



PLANT HEALTH CARE PLC

INVESTOR PRESENTATION, 17 DECEMBER 2020



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## PRE TEC - A REVOLUTION IN SUSTAINABLE AGRICULTURE

# WHAT IS PRE TEC?

#### PLANT RESPONSE ELICITOR TECHNOLOGY

- Derived from naturally occurring proteins that stimulate natural defence and growth systems
- Broad pipeline of PREtec peptides, many differentiated products
- Excellent ESG credentials (low toxicity, no residues)<sup>1</sup>

# "VACCINES FOR PLANTS"

- Deliver increased crop yield and quality
- Resist drought and disease
- Compatible with mainstream agricultural practices
- · Low cost of production



# WHAT ARE THE BENEFITS TO GROWERS?

#### EXAMPLE - PHC279: BRAZIL SOYBEANS, 2021 LAUNCH:

- Disease control improved + yield increase worth approx. \$75/Ha<sup>2</sup>
- ROI potential >6x from yield alone
- Potential value nationwide \$2.5bn
- Use fewer chemicals

# WHERE ARE WE TODAY?

- Expect regulatory licences in Brazil (2021) and US (2022)
- Plan first launch in Brazil soybeans in 2021
- Joint Development
   Agreement with Wilbur Fllis in US<sup>3</sup>

## **CUMULATIVE INVESTMENT >\$20M SINCE 2012: TARGETING MARKETS WORTH \$5BN<sup>4</sup>**

- 1. Exempt from US EPA requirement to establish residue limits.
- 2. Based on results from Brazil soybean field trials; value based on 38m Ha of soybeans planted in Brazil
- 3. Wilbur Ellis, a very strong US ag input distributor with \$3.4bn sales, has rights to develop four peptides in specialty crops (fruits and vegetables)
- 4. Current value of conventional inputs in the markets currently targeted; further markets to be studied





## PRE TEC - SUBSTANTIAL PROGRESS SINCE 2012

## THREE PRETEC PLATFORMS DISCOVERED:

• INNATUS 3G: disease & yield

T-REX 3G: nematodesY-MAX 3G: biostimulant

# PREtec - PLANT RESPONSE ELECTIONS -

# REGULATORY SUBMISSIONS

## EFFICACY Confirmed

# DISCOVERY COMPLETE

- Global lead in peptide discovery
- PHC279 created in 2015

• > 50 patents filed

**IP SECURED** 

- First patents granted
- Substantial barrier to entry

- Six products tested in the field since 2015
- PHC279 first tested in 2017
- Multiple crops
- US, Brazil, EU

 Pilot scale PHC279 proven

PRODUCTION SCALE-UP

- Ramping up to supply 2021 launch
- Lab scale for other peptides
- Highly costeffective

- Expect H1 2021 Brazil registration
- Target H2 2022 US registration

GROUND-BREAKING PROPRIETARY PLATFORM IN SUSTAINABLE AGRICULTURE NOW POISED FOR FIRST LAUNCHES IN VERY LARGE MARKETS



## PHC279 - A WORLD FIRST IN SEED TREATMENT FOR SOYBEANS

## **BRAZIL SOY: >\$2BN ANNUAL SPEND ON DISEASE CONTROL**

#### TWO YEARS OF STRONG RESULTS:

- Disease control improved + yield increase worth approx. US\$75/ha<sup>1</sup>
- 38m ha of soy planted in 2020; potential value nationwide \$2.5bn<sup>1</sup>

#### POTENTIAL TO REDUCE USE OF TOXIC FUNGICIDES

- Sustainable disease control
- Strong support from influencers

#### **VERY LARGE GROWER BENEFITS**

- ROI potential >6x from yield alone
- Growers want to reduce use of toxic products

#### **SCALING UP PRODUCTION FOR LAUNCH H2 2021**

#### **REGISTRATION SUBMITTED 2018**

• Expecting approval in H1 2021

#### MULTIPLE POTENTIAL NATIONAL DISTRIBUTORS TESTING PHC279 IN CURRENT SOY CROP

# PHC279 SEED TREATMENT MAKES SOY CROP HEALTHIER PHC279 TREATED UNTREATED

## PROGRESSING TO LAUNCH PHC279 IN BRAZIL SOYBEANS IN 2021



## PRE TEC PRODUCT DEVELOPMENT PROGRESSING IN USA

#### MULTIPLE PRODUCTS UNDER DEVELOPMENT

#### **EPA SUPPORT AS SUSTAINABLE PRODUCTS**

· Low risk; fast-track approval

# PHC279: FIELD TRIALS SHOW POTENTIAL IN SOYBEAN, CORN, WHEAT, AS WELL AS FRUITS AND VEGETABLES (SPECIALTY CROPS)

• EPA approval expected H2 2022

#### PHC949: NEMATODE CONTROL COMPARABLE WITH CHEMICAL STANDARDS

- EPA submission 2021
- Replace toxic soil fumigants (e.g. methyl bromide)

#### PHC404 SHOWING POTENTIAL IN ALMONDS

• Potential fast-track approval

#### JDA SIGNED WITH WILBUR-ELLIS® FOR SPECIALTY CROPS

- >\$3.4bn distribution partner, wide market access
- Expect multiple product launches over several years after EPA approval

