

BEOBIA

PRODUCT MANUAL

Re_™

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INTRO

01

INTRODUCTION

Thanks for purchasing your Re_ and joining the Food Revolution!

If you have questions, tips or advice please share them on the Facebook 'BeoBia Community' page. Scan the QR code below!

Re_ can make between 100-300 grams of mealworms per tray, depending on temperature, humidity and number of beetles. Re_ is super easy to set up.

Please take care when using your Re_. Re_ is not a toy and young children should not play with it.

We hope you enjoy using your Re_.



Content may be subject to modification.

SETTING UP

02

SETTING UP

MEALWORM LIFE CYCLE:

Fun fact! Mealworm isn't a worm! It's the larval stage of the Yellow Mealworm - *Tenebrio Molitor* is its Latin name.

EGG:

1-3 weeks for eggs to hatch into mealworms.

MEALWORM:

This is what you eat! They grow to around 2.5 cm and can stay in this stage for several months.

PUPAE:

While in this stage they don't eat, drink or move. Don't be alarmed if they wriggle a little!

BEETLE:

The beetles live up to 3 months and are critical to having a successful farm. Be sure to replace dead beetles with Pupae.





SETTING UP

PLACEMENT:

Temperature and humidity have a big impact on the speed the mealworms develop. You'll be able to produce larger quantities of mealworms faster the closer your Re_ is to the ideal growing conditions stated below. So, the placement of your product will have a huge impact on its performance.

Average room temperature is around 20-22 °C (68-72 °F), however, if you want your mealworms to develop faster, we recommend placing your Re_ in a consistently warm part of your home. You don't want the air to be too dry, or too humid.

BEST CONDITIONS:

Flat surface

Temperature: 24-30 °C (75-86°F)

Humidity: 60%



GETTING STARTED

03

GETTING STARTED

After you have selected the perfect location for your mealworms you need to set up their home!

This is super simple.

RE_MINI CONTAINS:

- 1x Lid (light grey)
- 1x Beetle tray (green)
- 1x Mealworm tray (white)



RE_CONTAINS:

- 5x Lid (light grey)
- 1x Beetle tray (green)
- 5x Mealworm tray (white)



GETTING STARTED!

Order yourself some mealworms or mealworm beetles. Due to shipping logistics, we cannot offer mealworms. But this isn't a problem! We can provide information on available suppliers in your location. Mealworms are widely sold around the world online and in stores.

ORDERING MEALWORMS:

Ordering mealworms online is cheap and reliable. Type 'live mealworms' into the internet and we are sure you can find a local supplier. Post on the Facebook group if you need help from the BeoBia community.

To start off your population we have found that 120-150 grams of live mealworms work best.

Once the mealworms have turned into beetles, they will start laying eggs that will develop into your first generation of mealworms that you can cook with.

After your first harvest you can harvest a tray every 2/3+ weeks, but it can take 15+ weeks to get to your first initial harvest.

