



Integrated Pest Management Strategy

At Ipsum Vision, we aim to help you to get the best of your farm. Meanwhile our softwares will help you mitigate risk and achieve higher margins through inputs reduction and better crop quality, we know that IPM (Integrated Pest Management) is a long term strategy.

This Ebook has been designed to accompany you to build your own tailored IPM system which depends a lot on your farm, the way you manage it and of course its environment.

Asking the right questions, you will know your system better and you will be able to customize BugVision to report accurate results.

This Ebook is describing the 10 steps to succeed in Integrated Pest Management

1. List your crops
2. Determine crops sensitivity to pests
3. Figure out biology and environment of pests concerned
4. List your ways of action (beneficial agents available)
5. Target and action modes of the beneficial agents
6. Implement a preventive action plan
7. Implement a curative action plan
8. Set bug count limits
9. Calculate cost of both plans
10. The Cost Effective Point

When you have worked on all those items, your system is ready and any issue addresses a corrective action that keeps your production safe.

Let's have a look at each step in detail:

1. List your crops.

This one is the easiest but you can go further listing your varieties. It might also be interesting to separate the different stages of the crop as each one may show its own sensitivity to pests. Early stages have usually soft tissues more appreciated by pests as well as flowering stages provide them with pollen.

It might also be important to eventually include your trials as it may be a nest for the pest to breed.

Dont forget to render all your crops in a calendar table showing for each of them the production period (as shown in illustration 1). We will show how important it is in Step 3 and we will link it to the pest’s biology.

Illustration 1

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Crop 1 Stage1												
Crop 1 Stage 2												
Crop 2												

2. Determine crops sensitivity to pests

According to your experience and history on the farm, it is important to list all the pest feeding on your crops according to their stages.

We also need to grade the risk the pest represents for the crop. Each one choose the kind of grading (letters, numbers... or “+” like on the table below) that fits the best to the company and the people that will use it. Four levels of risk is usually enough.

Illustration 2 give an example of the way to collect information with the growing team.

Illustration 2

		Pest 1	Pest 2	Pest 3	Pest 4	Pest 5	Pest 6
Crop 1	Stage 1	+++	+		++++		
	Stage 2			++			
Crop 2			++++	+		++++	
Crop 3	Stage 2						+
	Stage 3	++++			++		

Now you know where are your priorities and you know where to focus for you Integrated Pest Management Plan.

3. Biology and environment for pests concerned

In this section, we will tell you how to document your system with crucial information regarding the pest you are facing in your farm. It may look as a military tactic but you need to know your enemies and their strength and weakness.

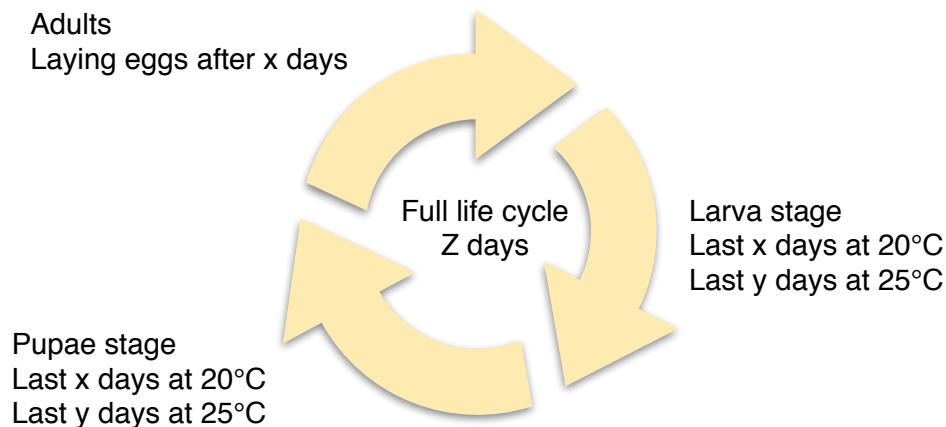
For the pests you are facing in your farm, you need to gather the information below:

- Lifespan of the adults
- Egg laying delay
- Larva stage duration
- Pupae stage duration

Duration of one cycle (from one adult to the next generation) and how does it depends on environment like temperature, humidity or light.

