Saya Harvey – Manor Farm, Owston

Saya Harvey and her father Richard Harvey farm at Manor Farm, Owston in Leicestershire. They grow three crops in rotation on 90ha of arable land: oilseed rape, feed wheat and beans. The farm also includes 10ha of extensively managed grassland, a scheduled ancient monument and 10ha of new woodland habitat.

Integrated Pest Management

Currently, like many arable farmers, blackgrass is the biggest issue on the farm. "Our blackgrass control is not always as effective as we would like it to be", says Saya, who has tried various different cultural control methods including delayed drilling of wheat, spring cropping, zero tillage and hand rogueing. "It's all edging forward our knowledge and there is no doubt that a combination of control methods is essential. Our system used to have a grass ley in the rotation when we had livestock and we never had a problem with blackgrass so we are considering increasing and extending the rotation. However, on a small farm with field operations done by a contractor, three crops do make life more simple."

Disease management at Manor Farm is all about variety selection and they are very careful to choose varieties that are resistant to the most serious diseases in the area. "We are going to try the wheat variety Extase next year as is looks like it has good resistance to *Septoria tritici*. We are also considering a variety of oilseed rape that is resistant to club root called Crocodile as we have had one or two patches of the disease around the farm." Fungicides are an important part of disease management but by using resistant varieties timings are more flexible and costs can be kept to a minimum.

Saya's philosophy on insecticide use is to try very hard not to use them. "Since we created diverse margins around all our fields we have had very little need to use insecticides. However, since the ban on neonicotinoid seed treatments, cabbage stem flea beetle has posed a few challenges in our oilseed rape. This year we have tried chopping and spreading straw and leaving the stubble much taller, apparently this confuses the beetles and it seems to be working so far."

Bruchid Beetle

Bruchid beetle *(Bruchus rufimanus)* affects both spring and winter bean varieties. During flowering, adult beetles fly into bean crops and lay their eggs on the developing pods. The larvae then bore through the pod and into the seed, eating their way out again when they become adults.

In field beans, seeds damaged by bruchid beetle are not suitable for human consumption and the premium this attracts. Some farmers will spray their beans according to the BruchidCast system developed by Syngenta and PGRO. This forecast is based on air temperature: when 3 consecutive days at 20°C have been reached the beetles are active in the crop and laying eggs so this is a trigger to spray with a broad spectrum pyrethroid insecticide. This treatment is recommended every 7-10 days if conditions remain suitable. The forecast assumes that bruchid beetles will be present but this is not always the case so there appears to be huge scope to develop our understanding of the biology and behaviour of this pest and potential for control by natural predators.

To address the problem of resistance, NIAB and other stakeholders are carrying out research into the use of a pheromone/semio-chemical system to monitor and risk assess as part of an integrated control method. They hope that this will provide a more sustainable approach to IPM which would include resistant or tolerant varieties (O'Sullivan, 2019).

Saya recognises the risk of resistance development in Bruchid populations through repeated applications of insecticides and carries out monitoring in the field to assess beetle numbers. "Someone from PGRO showed me how to catch bruchid beetles using a white plastic tray and shaking it under flowering bean plants. For several years we didn't have any bruchid and never sprayed and saw no damage. The population of bruchid beetle has built up now so we do sometimes have to spray but the heavy rainfall we had this spring seemed to diminish populations so we didn't spray insecticide on our beans this year."

To watch a video on Bruchid trap placement, please click here.

The agronomy on farm is carried out by Saya, who is BASIS qualified. Prior to this, Saya's father did the agronomy so it has always been done in house. "We are members of NiabTag and

have telephone access to a very good agronomist which is really helpful on occasions. We also purchase chemicals through a distribution company so frequently consult their agronomists, particularly on new product availability. Because we farm a small area we can keep a close eye on the crops and use all economic threshold information available to us. We possibly take more risks than other farmers and agronomists because we can act quickly if the situation changes."

The farm has 4, 6 or 12 metre margins around all the fields, helping to host a good population of beneficials that predate aphids such as lace wings, ladybirds and carabid beetles. The margins are made as floristically diverse as possible through plant transplantation and self-seeding. Initially the margins were established in the original Countryside Stewardship Scheme over 20 years ago and were tussocky grass margins but as they developed the species diversity has grown. They are topped on a regular basis to check the grass species and allow flowering species to thrive like black knapweed, birds foot trefoil, red clover, pignut, field vetch, meadowsweet and self-heal.

In terms of tillage, Saya and Richard try to carry out min-till where possible but they also believe it is important to keep their options open with a "one size doesn't fit all" approach. "It entirely depends on the weather conditions during harvest, the weed problem in the field and the crop you are trying to establish. Sometimes ploughing is necessary to achieve effective weed control both in terms of burying seed and creating a good seed bed that will allow residual herbicides to work effectively.

Saya's Top 5 IPM techniques:

1. Cultivation to suit the situation; minimum or zero till whenever possible but stay flexible depending on conditions.
2. Anti-resistance strategy, use all cultural control methods available and then the chemistry is more effective. Farming is becoming a bit of an art with lots of different media involved!
3. Agronomy – regular crop walking and use of economic thresholds.
4. Encourage plants that support beneficial insects in field margins which hopefully reduces the need for insecticides.
5. Always grow resistant varieties, yield is never king.

> "We are very lucky because we use a contractor so we have access to a wide range of equipment and have lots of different options, total management control and fewer overheads."

Future

For future environmental land management schemes, Saya believes that farmers should continue to be paid for the environmental work that they do. "It looks like basic support for farming will disappear so the environmental services we provide should give a supplementary source of income. I think farmers need to listen to what is required in terms of clean air, water, healthy soil and biodiversity and adapt practices accordingly but at the end of the day the farm business must be thriving to enable us to produce food and wildlife hand in hand. Not everyone can get an income from re-wilding and if we did the country would need to import all our food which definitely isn't taking control".

It seems clusters of farms delivering environmental benefits are the future and Saya would like to develop a cluster of neighbouring farms to deliver local environmental priorities.

> "We applied to be a monitor farm but I think we are really too small which is a shame because there are small farms out there that need some ideas."

Getting more crops into the rotation, maybe novel crops with alternative UK markets, making field margins more diverse and getting on top of blackgrass are all future goals for Manor Farm.

POLICY ASKS

Compromise. Look at all the angles and benefits: e.g. with the plough – there are some indirect environmental benefits with ploughing; it's important not to just jump on the no-till bandwagon. There are unintended consequences of decisions and therefore we need science-based policy making.

Following this, we then need better knowledge exchange in order to get the information out there for farmers to be able to make better informed decisions.

Education; the general population is disconnected from farming. We need more links with farms not just in primary schools but also in secondary schools and colleges. It would also be great to have some funding in order to get schools to visit farms.

FOR FURTHER INFORMATION:

Bruchid beetle

BruchidCast system

PGRO

NIAB and other stakeholders are carrying out research

Click here to access the NFU's Environment Report

Encyclopaedia of Pests and Natural Enemies in Field Crops