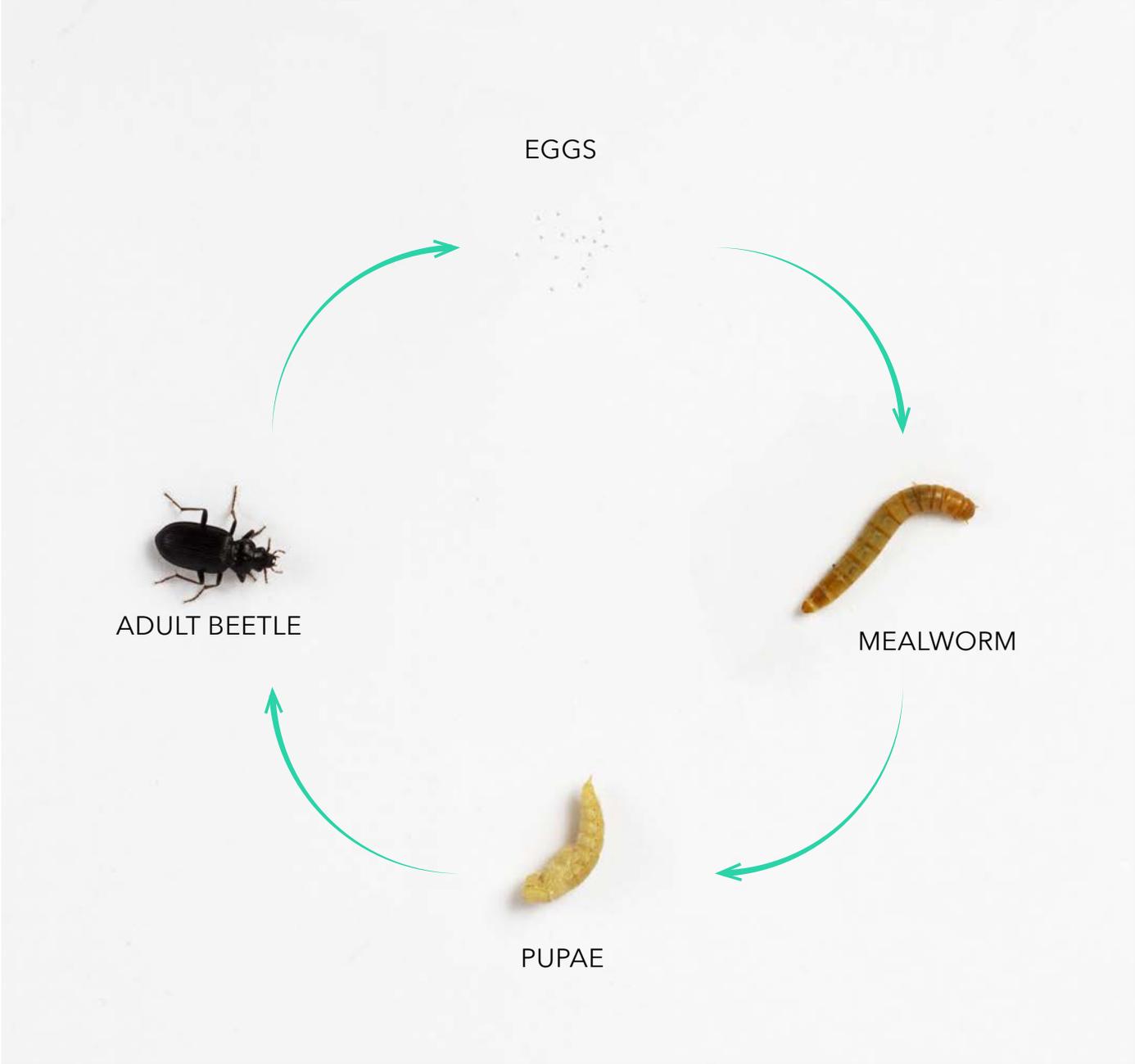
So, if you want to speed up the process follow 'quick start' below.

'QUICK START' ORDERING MEALWORM BEETLES:

We recommend purchasing adult beetles if possible, as you'll save several weeks of waiting for your initial mealworms to all turn into beetles. But... adult beetles are slightly harder to find and are considerably more expensive than purchasing mealworms.

Type 'live mealworm beetles' into the internet and we are sure you can find a local supplier. Post on the Facebook group if you need help from the BeoBia community.

PLEASE NOTE: Don't consume the first generation of insects that you initially purchase. They should just be used to produce future mealworms.



Re_ Mini

RE_MINI: SETTING UP

Set up: Order 60-100g of live mealworms. Follow all steps

'Quick Start' Set up: Order 150-200 mealworm beetles. Skip to step 6

1



Your Re_Mini consists of three main parts: 1x mealworm tray, 1x beetle tray and 1x lid (and a pair of tweezers!).

2



As soon as your mealworms arrive you should sieve them. Pour the contents through the lid and gently sieve. This is to separate the frass (insect poo) from the mealworms. You can use the frass as plant fertilizer.

Tip: They might smell a little when they first arrive.

3



Place the now clean mealworms into your mealworm tray. Add a layer of oats (around 2cm deep) into the tray with them.

Tip: Don't worry if some of your mealworms die, this is common for a batch ordered online. Just pick them up with your tweezers and remove them.