The best is to download a lifecycle for each of the concerned pest on the Internet. The illustration 3 show an example.

Illustration 3



This knowledge is very important in your integrated pest management system as :

Some pest stages are more difficult than others to fight

As you usually cannot fight the adults, you will cut the cycle at an early stage (larvae or pupae) and you will see results later on (two to three weeks)

The duration of the whole cycle is also important to implement your strategy

Knowing your pests in details, we will then list the ways of action.

💡 Those information will be found on Wikipedia and on google/images for the lifecycle.

4. List your ways of action

There are lots of ways to control the pests. Here is a short list :

- Manage the environment to interrupt pest cycle
- Isolate the production zone from oncoming pests
- Set traps to catch the pests
- Spread beneficial insects that feed on pests
- And ... as a backup spray chemicals (if you are not organic)

5. Targets and action modes of the beneficials

At that point, we need to get the knowledge of the beneficials action mode to focus on how to use them.

Some beneficial insects feed on different pests but we need to list their order of preference.

The Illustration 4 below show the information that need to be collected.

As we did previously on the pests, you also need to collect all you can about the biology of your Beneficial agents :

Lifespan

Does it breed in your environment?

If so, What does it need to breed? to save on later releases.

Durations and need of each stage

Illustration 4

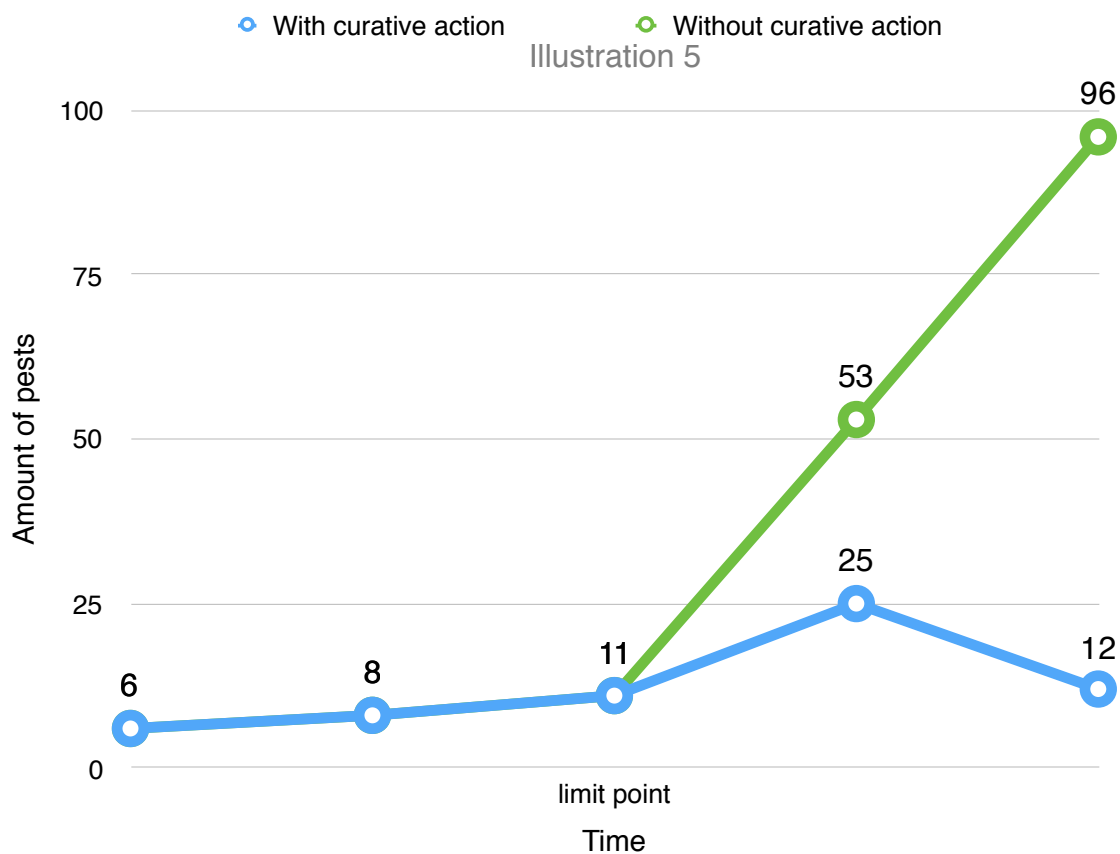
	Preventive rate (per Square meter)	Curative rate (Per square meter)	Temp (deg C)	Note	Targets and feeding preference
Beneficial Agent 1	2	10	until 30		Larvae of fungus gnats and shore flies
Beneficial Agent 2	50	50-150	Until 25		Thrips larvae and spider mites
Beneficial Agent 3	2	20	Until 32	Need light	All stages of thrips

