confidence in IPM

[ ]  Lack of suitable IPM solutions

[ ]  Unaware of crop specific IPM advice

[ ]  Risks associated with IPM

[ ]  Equipment costs

[ ]  Labour costs

[ ]  Time and effort required to increase knowledge of IPM

[ ]  Farm constraints (e.g. lack of suitable land for crop rotation)

[ ]  Market constraints

[ ]  Increased waste

[ ]  Other *(please specify)*

[ ]  Nothing/none of these

[ ]  Don’t know

1. **What is your position on the enterprise?** *Please tick all that apply*

[ ]  Owner

[ ]  Tenant

[ ]  Farm worker/ sprayer operator

[ ]  Contractor

[ ]  Farm/production/technical manager

[ ]  Agronomist

1. **What is the predominate soil type/growing media for the three most economically important crops you grow?**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Crop 1 | Crop 2 | Crop 3 |
|  |       |       |       |
| **Outdoor soil-grown crops** |  |  |  |
| Light Sand  |  |  |  |
| Shallow  |  |  |  |
| Medium  |  |  |  |
| Deep Clayey |  |  |  |
| Deep silty  |  |  |  |
| Organic |  |  |  |
| Peat |  |  |  |
| Other *(please specify)* |  |  |  |
| **Outdoor container grown** |  |  |  |
| **Permanent protection (e.g. glasshouses)** |  |  |  |
| Compost/organic media (container grown) |  |  |  |
| Soil |  |  |  |
| Hydroponics |  |  |  |
| Synthetic growing media (e.g. perlite/rock wool) |  |  |  |
| Other *(please specify)* |  |  |  |
| **Semi-protection (e.g. polytunnels, open-sided canopies)** |  |  |  |
| Compost/organic media (container grown) |  |  |  |
| Soil |  |  |  |
| Hydroponics |  |  |  |
| Synthetic growing media (e.g. perlite/rock wool) |  |  |  |

1. **How much land you farm under the follow categories?**

|  |  |
| --- | --- |
| Biodiversity scheme  | Ha |
| Field outdoor cropping  | Ha |
| Semi-protection cropping (polytunnels, open-sided canopies) | Ha |
| Permanent protection cropping (glasshouses) | Ha |
| Outdoor container grown | Ha |
|  |  |
| Estimate what percentage of the land you farm or manage is owned? |  % |
| Estimate what percentage of the land you farm or manage is rented/leased? |  % |
| Estimate what percentage of the land you farm or manage is contract farmed? |  % |

1. **Your age**.*Please state (optional)*

1. **Please state your county**

1. **Do you have a farming qualification?** *Please tick all that apply*

[ ]  None

[ ]  NRoSO membership

[ ]  National Spray Proficiency Test (NSPT)

[ ]  BASIS

[ ]  FACTS

[ ]  National Diploma

[ ]  Bachelor’s degree

[ ]  Higher degree

[ ]  Other (please state)

1. **Are you involved in a scheme/ initiative that promotes biodiversity e.g. Countryside Stewardship, LEAF, CFE,** **EFS, Glastir, AECS etc.**

[ ]  Yes *(please state)*

[ ]  No

1. **Are you involved in an assurance scheme?**

[ ]  Yes *(please state)*

[ ]  No

**PLAN**

1. **For this cropping year, which management measures will you employ to prevent/control pests on the land that you farm or manage?** *Please place one X per row*
2. *To prevent/control weeds*

|  |  |  |  |
| --- | --- | --- | --- |
|  | I will employ this cropping year | I will not employ this cropping year | Practice not relevant/available to my business |
|  |
| Weed prevention is not a consideration for my business |  |
| Use of a non-selective herbicide (e.g. glyphosate) pre-sowing |  |  |  |
| Ensure control measures are used at the optimum time |  |  |  |
| Patch spraying of weeds with a selective herbicide or selective application method. |  |  |  |
| Manage cropped headlands/surrounding vegetation to prevent weed ingress from non-cropped areas |  |  |  |
| Regular cleaning of harvesting and cultivation equipment and/or ensuring areas with high weed levels are harvested last |  |  |  |
| Choose competitive varieties |  |  |  |
| Set action thresholds |  |  |  |
| Use a selective herbicide at appropriate dose |  |  |  |
| Use of a rotation |  |  |  |
| Frequent crop inspections to monitor weed pressures |  |  |  |
| Adopting crop management measures (such as varying drilling/plant transplant dates, increasing seeding/planting rate etc) |  |  |  |
| Consider site selection (factors such as weed burden etc) |  |  |  |
| Other *(please specify)*       |