4



Add a thin layer of oats to your beetle tray.

Tip: Make sure you leave the pupae section empty (the raised centre platform). You don't want any oats on it.

5



Over the coming days/weeks all your mealworm will turn into pupae. As soon as you see pupae, transfer them to the pupae section as your mealworms might start to eat pupae if left together too long.

Tip: It is easier to pick up the pupae from their top half/head section as they sometimes like to wiggle.

6



After a few more days/weeks all of your pupae should have turned into beetles and they will crawl off the pupae section. Your beetles will now produce eggs that will collect in the mealworm tray.

Tip: FOR QUICK START, place all beetles directly into the green beetle tray. Make sure to leave the center raised section empty

7



Make sure you feed the beetles and mealworms regularly. They need the moisture from fruit/vegetables. Feed them every couple of days.

Tip: Make sure you read the 'maintenance' section of this manual so you know what they can/can't eat.

8



After a few weeks you will start to see baby mealworms.

Tip: Depending on the room temperature it might take longer

9



After several more weeks you will see pupae. Allow some of your mealworms to turn into pupae to replenish your beetle population. Place them on the pupae section.

Tip: If you are running low on beetles allow more of your mealworms to pupate.

10



Make sure you keep your Re_ clean. Remove any dead insects you find.

Tip: Don't worry if some of your mealworms/pupae die. Just pick them up with your tweezers and remove them.

11



This is a never ending-cycle. Enjoy!

Tip: As long as you have beetles you will be able to produce mealworms.

Re_

RE_: SETTING UP

Set up: Order 120-180g of live mealworms. Follow all steps

'Quick Start' Set up: Order 250-300 mealworm beetles. Skip to step 6



Your Re_ consists of three main parts: 5x mealworm tray, 5x lids and 1x beetle tray (and a pair of tweezers!). Stack them, with tray 1 at the top.

Tip: Notice that there are small rectangles on the outside of the trays. These indicate which number they are and we will be referring to them over the next steps.



As soon as your mealworms arrive you should sieve them. Pour the contents through the lid and gently sieve into tray one. This is to separate the frass (insect poo) from the mealworms. You can use the frass as plant fertilizer.

Tip: They might smell a little when they first arrive.



Place the now clean mealworms into tray one. Add a layer of oats (around 2cm deep) into the tray with them.

Tip: Don't worry if some of your mealworms die, this is common for a batch ordered online. Just pick them up with your tweezers and remove them.



Place the beetle tray into tray two. Add a thin layer of oats to your beetle tray. Reassemble and stack your Re_ with tray one at the top.

Tip: Make sure you leave the pupae section empty (the raised centre platform). You don't want any oats on it.



Over the coming days/weeks all of your mealworms will turn into pupae. As soon as you see pupae, transfer them to the pupae section as your mealworms might start to eat pupae if left together too long.

Tip: It is easier to pick up the pupae by their top half/head section as they sometimes like to wiggle.



6

After a few more days/weeks all of your pupae should have turned into beetles and they will crawl off the pupae section. Your beetles will now produce eggs that will collect in the mealworm tray.

Tip: FOR QUICK START, place all beetles directly into the green beetle tray. Make sure to leave the centre raised section empty.



7

Make sure you feed the beetles and mealworms regularly. They need the moisture from fruit/vegetables. Feed them every couple of days.

Tip: Make sure you read the 'maintenance' section of this manual so you know what they can/can't eat.



8

After 2/3+ weeks the beetles will have populated tray two with eggs. Move the green beetle tray down into tray three. The beetles will now start to lay eggs in the new tray. Every 2/3+ weeks move the beetle tray into the next tray.

Tip: The holes in the beetle tray allow the beetle eggs to fall through and collect in the mealworm tray below.



9

After 10/15+ weeks tray two (the tray that had the beetles in first) should be ready to harvest. It will take longer if the temperature is constantly below room temperature (20 degrees).

Tip: Once you see some of your mealworms turning into pupae you should be ready to harvest!



10

Allow some of your mealworms to turn into pupae to replenish your beetle population. Place them on the pupae section. Remove any dead insects.

Tip: If you are running low on beetles allow more of your mealworms to pupate.



