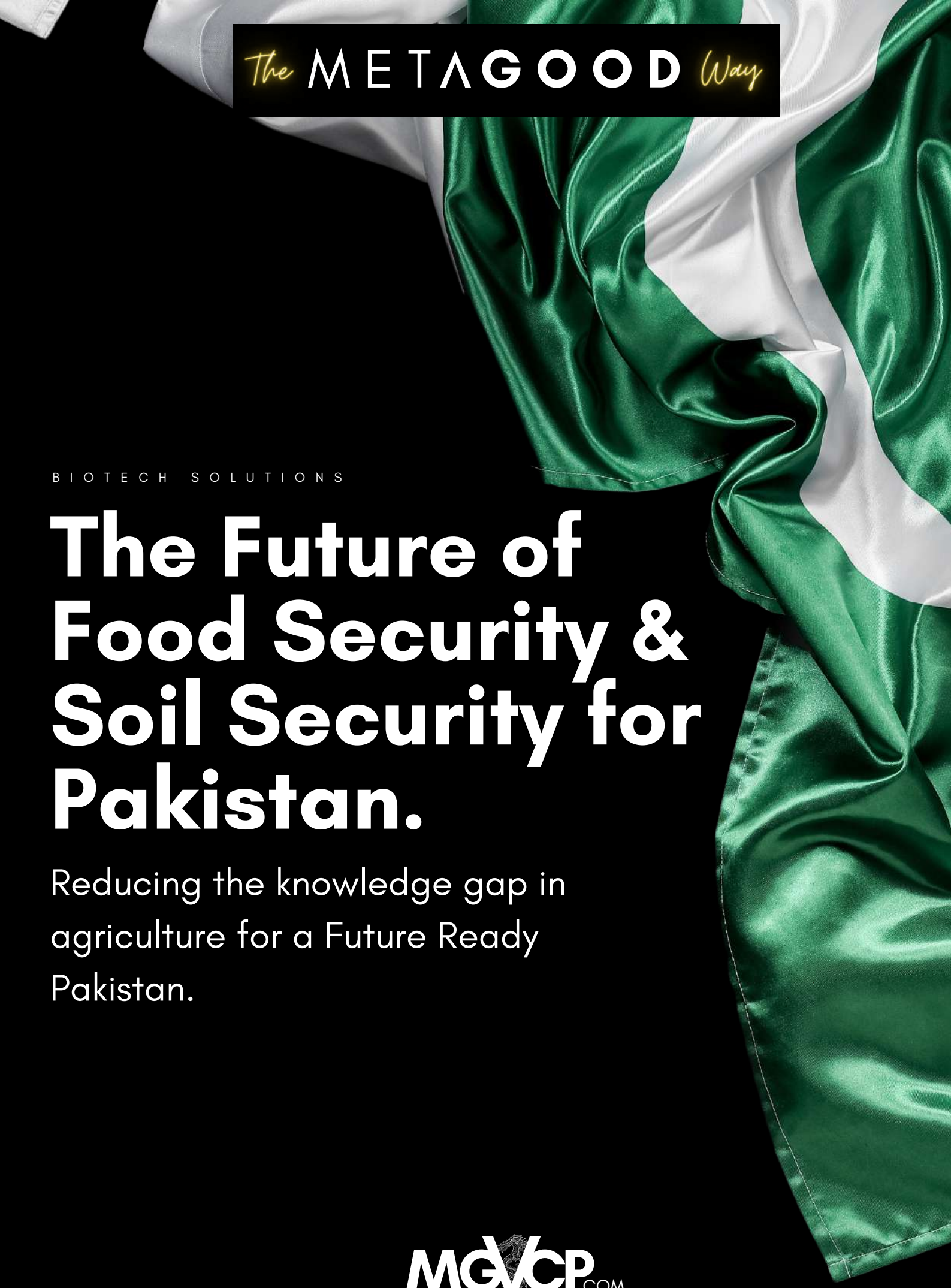
The METAGOOD Way



BIOTECH SOLUTIONS

The Future of Food Security & Soil Security for Pakistan.

Reducing the knowledge gap in agriculture for a Future Ready Pakistan.

