

**MicrobeBio®**

**PEPPER  
PRODUCTION  
GUIDE**

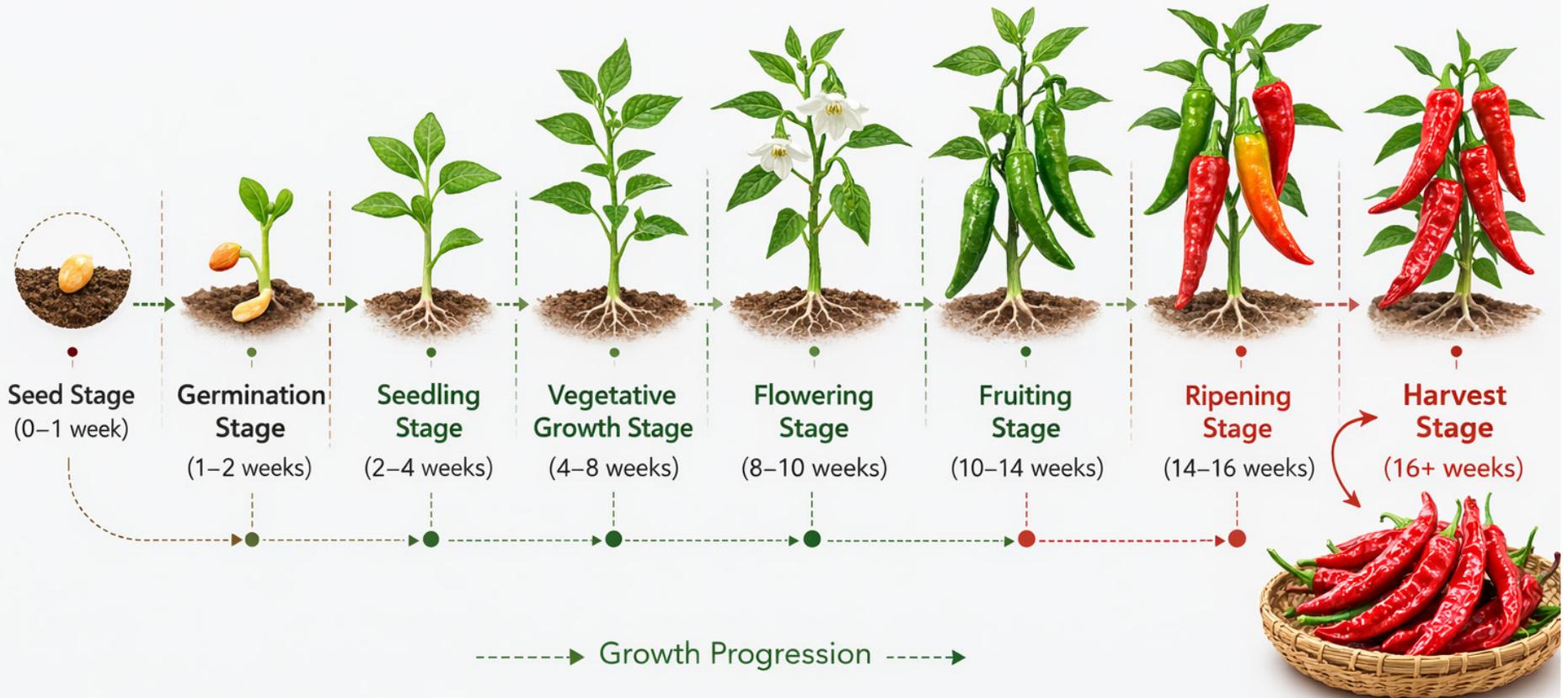




# APPLICATION

Seedling

# LIFE CYCLE OF GOCHUGARU (Korean Chili for Kimchi)



## Application rate - per hectare

# PEPPER

		SOAK SEEDS	SEED SELECTION & GERMINATION STAGE	TRANSPLANTING & EARLY VEGETATIVE GROWTH	VEGETATIVE GROWTH STAGE	FLOWERING STAGE	FRUIT DEVELOPMENT STAGE	HARVEST
ORGANIC SOIL ENHANCEMENT	PRODUCT	DAY -7	DAY 0	DAY 21	DAY 42	DAY 63	DAY 77	DAY 90
	* NATURE VIGOR	-	5 KG	5 KG	5 KG	5 KG	5 KG	-
	* HYDRO ACTIVATOR	-	8 L	8 L	8 L	8 L	8 L	-
	*AQUA ACTIVATOR GRW	500 G	500 G	500 G	500 G	500 G	500 G	-
	**RHIZO ACTIVATOR	-	50 KG	50 KG	50 KG	100 KG	100 KG	-
BIORATIONAL	*AQUA ACTIVATOR X1™ (NEMATO)	500 G	-	500 G	500 G	500 G	500 G	-
	*AQUA ACTIVATOR X3™ (PEST)	500 G	500 G	500 G	500 G	500 G	500 G	-
	*AQUA ACTIVATOR X5™ (FUNGUS)	500 G	500 G	500 G	500 G	500 G	500 G	-
	*AQUA ACTIVATOR X8™ (SNAIL)		-	-	-	-	-	-
	*AQUA ACTIVATOR X11™ (COMPOSE)		-	-	-	-	-	-
	*GREEN FURY (PEST)	<i>Plant disease outbreak (pest): agitate 500 ml Green Fury™ into at least 400 liters of non-chlorine water to treat 1 hectare.</i>						
*NATURE VENOM (FUNGUS)	<i>Plant disease outbreak (fungus and virus): agitate 500 ml Nature Venom™ into at least 400 liters of non-chlorine water to treat 1 hectare.</i>							



**Soaking  
pepper seeds**

Soaking pepper seeds (whether bell peppers, chili peppers, or hot varieties) before planting is a common optional step among farmers. It can help soften the seed coat, potentially speed up germination slightly, reduce the risk of mold or pathogens (especially with additives like hydrogen peroxide), and solution A, and sometimes improve overall success rates—though results vary by variety, seed age, and conditions.

Pepper seeds often take 7–21+ days (or longer for some hot types) to germinate even under ideal warm conditions (80–90°F/27–32°C soil temperature with consistent moisture), so soaking is more of a helpful boost than a necessity.

## RECOMMENDED SOAKING TIMES

Opinions differ based on experiments and grower experiences, but here's a breakdown of the most common and evidence-based approaches:

- Short soak (most popular and low-risk): 8–24 hours in room-temperature water (or lukewarm/warm water around 80–100°F/27–38°C for better results).