11

When you're ready to harvest, pour the contents of the tray through the lid and gently sieve. Use the frass as plant fertilizer and cook with your mealworms. Clean the mealworm tray then place the beetle tray back into it so the process can start again!

Tip: Don't worry if some of your mealworms/pupae die. Just pick them up with your tweezers and remove them.



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Repeat steps 9,10 and 11 for each tray when they are ready to harvest.

Tip: This is a never-ending cycle! As long as you have beetles you will be able to produce mealworms.

MAINTENANCE

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MAINTENANCE

Re_ is very low maintenance. We recommend cleaning each tray at least once during the development process, as a mild musky smell can come from the mealworm frass (insect poop).

THE LID

This gives the mealworms ventilation and also doubles up as a sieve! You can clean your tray by pouring the contents of the tray through the lid and sieving it. The frass will fall through. This can be used as plant fertilizer for your plants! Place the mealworms back into the tray with fresh oats and clean the lid with warm soapy water.

CLEANING

Once you have harvested a tray you need to clean the mealworm lid and tray with warm soapy water and then dry it. Please note: hand wash only. Don't put your Re_ in a dishwasher, as Re_ is made from recycled bio-plastics and will be damaged.

FEEDING

Oats are their main food source, we find that porridge oats for the beetle tray and bran oats for the mealworm tray works best.

Your mealworms and beetles also need water, which they get from fruit or vegetables. Place a few small pieces into each tray that has mealworms and beetles. Feed once every two days. Remove any old fruit/vegetables and replace. If any oats go mouldy, due to moisture from the fruit, remove mouldy oats and throw away.

Mealworms should have a varied diet of fruit and vegetables. We find that more fibrous foods are ideal, such as apples, compared to more watery foods, such as watermelon.

FEED THEM:

Feed them oats, fruit and vegetables only.

DO NOT FEED THEM:

Meat, fish, dairy, eggs, onions and rotten fruit/vegetables.

Food for thought...

Your mealworms are what you feed them. You'll eat mealworms that have only ever eaten clean oats and fresh fruit and vegetables. You are what you eat!

COOKING

05

COOKING WITH MEALWORMS

Mealworms are extremely easy and fun to cook with! They are also a protein super-food! Containing all nine essential amino acids and over 54% protein when cooked! It might seem a little daunting at first (which is totally normal if you are trying ANYTHING for the first time) but remember, over two billion people all around the world eat and enjoy insects. Welcome to the club!

We always cook our mealworms! Similar to how one wouldn't eat raw meat, one shouldn't eat raw mealworms. We take hygiene seriously at BeoBia, so when we are cooking with live mealworms we follow these simple steps.

1. Separate *(this step is optional)*

After harvesting your mealworms place them in a container with no food for half a day. This allows the mealworm to rid their system of frass. This practice is commonly used on shellfish and snails. Make sure the container has sufficient airflow.

2. Freeze

In the wild, during cold conditions, mealworms naturally go into hibernation - a deep sleep - to save energy. Your freezer conditions are colder than mealworms can naturally deal with. So, to humanely dispatch mealworms place them in the freezer. We typically leave them in the freezer for at least an hour.

3. Blanch

We then blanch them in boiling water for a few minutes to prepare and clean them for cooking.

4. Cook

Now it is cooking time! We like to fry or bake our mealworm and then eat them whole or in a powder form.

Let's start cooking!

For more information and recipe ideas look at your [BeoBia Re_cipe book!](#)

HEALTH & SAFETY

06

HEALTH & SAFETY

FIRST GENERATION:

Do not consume the first generation of insects that you initially purchase. They should just be used to produce future mealworms.

ALLERGIC:

If you are allergic to seafood/shellfish you could be allergic to mealworms. So, please be aware.

SKIN IRRITATION:

Handling large amounts of mealworms over a long period of time and in enclosed spaces can cause skin mild irritation. We at BeoBia take hygiene seriously. We advise you to wash your hands before and after interacting with your Re_.