MGVCP.COM

The METAGOOD Way

METAGOOD - Vessels for a Circular Planet is Pakistan's First integrated climate tech, food tech & biotech start-up designing a sustainable system change for A New Zero Waste System & Culture to kickstart & accelerate the transition to the New Circular Economy, & New Bioeconomy of Pakistan.

Our purpose is the reduction of the soil health gap, forest gap, biodiversity gap & protein health gap of the Planet, starting from Pakistan, Asia.

The METAGOOD Way

To understand the story & health of the food you eat, **you have to understand the story of the soil your food comes from.**

Soil Health is a combination of suitable structure, nutrients & healthy microbiome.

Decoding the soil of Pakistan is the future of food security & soil security for Pakistan

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SOLUTION

BIOMEMAKERS
POWERED BY BECROP

BeCrop® Technology

Decoding Soil Life

Soil is alive. It harbors an abundance of life forms that breathe, grow, work together, respond to their environment and perform functions on a community level. Our unique BeCrop® technology is setting **the standard for soil health** by unveiling the work of living microbial networks, optimizing agriculture and empowering **soil health worldwide.**

BeCrop® Technology: The Global Standard for Soil Health

At Biome Makers we decode soil biology to optimize farming practices and improve soil health. Powered by the **largest global database of 14M microorganisms,** BeCrop® uses the soil microbiome DNA and machine learning to analyze not only which microbes are present, but also *what they do.*

Microbiome Analysis Report

Demo Tomato #123

SOTOM6

PARCEL	CROP	VARIETY	SOIL	DATE
Net House 2 -	Tomato	Regular		8-Mar-2023

All the information shown in this microbial report is based on the detection presence of *1082* different species

1e+9 units/gr
Total Bacteria

1e+6 units/gr
Total Fungi

Only Ectomycorrhiza
Arbuscular-Ectomycorrhiza Ratio

1:1533
Fungi-Bacterial Ratio

Summary

Soil Quality	Soil Quality: Low	Biodiversity: High	Functionality: Medium	Resilience: High
Health	Health: Medium	Biocontrol: Medium	Hormone Pr...: Medium	Stress Adapt: Medium
Nutrition	C: Medium	N: Low	P: High	K: High

Distribution

Fungal Phylum distribution

68%	Ascomycota
18%	Mortierellomycota
12%	Basidiomycota

Bacterial Phylum distribution

40%	Proteobacteria
29%	Actinobacteriota
11%	Firmicutes

Ranks

Not Detected · Very low · Low · Medium · High · Very High

Soil Quality

SOIL QUALITY	LOW	FUNCTIONALITY	MEDIUM
BIODIVERSITY	HIGH	RESILIENCE	HIGH

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Health

HEALTH
MEDIUM

7
Disease Risks found

Crop health according to the pathogens detected

Slight Risk Detected

FUSARIUM CROWN AND ROOT ROT
LOW Risk level

FUSARIUM FOOT ROT
LOW Risk level

FUSARIUM WILT
LOW Risk level

VERTICILLIUM WILT
LOW Risk level

BLACK MOLD ROT • CHARCOAL ROT • ROOT MAT

Not Detected

ALTERNARIA STEM CANKER • ANTHRACNOSE • BACTERIAL CANKER • BACTERIAL LEAF BLIGHT • BACTERIAL SOFT ROT • BACTERIAL SOUR ROT • BACTERIAL SPECK • BACTERIAL SPOT • BACTERIAL STEM ROT • BACTERIAL WILT • BLACK MOLD • BLACK ROOT ROT • BUCKEYE ROT • CERCOSPORA LEAF MOLD • CORKY ROOT ROT • DIDYMELLA STEM ROT • EARLY BLIGHT • GRAY LEAF SPOT • GRAY MOLD • GRAY MOLD ROT (BOTRYTIS FRUIT ROT) • LATE BLIGHT • LEAF MOLD • PHOMA ROT • PHYTOPHTHORA ROOT ROT • PITH NECROSIS • POWDERY MILDEW • PYTHIUM DAMPING-OFF AND STEM ROT • PYTHIUM FRUIT ROT • RHIZOCTONIA DAMPING-OFF • RHIZOCTONIA FOLIAR BLIGHT AND FRUIT ROT • RHIZOPUS ROT • SEEDLING BLIGHT AND LEAF SPOT • SEPTORIA LEAF SPOT • SOUR ROT • SYRINGAE BLIGHT AND LEAF SPOT • TARGET SPOT • WHITE MOLD • ZONATE LEAF SPOT

