novoklon | NOVOKLON SDN BHD

Advance Your Business with Precision Biological Solutions

NOVOKLON PRODUCTS & SERVICES

Company Profile

Who are we?

Novoklon is a biotechnology company providing manufacturing services for the production of microbial biomass, enzymes, and bioactive metabolites. The company maintains an extensive collection of bacterial strains sourced from diverse environments worldwide, comprising more than 400 distinct wild-type strains.

As the largest private natural strain bank in Malaysia, this proprietary collection enables Novoklon to develop highly innovative and precision-driven microbial pipelines for agricultural, industrial, and environmental applications.

Novoklon was founded in 2020 by a group of scientists from Universiti Putra Malaysia, Selangor. Since then, the company has grown into one of Malaysia's emerging agricultural biotechnology firms, consistently supporting growers and industry partners in sustaining and expanding their operations.

Our team consists of highly skilled and knowledgeable scientists with experience in agricultural microbiology, pollution mitigation, ecosystem restoration and natural resource conservation.

Our core business is to develop and commercialize innovative biological solutions for agriculture and industry, enabling high-quality crop and livestock production while enhancing agroecosystem sustainability.

NOVOKLON

BIOSOLUTIONS FOR A HEALTHIER TOMORROW

OUR TOP TEAM

The Minds Behind Novoklon

A team of experts, innovators and visionaries, driving breakthrough biosolutions for a healthier, more sustainable future.

Dr. Shuhaimi Bin Mustafa

CTO

Dr. Shuhaimi brings extensive expertise in bioprocessing, microbial biotechnology and agricultural innovation. With a strong academic background and years of research experience, he leads Novoklon's technology and product development, ensuring scientific excellence and sustainable impact.

KEY EXPERTISE

- Microbial Biotechnology
- Agricultural Science
- Bioprocess Development
- Research & Innovation

Dr. Muhamad Akhmal Hakim Bin Roslan

CEO

Dr. Muhamad Akhmal Hakim Bin Roslan is a strategic leader with a strong background in biotechnology, innovation management and business development. He drives Novoklon's vision, creating value through science, technology and partnerships for global impact.

KEY EXPERTISE

- Biotechnology & Life Sciences
- Strategic Management
- Business Development
- Global Partnerships

MISSION

To discover, develop and deliver innovative solutions for sustainable agriculture

Since 2020, we have pursued innovative ways for science and technology to drive sustainability and profitability in agriculture. With our mission, we are focused on four key principles:

- Helping growers enhance their profitability and soil health
- Improving the quantity, quality, and traceability of the food available to consumers
- Protecting the environment by reducing and removing harmful greenhouse gases from the atmosphere, while incentivizing sustainable land stewardship practices
- Creating long-term value for our shareholders

VISION

Improving the world through biological solutions

Our vision is to unlock the power of agriculture by developing scalable, precision biological solutions that address critical challenges faced by growers and agribusinesses while meeting the growing demand for sustainable practices. These solutions complement existing production systems, making farming operations more profitable today and more financially and environmentally sustainable in the long term.

VALUES

Our decisions, priorities and actions are based on our core values

- Integrity
- Excellence
- Innovation
- Passion
- Responsibility
- Teamwork

Our Location

Map to our office

Office & Factory

Novoklon Sdn Bhd (Production Facility)
No. 8, Jalan Hi-Tech 3/3,
Kawasan Perindustrian Hi-Tech 3,
43500 Semenyih,
Selangor

Map to our Laboratory

Laboratory

Halways-Novoklon (Laboratory Facility)
Makmal FAMTECH,
Fakulti Bioteknologi & Sains Biomolekul,
Universiti Putra Malaysia,
43400 Serdang Selangor

Our Production Facility

Equipped with cutting-edge bioreactors, our facility produces up to 200 tonnes of high-quality biological solutions per month, ensuring consistent scale, precision, and reliability.

7 SUBMERGED BIOREACTORS
Capable of producing a wide range of high-quality liquid-type biological products.

9 SOLID-STATE BIOREACTORS
Capable of producing a wide range of high-quality dry-type biological products.

Forgebiome

The Intelligence Behind Novoklon Precision Biosolutions Technology

Formulas that learn from the field

Forgebiome connects field performance with our microbial and formulation data-so every deployment informs a better next version

Working Experience With Various Agencies

LKPP

Universiti Kebangsaan Malaysia
National University of Malaysia

Universiti Malaysia Terengganu
UMT

Penjara Malaysia

PUNB

UPM
Universiti Putra Malaysia
Berilmu Berbakti

Jabatan Pertanian

RISDA
Pihak Berkuasa Kemajuan Pekebun Kecil Perusahaan Getah

FELCRA Berhad

Jabatan Perikanan Malaysia

Technology Park Malaysia

OEM Services

Novoklon offers end-to-end OEM development and manufacturing of high-performance biological solutions, tailored for private-label brands.

Built it together.
Launch it as yours.

The **Manufacturing Alliance Program** gives partners access to Novoklon's integrated biotechnology capabilities—from R&D and formulation development to scale-up, manufacturing and quality assurance. By working with us, companies can accelerate product development, reduce the need for in-house biotechnology infrastructure, and bring differentiated biological products to market under their own brands with greater confidence, consistency and scalability.