1. *To prevent/control disease*

|  |  |  |  |
| --- | --- | --- | --- |
|  | I will employ this cropping year | I will not employ this cropping year | Practice not relevant/available to my business |
|  |
| Grow resistant varieties |  |  |  |
| Optimising nutrition (including the use of biostimulants) |  |  |  |
| Use certified seed/plant material |  |  |  |
| Test non-certified seed and treat if required |  |  |  |
| Regularly test soils/growing media/water treatments for plant pathogens |  |  |  |
| Use biopesticides (e.g. microorganisms, plant extracts) |  |  |  |
| Use seed treatments where available |  |  |  |
| Consider disease forecasts |  |  |  |
| Monitor temperature and humidity |  |  |  |
| Use on-site disease modelling |  |  |  |
| Use of a rotation |  |  |  |
| Remove/destroy affected plant material (incl. timing incorporation) |  |  |  |
| Set action thresholds |  |  |  |
| Use a selective chemical control at appropriate dose |  |  |  |
| Use of elicitors (inducers of plant defence responses) |  |  |  |
| Frequently clean glasshouses/polytunnels/equipment and implement good biosecurity practices |  |  |  |
| Frequent crop inspections to monitor disease pressures |  |  |  |
| Other *(please specify)*       |

1. *To prevent/control invertebrate pests*

|  |  |  |  |
| --- | --- | --- | --- |
|  | I will employ this cropping year | I will not employ this cropping year | Practice not relevant/available to my business |
|  |
| Encourage beneficial insects through provision of habitats |  |  |  |
| Consider site selection (factors such as pest burdens etc) |  |  |  |
| Use physical barriers (e.g. netting) |  |  |  |
| Optimising nutrition (including the use of biostimulants) |  |  |  |
| Introduce beneficial predators/parasitoids |  |  |  |
| Use biological pesticides (e.g., microorganisms, plant extracts) |  |  |  |
| Use of semiochemicals (e.g. pheromones) |  |  |  |
| Use seed treatments |  |  |  |
| Cultivations for control of slugs (preparation of fine, consolidated seedbed, rolling) |  |  |  |
| Use of a rotation |  |  |  |
| Consider invertebrate pest forecasts |  |  |  |
| Monitor temperature and humidity  |  |  |  |
| Set action thresholds |  |  |  |
| Use selective chemical controls |  |  |  |
| Frequently clean glasshouses/polytunnels/equipment and implement good biosecurity practices |  |  |  |
| Frequent crop inspections to monitor populations of invertebrate pests and beneficials  |  |  |  |
| Other *(please specify)*       |

1. **Which of these factors influence your use of plant protection products?** *Please tick all that apply*

|  |  |
| --- | --- |
|  |  |
| Growth stage of the crop |  |
| Crop economic potential |  |
| Calendar date |  |
| Product quality specification |  |
| Retailer specifications on PPP usage |  |
| Resistance management |  |
| Harvest interval |  |
| Forecasts and current atmospheric conditions (e.g. temperature or humidity)  |  |
| Industry crop monitoring information (e.g. aphid/disease alerts, forecasts etc) |  |
| Predictions of Decision Support Systems (e.g. pest and disease models/forecasts) |  |
| Availability of plant protection products |  |
| Observed levels of pest/weed/disease presence in the field (including thresholds) |  |
| Observed levels of beneficials (predators, parasitoids, etc.) in the field |  |
| Observed levels of pollinators in the field |  |
| Agronomist recommendation |  |
| Previous experience |  |
| PPP product target selectivity |  |
| Environmental Impact Assessment |  |
| Actions of/advice from other growers in the area |  |
| None of the above, I operate a fixed spraying programme |  |
| Other (please specify below)      |  |