Biocontrol

FUNGICIDE AGENTS	HIGH	BACTERICIDE AGENTS	LOW
INSECTICIDE AGENTS	MEDIUM	NEMATICIDE AGENTS	LOW

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HORMONE PRODUCTION

MEDIUM

3 Detected

Microbial phytohormone potential based on Microbial species detected

AUXIN PRODUCTION (IAA)

CELL DIVISION | STEM ELONGATION

MEDIUM

CYTOKININ PRODUCTION (CK)

CELL PROLIFERATION | CELL DIFFERENTIATION

MEDIUM

GIBBERELLIN PRODUCTION (GA)

STEM ELONGATION | GERMINATION | FLOWERING

LOW

STRESS ADAPTATION

MEDIUM

7 Detected

Microbial species grouped according to their relationship with the metabolisms linked to the capability to withstand stress conditions

EXOPOLYSACCHARIDE PRODUCTION

NUTRIENT TRAP | SALINITY PROTECT. | DROUGHT PROTECT.

LOW

ACC DEAMINASE (ACC-D)

PATHOGEN PROTECT. | SALINITY PROTECT. | DROUGHT PROTECT.

MEDIUM

HEAVY METAL SOLUBILIZATION

BIOREMEDIATION | DETOXIFICATION | ALLEVIATE HEAVY METAL STRESS

HIGH

SALICYLIC ACID (SA)

DROUGHT PROTECT. | SALINITY PROTECT. | ALLEVIATE HEAVY METAL STRESS

MEDIUM

SALT TOLERANCE

SALINITY PROTECT. | ROOT GROWTH PROMOTION

MEDIUM

ABSCISIC ACID (ABA)

GROWTH REGULATION | PLANT RESISTANCE | INCREASE YIELDS

MEDIUM

SIDEROPHORE PRODUCTION

IRON AVAILABILITY | BIOFERTILIZER

MEDIUM

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Nutrition

Nutritional status based on the microbial mobilization of certain compounds

Major Compounds

C Carbon — MEDIUM

PATHWAYS

GAIN		LOSS		INDIRECT BENEFITS	
CARBON FIXATION	LOW	AEROBIC RESPIRATION	MEDIUM	ORGANIC MATTER RELEASE	MEDIUM
		FERMENTATION	MEDIUM		
		METHANOGENESIS	MEDIUM		

N Nitrogen — LOW

PATHWAYS

NUTRIENT SUPPLY		NUTRIENT COMPETITION		INDIRECT BENEFITS	
INORGANIC NITROGEN RELEASE	LOW	INORGANIC NITROGEN CONSUMPTION	LOW	NITROGEN CYCLE	MEDIUM

P Phosphorus — HIGH

PATHWAYS

NUTRIENT SUPPLY		NUTRIENT COMPETITION		INDIRECT BENEFITS	
INORGANIC P SOLUBILIZATION	HIGH	INORGANIC P CONSUMPTION	LOW	ORGANIC P ASSIMILATION	MEDIUM

K Potassium — HIGH

PATHWAYS

NUTRIENT SUPPLY		NUTRIENT COMPETITION	
POTASSIUM SOLUBILIZATION	HIGH	POTASSIUM CONSUMPTION	HIGH

Minor Compounds

Fe Iron	**Zn** Zinc	**Mn** Manganese	**S** Sulfur
LOW	LOW	VERY LOW	HIGH
Iron assimilation	Zinc transport equilibrium	Manganese transport equilibrium	Sulfur cycle equilibrium
Ca Calcium	**Cu** Copper	**Mg** Magnesium	**Cl** Chlorine
VERY LOW	LOW	MEDIUM	VERY LOW
Calcium transport	Copper export	Magnesium transport	Chlorine transport

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BIOMEMAKERS
better Soil, better Food, better Life

BIOME MAKERS

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