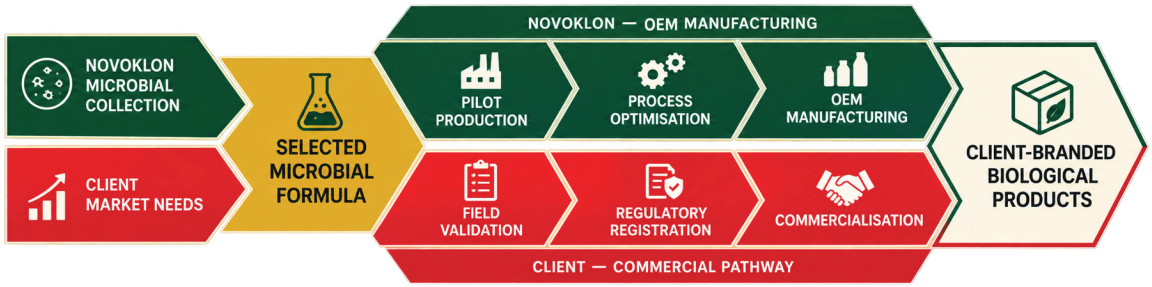
200 t/month LIQUID | **20** t/month POWDER | **500** kg/month TABLETS | **5** t/month GRANULES

APPLICATIONS

- Bioinsecticides
- Biofungicides
- Soil microbes
- Composting microbes
- Bioremediation microbes
- Animal probiotics
- Enzymes
- Bioindustrial microbes

You know your market.
We know how to build the biology.

Every collaboration begins with a defined market need. Novoklon translates that requirement into a targeted microbial formulation, then develops, optimises and scales the manufacturing process. In parallel, our partners lead field validation, regulatory registration and commercialisation—creating a clear pathway from biological concept to a market-ready product under their own brand.



Biological Products

Novoklon delivers advanced ready-to-use Generic Biosolutions and Precision Biosolutions for agriculture, poultry, and aquaculture.

Generic Biosolutions

Ready-to-use microbial solutions for immediate agricultural needs.

Designed for growers and producers who require fast and practical biological support, Novoklon Generic Biosolutions deliver proven beneficial microbes such as *Bacillus, Trichoderma, Lactobacillus*, and *Pseudomonas* to enhance soil health, promote plant growth, improve animal gut health, and maintain balanced aquatic ecosystems. These solutions provide a reliable and cost-effective biological foundation for crop production, poultry farming, livestock management, and aquaculture systems.

GENERIC BIOSOLUTIONS

List of microorganisms for crop farming

ID	PRODUCT	BENEFITS	TYPE
BS1	*Bacillus subtilis* *CFU 10^6 - 10^9 per milliliter*	Disease resistance, pathogen suppression	Liquid Powder
BC2	*Bacillus cereus* *CFU 10^6 - 10^9 per milliliter*	Plant growth promotion, stress tolerance	Liquid Powder
BL1	*Bacillus licheniformis* *CFU 10^6 - 10^9 per milliliter*	Soil fertility, nutrient solubilization	Liquid Powder
BA1	*Bacillus amyloliquefaciens* *CFU 10^6 - 10^9 per milliliter*	Pathogen suppression, disease resistance	Liquid Powder
BL1	*Bacillus laterosporus* *CFU 10^6 - 10^9 per milliliter*	Biocontrol, pathogen suppression	Liquid Powder
BP1	*Bacillus pumilus* *CFU 10^6 - 10^9 per milliliter*	Stress tolerance, disease resistance	Liquid Powder
BM1	*Bacillus mucilaginosus* *CFU 10^6 - 10^9 per milliliter*	Nutrient solubilization, soil fertility	Liquid Powder
BM2	*Bacillus megaterium* *CFU 10^6 - 10^9 per milliliter*	Biofertilizer, soil fertility	Liquid Powder
BT1	*Bacillus thuringiensis* *CFU 10^6 - 10^9 per milliliter*	Insect control, biocontrol	Liquid Powder
BH1	*Bacillus halotolerans* *CFU 10^6 - 10^9 per milliliter*	Salt tolerance, stress tolerance	Liquid Powder
BZ1	*Bacillus velezensis* *CFU 10^6 - 10^9 per milliliter*	Plant growth promotion, disease resistance	Liquid Powder
TK1	*Trichoderma koningii* *CFU 10^6 - 10^9 per milliliter*	Soil disease control, biocontrol	Powder
TH1	*Trichoderma harzianum* *CFU 10^6 - 10^9 per milliliter*	Biocontrol, soil disease control	Powder
TA1	*Trichoderma asperellum* *CFU 10^6 - 10^9 per milliliter*	Plant disease control	Powder
TV1	*Trichoderma viride* *CFU 10^6 - 10^9 per milliliter*	Soil health improvement	Powder
A1	*Actinomycetes spp.* *CFU 10^6 - 10^9 per milliliter*	Antibiotic production, soil health	Liquid
BSA1	*Beauveria bassiana* *CFU 10^6 - 10^9 per milliliter*	Insect biocontrol	Powder
MAN1	*Metarhizium anisopliae* *CFU 10^6 - 10^9 per milliliter*	Insect biocontrol	Powder
P1	*Pseudomonas spp.* *CFU 10^6 - 10^9 per milliliter*	Biocontrol, plant growth promotion	Liquid
RP1	*Rhodopseudomonas spp.* *CFU 10^6 - 10^9 per milliliter*	Photosynthesis, nitrogen fixation	Liquid
AA1	*Acetobacter aceti* *CFU 10^6 - 10^9 per milliliter*	Biocontrol	Liquid
AN1	*Aspergillus niger* *CFU 10^6 - 10^9 per milliliter*	Enzyme production	Liquid
AFG1	*Aspergillus fumigatus* *CFU 10^6 - 10^9 per milliliter*	Enzyme production, pathogen suppression	Liquid
AO1	*Aspergillus oryzae* *CFU 10^6 - 10^9 per milliliter*	Fermentation, enzyme production	Liquid