#### PRETEC UNDER EVALUATION WITH OTHER PARTNERS FOR ROW CROPS





PRE TEC PRODUCTS MOVING FORWARD TO MULTIPLE US LAUNCHES IN MARKETS WORTH >\$3BN





## THE ECONOMICS OF PRE TEC PRODUCTS

## SUBSTANTIAL BENEFITS FOR GROWERS

- PHC279 Brazil soybeans: 38 million Ha planted area; \$75/Ha yield increase<sup>1</sup>
- PHC414 US strawberries: 45,000 acres<sup>2</sup>; \$6,000/acre benefit<sup>3</sup>
- PHC404 US almonds:
   1.2 million acres<sup>2</sup>;
   \$1,600/acre benefit<sup>3</sup>

# LOW APPLICATION RATES<sup>4</sup>

- Brazil soybeans: single seed treatment, 9 – 27g/Ha<sup>5</sup>
- US strawberries: 8 applications, 60g/acre; total 480g/acre
- US almonds: 4 applications, 57g/acre; total 228g/acre
- Finished product contains 1% peptide

# CHEAP TO PRODUCE

- Low cost of production per Kg
  - Confirmed at pilot scale (Penn State)
- Conventional fermentation technology widely available
- Toll manufacturing sources under evaluation; minimal PHC CapEx

# SUBSTANTIAL MARGIN OPPORTUNITY

- Price of peptides will vary, depending on value of benefits
- Gross Margin % comparable to Harpin ab (73%)

## **VERY SUBSTANTIAL MARGIN OPPORTUNITY FOR PHC**

- l. Based on average yield increase. Yield increases as large as 27% compared to the fungicide-only treatment were observed.
- 2. Crop areas from USDA National Agriculture Statistics Service. 3. Benefit based on Plant Health Care small scale field trials and current crop economics.
- 4. All application rates stated in grammes of finished product (1% active ingredient). 5. Application rate being refined in current field trials programme





## MULTIPLE PRODUCTS FROM THE PRETEC PIPELINE

**BRAZIL PHC279** 

**USA PHC279** 

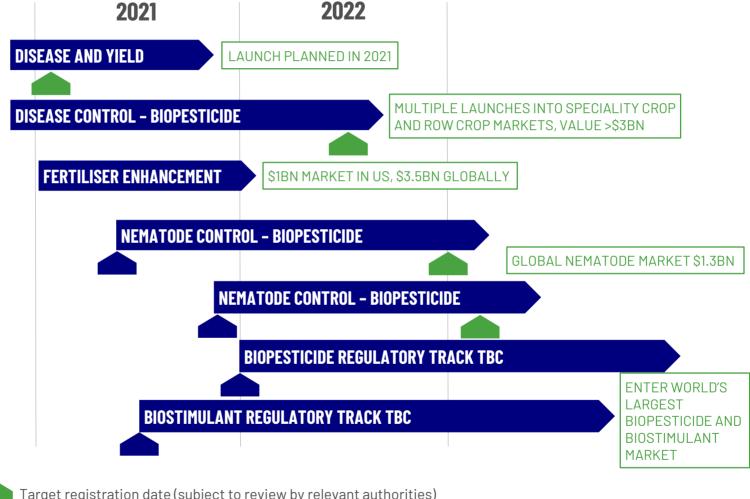
**USA PHC404** 

**USA PHC949** 

**BRAZIL PHC949** 

**EU PHC279** 

**EU PHC414** 



Submit for registration

Target registration date (subject to review by relevant authorities)

## PRODUCT PIPELINE TARGETING MARKETS WORTH >\$5BN





## PRE TEC MILESTONES 2021-22

#### PHC279 BRAZIL

- Federal registration H1 2021
- Results from 2020/21 season available mid-2021
- Present at World Soybean Congress, June 2021
- Launch H2 2021

#### PRE TEC IN THE USA

- Progress JDA with Wilbur-Ellis®
- Advance discussions with partners for row crops in US
- Achieve PHC279 registration H2 2022
- Submit PHC949 to EPA during 2021
- Plan multiple launches in 2022/23

#### **CAPABILITIES**

- Appoint toll manufacturer 2021
- Further patent grants to extend IP protection

LAUNCHING PRETEC PEPTIDES IN VERY LARGE MARKETS WORTH >\$5BN FIRST LAUNCH H2 2021 A REVOLUTION IN SUSTAINABLE AGRICULTURE





## GROUND-BREAKING PROPRIETARY PLATFORM IN SUSTAINABLE AGRICULTURE

## PREtec - "VACCINES FOR PLANTS"

## **SUBSTANTIAL BENEFITS TO GROWERS**

- ROI >6x from yield alone
- Promotes sustainable farming

## THE PLANT HEALTH CARE OPPORTUNITY

- Broad pipeline of PREtec peptides, many differentiated products
- Excellent ESG credentials (low toxicity, no residues)1
- High gross margin: comparable to Harpin (73%)
- Scalable global opportunity: Brazil, US, then rolling out globally
- Harvesting sunk investment of >\$20m
- First launch in H2 2021

LAUNCHING PRETEC PEPTIDES IN VERY LARGE MARKETS WORTH >\$5BN FIRST LAUNCH H2 2021 A REVOLUTION IN SUSTAINABLE AGRICULTURE