DISCLAIMER:

BeoBia is not responsible for any issues caused by Re_ , growing mealworms, websites linked-to from this document, or the outcome of any recipe you try. You might not achieve desired results due to variations in elements such as humidity, room temperature, ingredients, cooking, errors or individual cooking ability. Please review all ingredients prior to trying a recipe in order to be fully aware of the presence of any substances that might cause adverse reaction in some consumers.

We hope you feel inspired by this manual and welcome to the food revolution!

ADDITIONAL INFO

07

ADDITIONAL INFORMATION

FEEDING TIPS:

You never want your mealworms to run out of food so we recommend that you give them plenty of oats. Make sure you feed them regularly, and if they eat all the fruit/vegetables increase the amount and remove the excess. They need a mixture of dry (oats) and moist (fruit/vegetables) foods!

CAN THEY ESCAPE:

Mealworms are very slow-moving creatures. They cannot hop or fly. We have designed Re_ so they should not escape.

FIRST BATCH SMELL:

Different suppliers might provide mealworms/mealworm beetles in different ways. And some might smell on arrival. This will be due to a build-up of frass in the container. We always suggest you sieve your mealworms upon delivery.

INSECT WELFARE:

We take this very seriously at BeoBia as mealworms are living creatures and deserve to be treated with respect. Please make sure they have the appropriate temperature and humidity level and you feed them regularly. Other than that, you shouldn't worry about your mealworm living conditions as our configuration mimics their natural living conditions. Mealworms often live in concentrated groups around food.

SOUNDS OR SMELLS:

Mealworms don't chirp, jump or fly! They are very relaxed insects. They pretty much just eat! So, you shouldn't be able to hear much from them.

DEAD INSECTS:

Do not worry if some of your mealworms/pupae/beetles die, this is common and happens. Make sure to remove and discard them when discovered.

ADDITIONAL INFORMATION

GOING ON HOLIDAY:

If you know you will not be able to feed your mealworms for several days - that's OK! Mealworms can live for several weeks without feeding. If you cannot get someone else to feed them, we recommend placing them into your fridge. They will hibernate. However, please be aware that eggs/pupae are less likely to survive an extended stay in your fridge.

CAN THEY FEEL PAIN:

For humans, pain is our body's response to a stimulus. In contrast, insects have a simple nervous system and a very different biological make up to mammals, and do not perceive pain like we do.

WHY IS TEMPERATURE AND HUMIDITY SO IMPORTANT:

Temperature and humidity impacts growth rate. So, if it's too cold it can take a long time for you to produce enough insects to eat. If it gets too humid mould might start to form, which can kill your mealworm. High humidity can cause dust mites (which naturally lie dormant in oats).

TOO FEW /TOO MANY BEETLES:

If you have too few beetles you will have a reduced mealworm output. If you have too many, you will have a large mealworm output and risk overpopulation, which can lead to humidity issues which can in turn lead to mould and dust mites.

FIRST GENERATION:

Do not consume the first generation of insects (the initial batch of insects you purchase). They should just be used to produce future mealworms.

I CAN'T SEE ANY MEALWORMS:

It can take several weeks for the eggs to develop into mealworms. They start off very small and are barely visible.

ADDITIONAL INFORMATION

BETLES IN MEALWORM TRAY:

Young beetles are more active than mature beetles, so you might find that a few beetles initially can crawl out of the beetle tray and make it into the mealworm tray. Do not worry, just place them back into the beetle tray. This should stop after a week or so.

HOW MUCH OATS DO THEY NEED:

Initially give the mealworm tray a 2cm layer of oats/oat bran, top this up whenever it gets noticeably depleted. Your beetle tray only needs a thin layer of oats, it's important not to overfill your beetle tray.

3D PRINTING:

You'll have noticed that your Re_ doesn't look or feel like a typical plastic tray. This is because we've used sophisticated 3D printing machines to create them. Allowing us to use recycled bio-plastic while also designing, manufacturing and shipping all of our products from the same facility, reducing our carbon footprint and product air miles. 3D printing machines work by creating 3D forms in 'layers'. It prints one layer, then it lays another on top, which is why Re_ is made up of a series of recycled bio-plastic layers.

ENJOY!



*If you have questions, tips or advice please share them
on the Facebook 'BeoBia Community' page.*