GENERIC BIOSOLUTIONS

List of microorganisms for crop farming

ID	PRODUCT	BENEFITS	TYPE
AS1	*Aspergillus sojae* *CFU 10^6 - 10^9 per milliliter*	Fermentation, enzyme production	Liquid
PC1	*Penicillium spp.* *CFU 10^6 - 10^9 per milliliter*	Antibiotic production, biocontrol	Liquid
RMS1	*Rhizopus microsporus* *CFU 10^6 - 10^9 per milliliter*	Fermentation, enzyme production	Liquid
RB1	*Rhodobacter spp.* *CFU 10^6 - 10^9 per milliliter*	Photosynthesis, biodegradation	Liquid
NS1	*Nitrosomonas spp.* *CFU 10^6 - 10^9 per milliliter*	Nitrogen cycling	Liquid
NB1	*Nitrobacter spp.* *CFU 10^6 - 10^9 per milliliter*	Nitrogen cycling	Liquid
NC1	*Nitrococcus spp.* *CFU 10^6 - 10^9 per milliliter*	Nitrogen cycling	Liquid
AF1	*Azospirillum fluorescens* *CFU 10^6 - 10^9 per milliliter*	Nitrogen fixation, plant growth promotion	Liquid

GENERIC BIOSOLUTIONS

List of microorganisms for composting

ID	PRODUCT	BENEFITS	TYPE
A1-C	*Actinomycetes spp* *CFU 10^6 - 10^9 per milliliter*	Improve nutrient cycling and degradation of complex organic matters in the soil	Liquid
BS1-C	*Bacillus subtilis* *CFU 10^6 - 10^10 per gram @ milliliter*	Degrade organic matter / improve composting	Liquid Powder
BL1-C	*Bacillus licheniformis* *CFU 10^6 - 10^10 per gram @ milliliter*	Degrade organic matter / improve composting Efficient protease producer	Liquid Powder
BA1-C	*Bacillus amyloliquefaciens* *CFU 10^6 - 10^10 per gram @ milliliter*	Degrade organic matter / improve composting / Biocontrol	Liquid Powder
BP1-C	*Bacillus pumilus* *CFU 10^6 - 10^10 per gram @ milliliter*	Degrade organic matter / improve composting	Liquid Powder
BM1-C	*Bacillus megaterium* *CFU 10^6 - 10^10 per gram @ milliliter*	Degrade organic matter / improve composting	Liquid Powder
BM2-C	*Bacillus mucilaginous* *CFU 10^6 - 10^10 per gram @ milliliter*	Degrade organic matter / improve composting	Liquid Powder
BT1-C	*Bacillus thuringiensis* *CFU 10^6 - 10^10 per gram @ milliliter*	Degrade organic matter / biocontrol agent for insect larvae	Liquid Powder
-	*Bacillus spp* (any other species) *CFU 10^6 - 10^10 per gram @ milliliter*	-	Liquid Powder
-	*Consortium Bacillus spp.* (Maximum 4 species) *CFU 10^6 - 10^10 per gram @ milliliter*	Degrade organic matter / improve composting	Liquid Powder
TK1-C	*Trichoderma koninggii* *CFU 10^6 - 10^8 per gram*	Degrade organic matter	Powder
TH1-C	*Trichoderma harzianum* *CFU 10^6 - 10^8 per gram*	Degrade organic matter	Powder
TV1-C	*Trichoderma viride* *CFU 10^6 - 10^8 per gram*	Degrade organic matter	Powder
TR1-C	*Trichoderma reesei* *CFU 10^6 - 10^8 per gram*	Excellent cellulase producer Improving Composting / Biofertilizer production made of plant based materials	Powder
-	*Consortium Trichoderma spp.* (Maximum 4 species) *CFU 10^6 - 10^8 per gram*	Degrade organic matter	Powder
R1-C	*Rhodopseudomonas spp.* *CFU 10^6 - 10^9 per milliliter*	Degrade organic matter	Liquid
P1-C	*Phanerochaete spp.* *CFU 10^6 - 10^8 per gram*	Degrade lignin/cellulose Efficient decomposer	Liquid
P2-C	*Pseudomonas spp* *CFU 10^6 - 10^9 per milliliter*	Oil remover from composting materials	Liquid
SSE1-C	*Saccharomyces serevisae* *CFU 10^6 - 10^9 per milliliter*	Degrade organic matter	Liquid
LP1-C	*Lactobacillus plantarum* *CFU 10^6 - 10^10 per gram @ milliliter*	Degrade organic matter / improve composting	Liquid
TCM1	*Consortium of composting thermophilic microbes F1* *CFU 10^6 - 10^9 per milliliter*	Enhance composting process Biocontrol agent	Liquid
MCM1	*Consortium of composting mesophilic microbes F2* *CFU 10^6 - 10^9 per milliliter*	Enhance composting process Biocontrol agent	Liquid