- Many sources (including grower tests and guides) recommend overnight (8–12 hours) or up to 24 hours to soften the coat without risking rot.

- Some use plain water, while others add a mild solution like weak chamomile tea (anti-fungal), diluted hydrogen peroxide (3% for 10–30 minutes to disinfect, then plain water), or even potassium nitrate (saltpeter) for stubborn varieties.

- Very short/quick soak: 10–60 minutes (or up to a few hours).

- Often for disinfection only (e.g., hydrogen peroxide mix) or if using chamomile tea to break down inhibitors. This is sufficient for many and avoids over-soaking issues.

- Longer soak: 24–48 hours (sometimes in chamomile tea or distilled water).

- Suggested by some for slower-germinating hot peppers (e.g., to mimic natural weathering or fully hydrate). One method soaks for 48 hours before paper-towel germination. However, longer than 24–36 hours can increase mold risk if not monitored.



## TIPS FOR BEST RESULTS

- Use room-temperature or slightly warm water (not hot/boiling, as it can damage seeds).
- Place seeds in a shallow bowl or jar—change the water if soaking longer than 12 hours to prevent bacterial growth.
- After soaking, plant immediately in moist seed-starting mix (¼-inch deep), or pre-sprout in a damp paper towel inside a bag for faster visible sprouting.
- Viability test: Floating seeds may be duds (discard or test them anyway), but sinking ones are usually good.
- Key for success: Heat mat for bottom warmth (80–85°F+), high humidity, and patience—don't give up early!
- Some controlled experiments show soaking doesn't always dramatically improve rates or speed compared to dry planting, especially for fresh seeds, but it rarely hurts if done properly.

If you're dealing with a specific variety (e.g., superhots like ghost peppers or rocotos, which can be stubborn), soaking longer (24+ hours) might help more. For standard bell or mild chilies, 12–24 hours is plenty.

Start with 12–24 hours in plain warm solutions A—many farmers swear by it for quicker, more uniform sprouts!





# Diseases & Pests

## PESTS, FUNGI, VIRUSES, AND DISEASES BY GROWTH STAGE

Pepper is susceptible to various pests, fungal, viral, and bacterial diseases that can reduce yield if not managed properly. Below are the major threats by growth stage, with symptoms and Microbebio-based control measures, supplemented by organic practices.