💡 Those information will be found on Wikipedia and on google/images for the lifecycle. Your beneficial insect provider may be able to help you collect it.

6. Set Bug counts limits

Usually, the populations of pests don't grow progressively but exponentially when it goes over a certain point. This number chosen indicates when you need to switch from preventive to curative plan. The content of each plan will be detailed in the next two paragraphs.

The Illustration 5 below explains how important it is to set correctly the limit. As shown with the blue series, the curative plan helped to come back to normal situation. If you trigger the curative plan too late, it is hard to get the control back as shown with the green series.



The limits have to be set for each crop+bug case. **We can even be more specific setting limits per stage or variety for the crop. On the bug side, we can also define different limits according to the period of the year as their biological cycle usually depends on light and temperature.**

The limits also depend on the kind of trap you are using (Size, Color, Kind...) and it is mostly based on your experience. The kind of trap is an important choice that needs to be allocated time and comparison. Once you choose one, it is better not to switch to another as you want to compare values using the same reference.

7. Implement a preventive action plan

In this section, we will describe how to implement a standard action plan that will be used on a weekly basis so long the numbers stays under the limits we just talked above. When the pest are under control, you need to make sure that your action is efficient but not too expensive.

It is a kind of process that you implement to remove the risk and let you focus on other management decisions.

As describe earlier, you know that so long you are under the limit, you keep running the preventive plan and dont have to care about it.

💡 A good start is to use the rate given by the beneficial insects provider and adapt it to your situation according to what you observe while monitoring.

For every production zone, you need to know the accurate surface to calculate the amount of beneficial agents you have got to order according to your preventive action rate

8. Implement a curative action plan

This plan is the one you never want to use but you still need to prepare it to avoid panic situation if the pest records exceed the limit.

Usually as curative plan. you have to spread **two times or more** the quantities of the preventive action plan

💡 Your beneficial insect provider may be able to help you with the rates for a curative action.

The more important is to trigger this plan as soon as the numbers cross the red line (limit) to get the situation back under control and switch back to preventive action plan. It is all about reactivity to keep the costs low.

9. Calculate cost of both plans

It is always interesting to calculate the exact cost of each plan to understand that it is usually cheaper to be a little bit stronger on the preventive plan to avoid the use of the curative one.

When you lose the control on the pest populations, the curative plan cost usually 2 to 3 times more on beneficials for 4 to 8 weeks as show in illustration 6. At the end of the year, it usually cost more.

Plus the stress on the plants than can delay your sales or even worst the visible damages that impact the quality for sales.

Illustration 6

	Jan	Fev	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Efficient preventive plan	\$110	\$110	\$110	\$110	\$110	\$110	\$110	\$110	\$110	\$110	\$110	\$110	\$1320
Inefficient preventive plan	\$100	\$100	\$100	\$100	\$270	\$270	\$100	\$100	\$100	\$100	\$100	\$100	\$1540

10. Cost effective point CEP

For your Preventive plan, you need to be exactly at the Cost Effective Point (CEP). This is where you are maximizing everything :