GENERIC BIOSOLUTIONS

List of microorganisms for animal farming

ID	PRODUCT	BENEFITS	STRAIN (Wild + GMO)	TYPE
ABS1	*Bacillus subtilis* *CFU 10^6 - 10^10 per gram @ milliliter*	Water quality Pathogen inhibition Stress tolerance Nutrient digestibility Growth promoter	7	Liquid Powder
ABL1	*Bacillus licheniformis* *CFU 10^6 - 10^10 per gram @ milliliter*	Water quality Pathogen inhibition Stress tolerance Nutrient digestibility	3	Liquid Powder
ABA1	*Bacillus amyloliquefaciens* *CFU 10^6 - 10^10 per gram @ milliliter*	Water quality Pathogen inhibition Stress tolerance Nutrient digestibility	4	Liquid Powder
ABP1	*Bacillus pumilus* *CFU 10^6 - 10^10 per gram @ milliliter*	Water quality Pathogen inhibition Stress tolerance Nutrient digestibility	2	Liquid Powder
ABM1	*Bacillus megaterium* *CFU 10^6 - 10^10 per gram @ milliliter*	Water quality Pathogen inhibition Nutrient digestibility	3	Liquid Powder
ABC1	*Bacillus coagulans* *CFU 10^6 - 10^10 per gram @ milliliter*	Pathogen inhibition Nutrient digestibility	2	Liquid Powder
ABC2	*Bacillus clausii* *CFU 10^6 - 10^10 per gram @ milliliter*	Pathogen inhibition Nutrient digestibility	2	Liquid Powder
ABP1	*Bacillus polymyxa* *CFU 10^6 - 10^10 per gram @ milliliter*	Water quality Pathogen inhibition	2	Liquid Powder
ABF1	*Bacillus firmus* *CFU 10^6 - 10^10 per gram @ milliliter*	Water quality	1	Liquid Powder
ABV1	*Bacillus velezensis* *CFU 10^6 - 10^10 per gram @ milliliter*	Pathogen inhibition	5	Liquid Powder
ABS2	*Bacillus stearothermophilus* *CFU 10^6 - 10^10 per gram @ milliliter*	Bioremediation	1	Liquid Powder
ABS3	*Bacillus sphaericus* *CFU 10^6 - 10^10 per gram @ milliliter*	Water quality	1	Liquid Powder
ABA2	*Bacillus alcalophilus* *CFU 10^6 - 10^10 per gram @ milliliter*	Bioremediation	1	Liquid Powder
ABS4	*Bacillus sporothermodurans* *CFU 10^6 - 10^10 per gram @ milliliter*	Bioremediation Water quality	1	Liquid Powder
ABC3	*Bacillus circulans* *CFU 10^6 - 10^10 per gram @ milliliter*	Decomposer	2	Liquid Powder
ABC4	*Bacillus cereus* *CFU 10^6 - 10^10 per gram @ milliliter*	Pathogen inhibition	2	Liquid Powder
ABP2	*Bacillus psychrophilus* *CFU 10^6 - 10^10 per gram @ milliliter*	Water quality	1	Liquid Powder
ABZ1	*Bacillus zhangzhouensis* *CFU 10^6 - 10^10 per gram @ milliliter*	Gut health Pathogen inhibition	1	Liquid Powder
ABS2	*Bacillus salmalaya* *CFU 10^6 - 10^10 per gram @ milliliter*	Pathogen inhibition	3	Liquid Powder

GENERIC BIOSOLUTIONS

List of microorganisms for animal farming

ID	PRODUCT	BENEFITS	STRAIN (Wild + GMO)	TYPE
ABM2	*Bacillus mycoides* *CFU 10^6 - 10^10 per gram @ milliliter*	Pathogen inhibition	1	Liquid Powder
ABS3	*Bacillus siamensis* *CFU 10^6 - 10^10 per gram @ milliliter*	Pathogen inhibition	1	Liquid Powder
ABS4	*Bacillus simplex* *CFU 10^6 - 10^10 per gram @ milliliter*	Health/immune	1	Liquid Powder
ABS5	*Bacillus subterraneus* *CFU 10^6 - 10^10 per gram @ milliliter*	Water quality	1	Liquid Powder
ABM3	*Bacillus mucilaginosus* *CFU 10^6 - 10^10 per gram @ milliliter*	Nutrient cycling	1	Liquid Powder
ABR1	*Bacillus rugosus* *CFU 10^6 - 10^10 per gram @ milliliter*	Gut health	1	Liquid Powder
-	*Bacillus spp* (any other species) *CFU 10^6 - 10^10 per gram @ milliliter*	-		Liquid Powder
-	*Consortium Bacillus spp.* (Minimum 3, Maximum 4 species) *CFU 10^6 - 10^10 per gram @ milliliter*	-		Liquid Powder
ABFA1	*Bifidobacterium animalis* *CFU 10^6 - 10^10 per gram @ milliliter*	Gut health	1	Liquid
ABFB1	*Bifidobacterium breve* *CFU 10^6 - 10^10 per gram @ milliliter*	Gut health	1	Liquid
ABFI1	*Bifidobacterium infantis* *CFU 10^6 - 10^10 per gram @ milliliter*	Gut health	1	Liquid
ABFL1	*Bifidobacterium longum* *CFU 10^6 - 10^10 per gram @ milliliter*	Gut health	1	Liquid
ABFT1	*Bifidobacterium thermophilum* *CFU 10^6 - 10^10 per gram @ milliliter*	Gut health	1	Liquid
ABFB2	*Bifidobacterium bifidum* *CFU 10^6 - 10^10 per gram @ milliliter*	Gut health	1	Liquid
ACB1	*Clostridium butyricum* *CFU 10^6 - 10^10 per gram @ milliliter*	Gut health Pathogen inhibition	2	Liquid
AEF1	*Enterococcus faecium* *CFU 10^6 - 10^10 per gram @ milliliter*	Gut health Pathogen inhibition	1	Liquid
AEF2	*Enterococcus faecalis* *CFU 10^6 - 10^10 per gram @ milliliter*	Gut health Pathogen inhibition	1	Liquid
ALA1	*Lactobacillus acidophilus* *CFU 10^6 - 10^10 per gram @ milliliter*	Gut health	2	Liquid
ALP1	*Lactobacillus plantarum* *CFU 10^6 - 10^10 per gram @ milliliter*	Pathogen inhibition Nutrient digestibility Gut health	6	Liquid
ALR1	*Lactobacillus rhamnosus* *CFU 10^6 - 10^10 per gram @ milliliter*	Gut health	2	Liquid
ALC1	*Lactobacillus casei* *CFU 10^6 - 10^10 per gram @ milliliter*	Gut health	3	Liquid
ALPC1	*Lactobacillus paracasei* *CFU 10^6 - 10^10 per gram @ milliliter*	Gut health	3	Liquid
ALR2	*Lactobacillus reuteri* *CFU 10^6 - 10^10 per gram @ milliliter*	Gut health	3	Liquid
ALB1	*Lactobacillus brevis* *CFU 10^6 - 10^10 per gram @ milliliter*	Gut health	1	Liquid