### SEED & GERMINATION STAGE

1	<b>Pests</b>	<ul style="list-style-type: none"> <li>• Fungus gnats</li> <li>• Aphids (in nurseries)</li> </ul>	Microbebio Aqua Activator X3
2	<b>Fungal Diseases</b>	<ul style="list-style-type: none"> <li>• Pathogens: Pythium spp., Rhizoctonia solani, Fusarium spp.</li> </ul>	Microbebio Aqua Activator X5
3	<b>Nematode</b>	<ul style="list-style-type: none"> <li>• Root-knot nematodes (Meloidogyne spp.)</li> </ul>	Microbebio Aqua Activator X1
4	<b>Virus</b>	<ul style="list-style-type: none"> <li>• Cucumber Mosaic Virus (CMV)</li> </ul>	Microbebio Aqua Activator X5

*Plant disease outbreak (pest): agitate 500 ml Green Fury™ into at least 400 liters of non-chlorine water to treat 1 hectare.*

*Plant disease outbreak (fungus and virus): agitate 500 ml Nature Venom™ into at least 400 liters of non-chlorine water to treat 1 hectare.*



## SEEDLING STAGE

1	<b>Pests</b>	<ul style="list-style-type: none"> <li>• Aphids: Leaf curling, Sticky honeydew</li> <li>• Whiteflies: Yellowing leaves, Virus transmission</li> <li>• Thrips: Silver streaks on leaves</li> </ul>	Microbebio Aqua Activator X3
2	<b>Fungal Diseases</b>	<ul style="list-style-type: none"> <li>• Damping-off (late stage)</li> <li>• Root rot (Phytophthora)</li> </ul>	Microbebio Aqua Activator X5
3	<b>Virus</b>	<ul style="list-style-type: none"> <li>• Cucumber Mosaic Virus (CMV): Symptoms: Mosaic leaf patterns, Distorted leaves</li> </ul>	Microbebio Aqua Activator X5
4	<b>Nematodes</b>	<ul style="list-style-type: none"> <li>• Root-knot nematodes (<i>Meloidogyne</i> spp.)</li> </ul>	Microbebio Aqua Activator X1

*Plant disease outbreak (pest): agitate 500 ml Green Fury™ into at least 400 liters of non-chlorine water to treat 1 hectare.*

*Plant disease outbreak (fungus and virus): agitate 500 ml Nature Venom™ into at least 400 liters of non-chlorine water to treat 1 hectare.*

## VEGETATIVE GROWTH STAGE

1	<b>Pests</b>	<ul style="list-style-type: none"> <li>• Whiteflies: Vector of leaf curl viruses.</li> <li>• Thrips: Vector of Tomato Spotted Wilt Virus.</li> <li>• Spider mites: Symptoms: Yellow speckled leaves, Webbing under leaves</li> </ul>	Microbebio Aqua Activator X3
2	<b>Fungal Diseases</b>	<ul style="list-style-type: none"> <li>• Powdery mildew: Symptoms: White powder on leaves,</li> <li>• Cercospora leaf spot: Symptoms: Brown leaf spots</li> </ul>	Microbebio Aqua Activator X5
3	<b>Nematode</b>	<ul style="list-style-type: none"> <li>• Root-knot nematodes</li> <li>• Lesion nematodes (<i>Pratylenchus</i> spp.)</li> </ul>	Microbebio Aqua Activator X1
4	<b>Virus</b>	<ul style="list-style-type: none"> <li>• Pepper leaf curl virus</li> <li>• Cucumber Mosaic Virus (CMV)</li> </ul>	Microbebio Aqua Activator X5

*Plant disease outbreak (pest): agitate 500 ml Green Fury™ into at least 400 liters of non-chlorine water to treat 1 hectare.*

*Plant disease outbreak (fungus and virus): agitate 500 ml Nature Venom™ into at least 400 liters of non-chlorine water to treat 1 hectare.*



## FLOWERING STAGE

1	<b>Pests</b>	<ul style="list-style-type: none"><li>• Thrips</li><li>• Pepper weevil</li><li>• Aphids</li></ul>	Microbebio Aqua Activator X3
2	<b>Fungal Diseases</b>	<ul style="list-style-type: none"><li>• Powdery mildew</li><li>• Phytophthora blight</li></ul>	Microbebio Aqua Activator X5
3	<b>Virus</b>	<ul style="list-style-type: none"><li>• Tomato Spotted Wilt Virus (TSWV)</li><li>• Pepper leaf curl virus</li></ul>	Microbebio Aqua Activator X5
4	<b>Nematodes</b>	<ul style="list-style-type: none"><li>• Root-knot nematodes</li></ul>	Microbebio Aqua Activator X1