1. **What factors will you consider when developing and evaluating your IPM plan?** *Please tick all that apply.*

[ ]  This is the first time I have completed a formal IPM plan

[ ]  Crop inspection data from previous crops, used to assess the performance of various control measures

[ ]  Research on IPM measure efficacy

[ ]  Historical pest problems recorded and monitored for changes between seasons

[ ]  Advice from agronomist/crop protection adviser

[ ]  Yield information, used to identify areas requiring specific attention

[ ]  Cost-benefit analysis of management options

[ ]  End-market requirements

[ ]  Variety resistance

[ ]  Availability of effective plant protection products

[ ]  Presence of soil borne diseases, invertebrate pests

[ ]  Position of each crop in your planned rotation

[ ]  Pesticide anti-resistance strategies

[ ]  Take into account invertebrate pest/disease monitoring

[ ]  Take into account invertebrate pest/disease forecasts

[ ]  Emerging/invasive invertebrate pest/weed/disease problems on your farm, or in the local area

[ ]  Peer to peer learning/shared grower experience/crop associations

[ ]  Weather/soil conditions

[ ]  None of the above

[ ]  Other (please specify)

1. **Do you currently use any Decision Support Systems**

Yes [ ]  No [ ]

**If Yes:**

B) Which Decision Support Systems (DSS) do you currently use?

C) Do you discuss the information contained in the DSS with your main agronomist?

 Yes [ ]  No [ ]

D) Do you check the latest updates to the DSS when taking decisions to treat or not to treat the crop?

 Yes [ ]  No [ ]

E) If a DSS is available for a crop you grow but you do not use it, why? *Please* *tick all that apply*

[ ]  Lack of trust in the support tool

[ ]  Bad experience

[ ]  Have not tried any decision support system

[ ]  Not aware of them

[ ]  Lack of management time to monitor and/or implement

[ ]  Financial cost

[ ]  Other (with a text box)

1. **Which of the following sources of IPM advice will you consider to input into your IPM plan?** *Please tick all that apply*

|  |  |
| --- | --- |
| Open days/crop walks |  |
| Grower discussion groups |  |
| Other growers (not including discussion groups) |  |
| Independent agronomist  |  |
| In-house agronomist |  |
| Agronomist employed by a distributor  |  |
| Product manufacturer representative |  |
| Contractors |  |
| Evaluating previous control strategies used on your farm |  |
| Farming press |  |
| Social media  |  |
| Online resources (e.g. the Voluntary Initiative, quality assurance scheme information etc) |  |
| Information and updates from membership, levy and research organisations |  |
| Other (please specify)       |  |

1. **Which specific facilities or procedures to minimise plant protection product movement to watercourses or to groundwater will you use?** *Please tick all that apply*

During filling and cleaning out the sprayer

 [ ]  Use of a closed-transfer system when filling the sprayer and cleaning containers

 [ ]  Use of a covered bunded sprayer filling area

 [ ]  Use of an uncovered bunded sprayer filling area

 [ ]  Use of a drip tray

 [ ]  For disposal of waste dilute pesticide, use of on farm systems (e.g.biobeds/biotanks/biofilters)

Field operations

 [ ]  Choice of crop or pesticide product

 [ ]  Use of low drift (3\*/4\*) nozzles

 [ ]  Section control of sprayer

 [ ]  Use of buffer strips

 [ ]  Management of tramlines

 [ ]  Use of weed-wiper

 [ ]  Use of the VI Check it Out tool

[ ]  None of the above

[ ]  Other *(please specify)*

[ ]  I am involved in a water company scheme to protect water quality

[ ]  There are no groundwater source protection zones on the land farmed or managed

[ ]  There are no watercourses on or immediately adjoining the land farmed or managed

Are there any other examples of best practice that you do to protect water quality? If so please state here      \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**25. If there are any examples of good IPM practice that you consider to be particularly effective to highlight, please state up to three below**

1.

2.

3.