GENERIC BIOSOLUTIONS

List of microorganisms for animal farming

ID	PRODUCT	BENEFITS	STRAIN (Wild + GMO)	TYPE
ALL1	*Lactobacillus lactis* *CFU 10^6 - 10^10 per gram @ milliliter*	Gut health	1	Liquid
-	*Lactobacillus spp* (any other species) *CFU 10^6 - 10^10 per gram @ milliliter*	-		Liquid
-	*Consortium Lactobacillus spp.* (Minimum 3, Maximum 4 species) *CFU 10^6 - 10^10 per gram @ milliliter*	-		Liquid
ANB1	*Nitrifying bacteria (Nitrosomonas spp. + Nitrobacter spp.)* *CFU 10^6 - 10^10 per gram @ milliliter*	Water quality	2	Liquid
AP1	*Paracoccus spp.* *CFU 10^6 - 10^9 per milliliter*	Health/immune	1	Liquid
AS1	*Streptomyces spp.* *CFU 10^6 - 10^9 per milliliter*	Pathogen inhibition	6	Liquid
TK1	*Trichoderma koninggii* *CFU 10^6 - 10^9 per milliliter*	Pathogen inhibition	2	Liquid
ASL1	*Streptococcus lactis* *CFU 10^6 - 10^9 per milliliter*	Growth promoter Gut health	1	Liquid
AST1	*Streptococcus thermophilus* *CFU 10^6 - 10^9 per milliliter*	Growth promoter	1	Liquid
AR1	*Rhodopseudomonas spp.* *CFU 10^6 - 10^9 per milliliter*	Water quality	5	Liquid
ARS1	*Rhodobacter sphaeroides* *CFU 10^6 - 10^9 per milliliter*	Water quality	5	Liquid
APF1	*Pseudomonas fluorescens* *CFU 10^6 - 10^9 per milliliter*	Pathogen inhibition	3	Liquid
ASBE1	*Saccharomyces boulardii* *CFU 10^6 - 10^9 per milliliter*	Gut health	3	Liquid
ASSE1	*Saccharomyces serevisae* *CFU 10^6 - 10^9 per milliliter*	Gut health	3	Liquid
ASSP1	*Saccharomyces pastorianus* *CFU 10^6 - 10^9 per milliliter*	Gut health	1	Liquid
AVA1	*Vibrio alginolyticus* *CFU 10^6 - 10^9 per milliliter*	Pathogen inhibition	1	Liquid
-	*Consortium aquaculture probiotics* (Minimum 3, Maximum 6 species) *CFU 10^6 - 10^10 per gram @ milliliter*	-		Liquid

Precision Biosolutions

POULTRY

Biosolutions for Poultry

AGRICULTURE

Biosolutions for Soil & Crops

AQUACULTURE

Biosolutions for Fish & Shrimp

Farm-specific microbial solutions engineered for targeted performance.

Designed for growers and producers who require optimized biological performance, Novoklon Precision Biosolutions are developed based on farm conditions, crop systems, environmental factors, and production challenges. Using advanced microbiological screening and formulation technologies, Novoklon selects and combines high-performing microorganisms to deliver targeted solutions for disease suppression, nutrient optimization, animal health improvement, and ecosystem balance.These customized biosolutions provide a powerful biological strategy for crop production, poultry farming, livestock management, and aquaculture systems where precision and maximum performance are required.

POULTRY

Precision Biosolutions

Novoklon's Poultry Precision Biosolutions are not generic, off-the-shelf products. They are farm-specific biological solutions designed around the unique conditions of each poultry operation. Each client can receive a uniquely coded formulation tailored to their flock conditions, farm environment, health challenges and performance objectives—delivering a more precise and targeted approach beyond conventional probiotics.

Reduce Reliance on Antibiotic Growth Promoters

Support a balanced gut microbiome and healthy flock performance while reducing dependence on antibiotic growth promoters.

Improve Growth & Feed Efficiency

Support digestion, nutrient utilisation and feed efficiency to optimise overall flock performance.

Support Gut Health & Resilience

Promote a beneficial intestinal microbiome, support natural microbial balance and strengthen overall bird health and resilience.

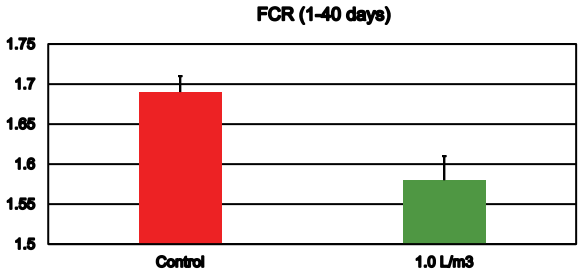
Poultry Biosolutions Product Range:

- Precision Probiotics
- Precision Postbiotics
- Precision Enzymes
- Precision Toxin Binder

Case study 1 : Broiler Chicken Field Results

150,000 broiler chicken. Johor. (Biosimilar program)

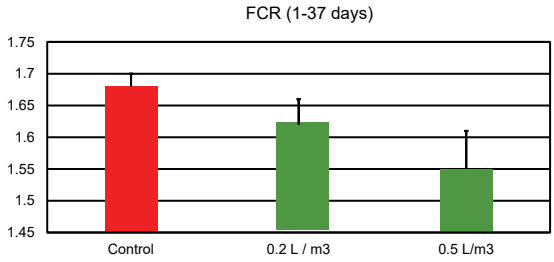
Drinking water dosage	: 1L/m3
Program duration	: DOC 21- 40
Average final weight	: 2.57 kg
Mortality	: 6%
FCR improvement	: 6%
Feed saving	: 36 tonnes



Case study 2 : Broiler Chicken Field Results

70,000 broiler chicken. Perak. (Customized program)