Very good crop quality
Lower possible beneficial agents costs

And so, highest margin possible



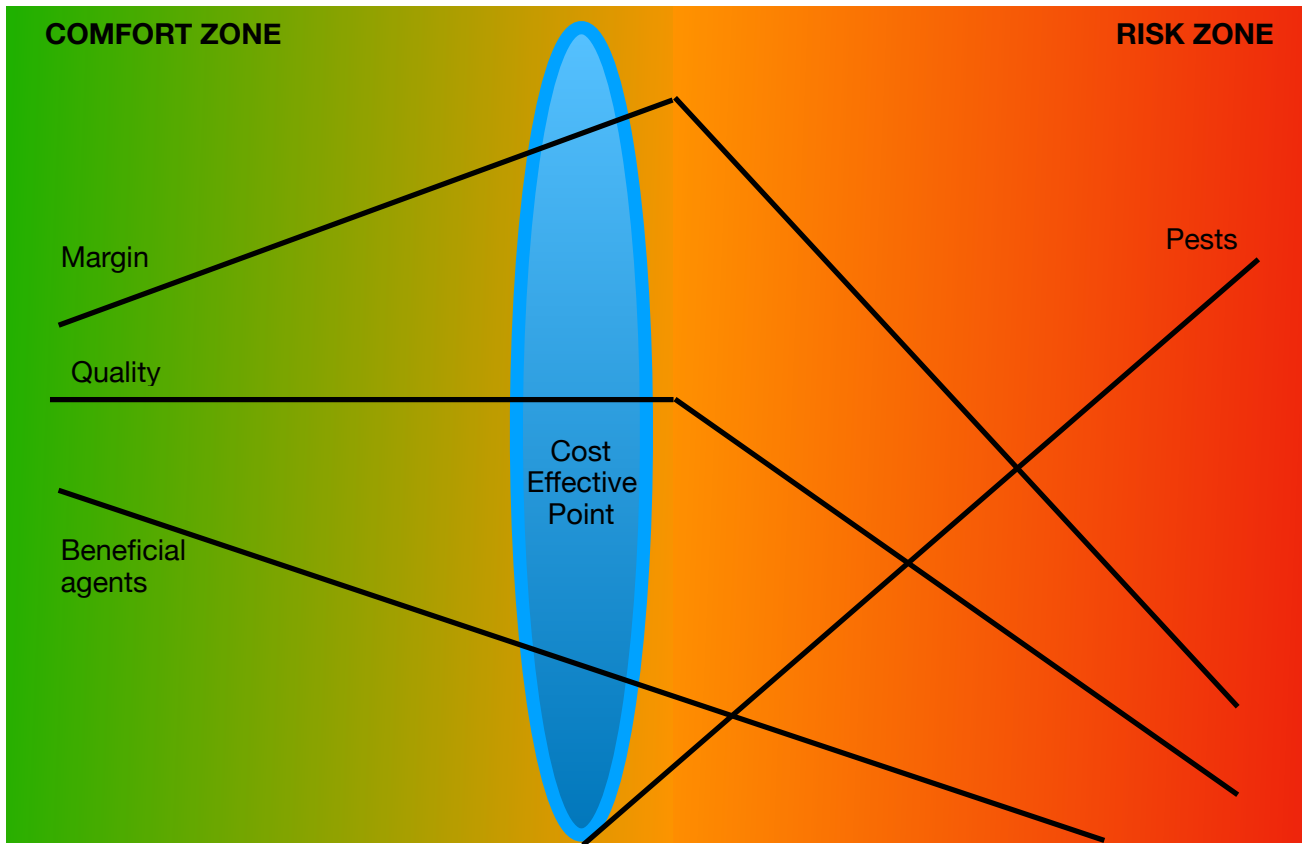
While keeping the pests under control.

Finding the CEP for all your crops all over the year (seasons) requires a lot of experience but it is something to keep in mind as a final target.

The best way to determine the CEP is to start from the comfort zone (High enough beneficial agents) and move slowly through small reducing steps. And you need to stay

on each “step” for two to three weeks before moving down again as you need that amount of time to validate that you are not already too far.
Going too fast will begin you to the “risk zone” right away with the extra cost of the curative plan and will not allow you to find the CEP.

Illustration 7



When you master at finding the CEPs on your farm, then you have the most efficient, cost effective and sustainable system producing high quality plants without any pest damage.

Thank you for reading this Ebook.

✍️ Now, it is your turn. Get a pen and a piece of paper to make your farm one of the most competitive in the business.

IPSUM Vision also propose a coaching to help you build your customized IPM system. [Click here to ask for a quote.](#)