*Plant disease outbreak (pest): agitate 500 ml Green Fury™ into at least 400 liters of non-chlorine water to treat 1 hectare.*

*Plant disease outbreak (fungus and virus): agitate 500 ml Nature Venom™ into at least 400 liters of non-chlorine water to treat 1 hectare.*



## FRUIT DEVELOPMENT STAGE

1	<b>Pests</b>	<ul style="list-style-type: none"> <li>• Fruit borers (<i>Helicoverpa</i> spp.)</li> <li>• Pepper maggots</li> <li>• Spider mites</li> </ul>	Microbebio Aqua Activator X3
2	<b>Fungal Diseases</b>	<ul style="list-style-type: none"> <li>• Anthracnose (<i>Colletotrichum</i> spp.)</li> <li>• Phytophthora fruit rot</li> </ul>	Microbebio Aqua Activator X5
3	<b>Nematode</b>	<ul style="list-style-type: none"> <li>• Root-knot nematodes</li> </ul>	Microbebio Aqua Activator X1
4	<b>Virus</b>	<ul style="list-style-type: none"> <li>• Cucumber Mosaic Virus (CMV)</li> <li>• Potato Virus Y (PVY)</li> </ul>	Microbebio Aqua Activator X5

*Plant disease outbreak (pest): agitate 500 ml Green Fury™ into at least 400 liters of non-chlorine water to treat 1 hectare.*  
*Plant disease outbreak (fungus and virus): agitate 500 ml Nature Venom™ into at least 400 liters of non-chlorine water to treat 1 hectare.*



## RIPENING STAGE

1	<b>Pests</b>	<ul style="list-style-type: none"><li>• Pepper weevil</li><li>• Fruit borers</li></ul>	Microbebio Aqua Activator X3
2	<b>Fungal Diseases</b>	<ul style="list-style-type: none"><li>• Anthracnose</li><li>• Botrytis (gray mold)</li></ul>	Microbebio Aqua Activator X5
3	<b>Virus</b>	<ul style="list-style-type: none"><li>• Pepper Mild Mottle Virus (PMMoV)</li><li>• Tobacco Mosaic Virus (TMV)</li></ul>	Microbebio Aqua Activator X5
4	<b>Nematodes</b>	<ul style="list-style-type: none"><li>• Root-knot nematodes (ongoing root damage)</li></ul>	Microbebio Aqua Activator X1

*Plant disease outbreak (pest): agitate 500 ml Green Fury™ into at least 400 liters of non-chlorine water to treat 1 hectare.*

*Plant disease outbreak (fungus and virus): agitate 500 ml Nature Venom™ into at least 400 liters of non-chlorine water to treat 1 hectare.*



## HARVEST & POST-HARVEST STAGE

1	<b>Pests</b>	<ul style="list-style-type: none"><li>• Fruit borers</li><li>• Pepper weevil</li></ul>	Microbebio Aqua Activator X3
2	<b>Fungal Diseases</b>	<ul style="list-style-type: none"><li>• Anthracnose</li><li>• Soft rot</li><li>• Botrytis gray mold</li></ul>	Microbebio Aqua Activator X5
3	<b>Nematode</b>	<ul style="list-style-type: none"><li>• Usually no new infection, but previous root damage affects yield.</li></ul>	Microbebio Aqua Activator X1
4	<b>Virus</b>	<ul style="list-style-type: none"><li>• Virus symptoms may remain visible on harvested fruit.</li></ul>	Microbebio Aqua Activator X5

*Plant disease outbreak (pest): agitate 500 ml Green Fury™ into at least 400 liters of non-chlorine water to treat 1 hectare.*

*Plant disease outbreak (fungus and virus): agitate 500 ml Nature Venom™ into at least 400 liters of non-chlorine water to treat 1 hectare.*



The logo for MicrobeBio is displayed on a white, ribbon-like banner that appears to be floating above a field of green beets. The text "MicrobeBio" is written in a bold, green, sans-serif font, with a registered trademark symbol (®) to the upper right of the word. The banner has a slight 3D effect with shadows on its sides.

**MicrobeBio<sup>®</sup>**

**[www.microbebio.com](http://www.microbebio.com)**  
*[info@microbebio.com](mailto:info@microbebio.com)*

***#Microbebio #BeetYield #SustainableFarming #HealthySoilHealthyPlants #MicrobialFarming #SoilHealth #RegenerativeAgriculture  
#OrganicBeets #EcoFriendlyFarming #BetterFlavorBetterFarming***

©Microbebio 2025 - All Rights Reserved