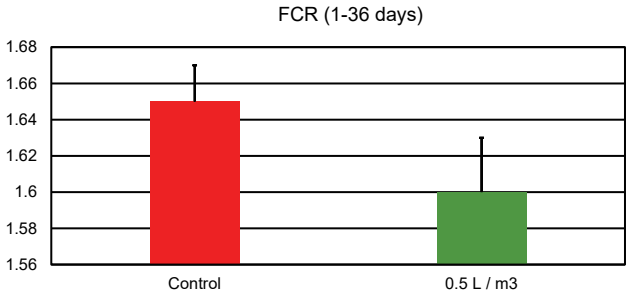
Drinking water dosage	: 0.2-0.5L/m3
Program duration	: DOC 4-37
Average final weight	: 2.3 kg
Mortality	: 7%
FCR improvement	: 3-8%
Feed saving	: 7-18 tonnes



Case study 3 : Broiler Chicken Field Results

190,000 broiler chicken. Perak. (Customized program)

Drinking water dosage	: 0.5L/m3
Program duration	: DOC 7-36
Average final weight	: 2.32 kg
Mortality	: 6%
FCR improvement	: 3%
Feed saving	: 21 tonnes



***All case studies were conducted and independently evaluated by experts from Universiti Putra Malaysia (UPM).

AGRICULTURE

Precision Biosolutions

Novoklon's Agriculture Precision Biosolutions are not generic, off-the-shelf biological inputs. They are farm-specific microbial systems designed around the unique soil, crop and management conditions of each farm. Each client can receive a uniquely coded formulation tailored to their soil biology, crop requirements, disease pressure, farming practices and productivity objectives—delivering a more precise and targeted approach beyond conventional biological inputs.

Enhance Soil Health

Support beneficial soil microbial balance, nutrient cycling and soil structure to create a healthier environment for crop growth.

Improve Plant Growth & Yield

Enhance nutrient availability and plant vigour to support stronger crop growth, improved productivity and yield potential.

Protect Crops & Suppress Diseases

Promote beneficial microbial activity, help suppress harmful soil-borne pathogens and strengthen overall plant health and resilience.

Agriculture Biosolutions Product Range:

- Precision Yield Enhancer
- Precision Biocontrol
- Precision Soil Remediation

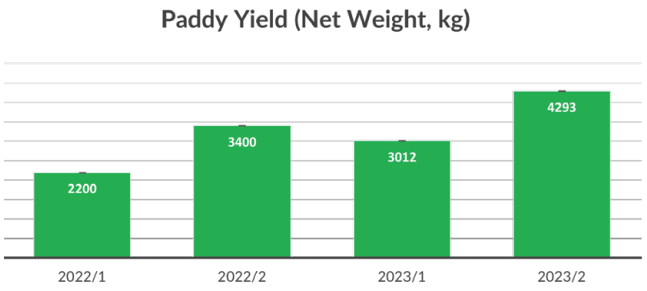
Case study 1 : Paddy Field Results

Paddy yield performance of Smart Bernas Perlis (Variety 315) over a two-year period.

The data present both gross and net harvest weights, illustrating the yield outcome under the implemented management program. This trial demonstrates the production performance and consistency of the crop across multiple planting cycles.

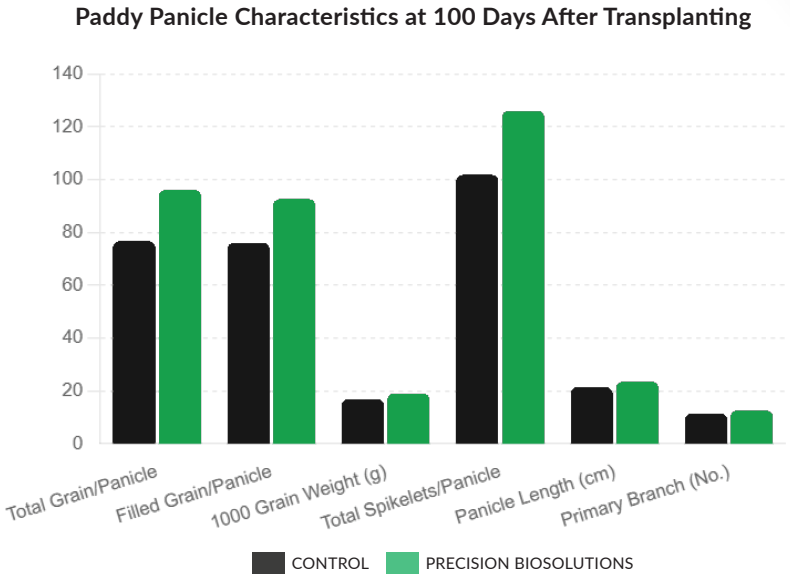
TREATMENT

A microbial management program was implemented to restore soil condition and control Bacterial Panicle Blight (BPB). A consortium of *Bacillus spp., Trichoderma, Lactobacillus,* and *Phanerochaete* spp. was applied to improve soil recovery, while *Trichoderma koningii* was used for disease control and *Bacillus thuringiensis subsp. kurstaki* was applied for insect control.



CONTROL

TREATMENT



***All case studies were conducted and independently evaluated by experts from Universiti Putra Malaysia (UPM).

AQUACULTURE

Precision Biosolutions

Novoklon's Aquaculture Precision Biosolutions are designed to manage both the aquatic microbiome and animal performance as an integrated system. Formulations can be tailored to species, water quality, stocking conditions, production intensity and farm-specific challenges—providing a targeted biological approach for more stable and productive aquaculture.

Optimise Water & Pond Ecology

Support beneficial microbial activity, organic matter degradation and nutrient cycling to maintain a more balanced culture environment.

Enhance Growth & Feed Efficiency

Improve digestive efficiency and nutrient utilisation to support healthy growth and better production performance.

Strengthen Aquatic Animal Resilience

Support microbial balance and natural biological defences to help fish and shrimp remain resilient under intensive farming conditions.

Agriculture Biosolutions Products Range:

- Precision Aquaculture Probiotics
- Precision Water Bioremediation Microbes
- Precision Enzymes
- Precision Toxin Binder

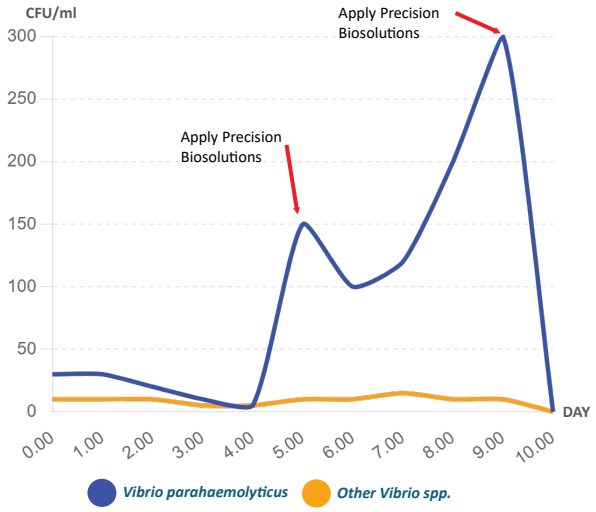
Case study 1 : Precision Probiotic

Earthen Pond. Pahang. (Customized program)

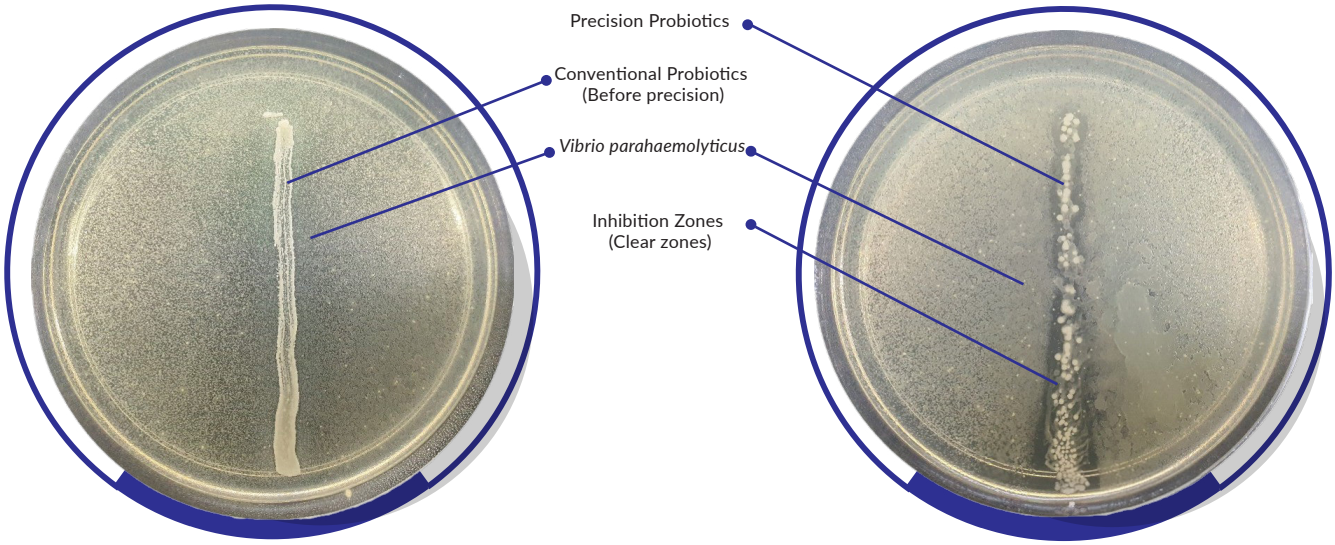
Stocking density : 80pcs/m3
Species : *P. vannamei*
Pond type : Earthen pond
Pond size : 0.5 ha
Feed brand : Evergreen
PL source : Gertak Sanggul

Probiotic Consortium
Size : 20L/unit
Dosage : 20 liter / application, 2 times / week

Effects of a Precision Biosolutions Against Water *Vibrio spp.*



Inhibition of *Vibrio parahaemolyticus* by Precision Probiotics Compared to Conventional Probiotics



Conventional Probiotics **Precision Probiotics**

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Laboratory Services

Novoklon provides precision laboratory services including soil, water, microbial, and disease analysis to support smarter farm management.

SOIL MICROBES ANALYSIS

Discover the Invisible Workforce Driving Soil Fertility

This test is designed to reveal the biological condition of the soil. Each analysis provides clear insights into microbial populations, beneficial organisms, and pathogen presence — helping growers make better soil management decisions.

Understand Your Soil Biology

Identify beneficial microbes and harmful pathogens living in your soil.

Improve Soil Fertility & Crop Health

Use microbial insights to optimize soil management and nutrient strategies.

Detect Disease Risks Early

Identify harmful soil pathogens before they damage your crops.

PESTICIDES EFFICACY TEST

Verify pesticide performance before field application.

Scientifically verify chemical pesticide performance against target pests and pathogens before field application.

Verify Product Effectiveness

Scientifically evaluate how well pesticides control target pests and pathogens.

Compare Product Performance

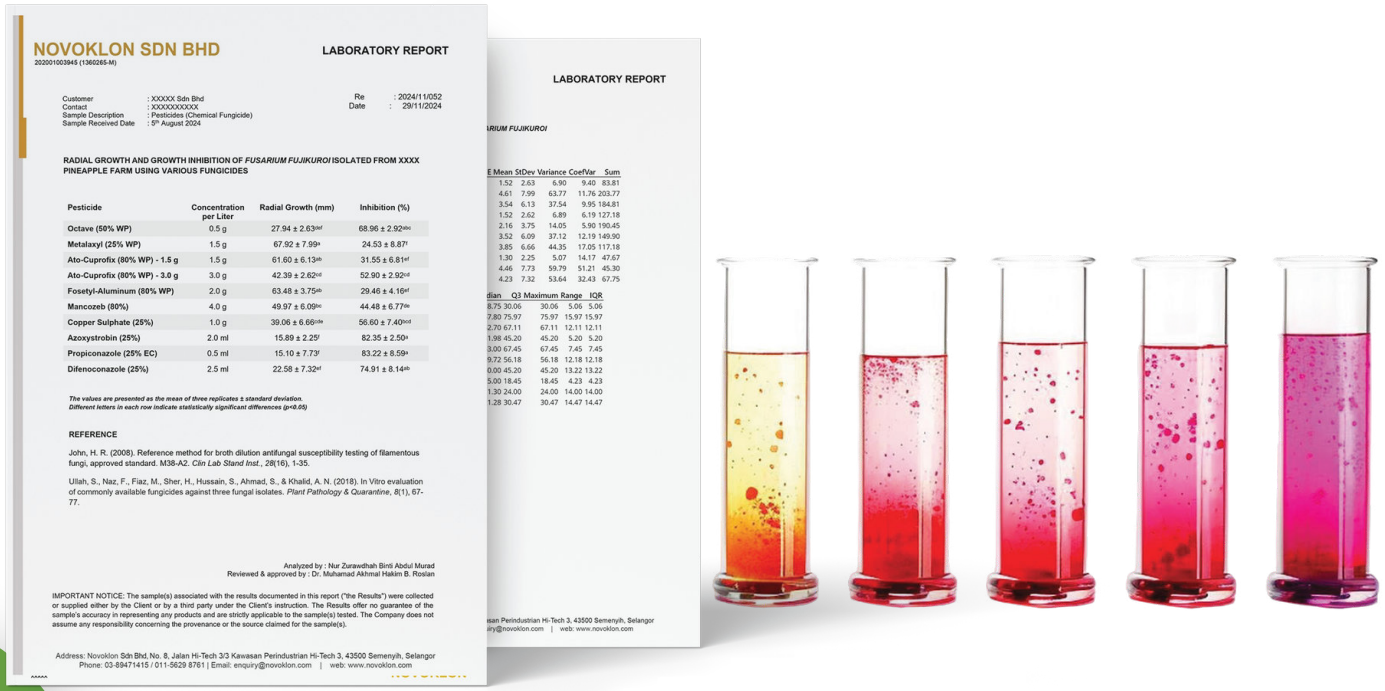
Test and compare different pesticides under controlled laboratory conditions.

Support Product Selection

Generate reliable data to help growers choose the most effective solutions.

Improve Crop Protection Strategies

Optimize pest and disease control based on scientific results.



NOVOKLON SDN BHD

202001003945 (1360265-M)

LABORATORY REPORT

Customer : XXXXX Sdn Bhd
Contact : XXXXXXXXX
Sample Description : Pesticides (Chemical Fungicide)
Sample Received Date : 5th August 2024

Re : 2024/11/052
Date : 29/11/2024

RADIAL GROWTH AND GROWTH INHIBITION OF *FUSARIUM FUJIKUROI* ISOLATED FROM XXXX PINEAPPLE FARM USING VARIOUS FUNGICIDES

Pesticide	Concentration per Liter	Radial Growth (mm)	Inhibition (%)
Octave (50% WP)	0.5 g	27.94 ± 2.63^{bcd}	68.96 ± 2.92^{abc}
Metalaxyl (25% WP)	1.5 g	67.92 ± 7.99^{a}	24.53 ± 8.87^{f}
Ato-Cuprofix (80% WP) - 1.5 g	1.5 g	61.60 ± 6.13^{ab}	31.55 ± 6.81^{ef}
Ato-Cuprofix (80% WP) - 3.0 g	3.0 g	42.39 ± 2.62^{cd}	52.90 ± 2.92^{cd}
Fosetyl-Aluminum (80% WP)	2.0 g	63.48 ± 3.75^{ab}	29.46 ± 4.16^{ef}
Mancozeb (80%)	4.0 g	49.97 ± 6.09^{bc}	44.48 ± 6.77^{de}
Copper Sulphate (25%)	1.0 g	39.06 ± 6.66^{cde}	56.60 ± 7.40^{bcd}
Azoxystrobin (25%)	2.0 ml	15.89 ± 2.25^{f}	82.35 ± 2.50^{a}
Propiconazole (25% EC)	0.5 ml	15.10 ± 7.73^{f}	83.22 ± 8.59^{a}
Difenoconazole (25%)	2.5 ml	22.58 ± 7.32^{ef}	74.91 ± 8.14^{ab}

The values are presented as the mean of three replicates ± standard deviation.
Different letters in each row indicate statistically significant differences (p<0.05)

REFERENCE

John, H. R. (2008). Reference method for broth dilution antifungal susceptibility testing of filamentous fungi, approved standard. M38-A2. *Clin Lab Stand Inst.*, *28*(16), 1-35.

Ullah, S., Naz, F., Fiaz, M., Sher, H., Hussain, S., Ahmad, S., & Khalid, A. N. (2018). In Vitro evaluation of commonly available fungicides against three fungal isolates. *Plant Pathology & Quarantine*, *8*(1), 67-77.

Analyzed by : Nur Zurawdhah Binti Abdul Murad
Reviewed & approved by : Dr. Muhamad Akhmal Hakim B. Roslan

Address: Novoklon Sdn Bhd, No. 8, Jalan Hi-Tech 3/3 Kawasan Perindustrian Hi-Tech 3, 43500 Semenyih, Selangor
Phone: 03-89471415 / 011-5629 8761 | Email: enquiry@novoklon.com | web: www.novoklon.com

LABORATORY REPORT

CONTACT US

Advance Your Business with Precision Biological Solutions

www.novoklon.com support@novoklon.com +603-8723 7661 / +6011-5420 7079