



Potato Healthy Tuber - Industry committed to sustainability & productivity for potato production in China

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How do we feed a growing

world population?

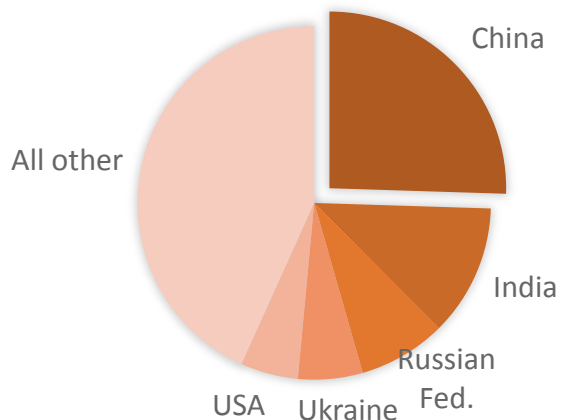


Farm new land

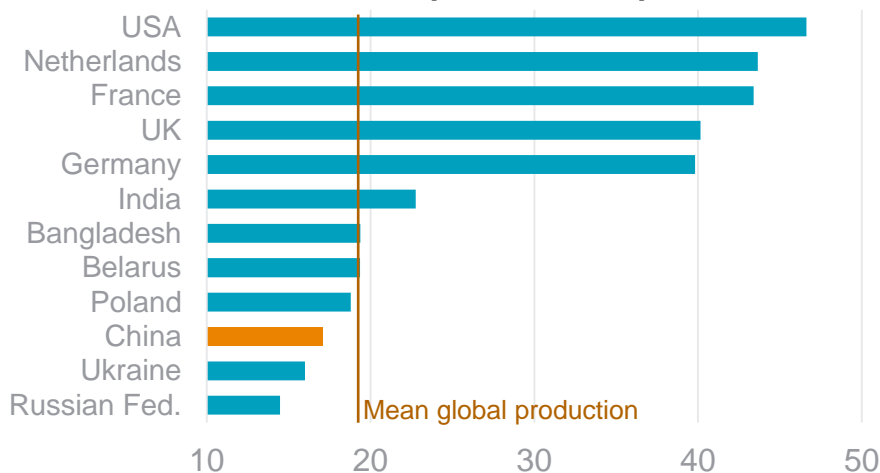
Get more from existing farmland

China largest world potato producer and expected to grow

% Total global potato production 2013*



Yield (tonnes/ha)*



- China is the largest world producer
- Producing 96m tonnes (1/4 world production) & using an area of 5.6m hectares
- Chinese production expected to double over the next 5-10 years (10m hectares)
- Potato will become the 4th staple crop of the Chinese population
- Current average potato yield in China is 17 tonnes/ha, below the average global yields (19 tonnes/ha) and less than half of that attained in US or Belgium (46 tonnes/ha)

* 2105 Potato Market and Trade Review published by Agri Market

Syngenta Good Growth Plan – Committed to improve productivity and sustainability

By 2020

More food
Less waste



Make crops more efficient

Increase average productivity of the world's major crops by 20% without using more land, water or inputs

More biodiversity
Less degradation



Rescue more farmland

Improve the fertility of 10 million hectares of farmland on the brink of degradation



Help biodiversity flourish

Enhance biodiversity on 5 million hectares of farmland

More health
Less poverty



Empower smallholders

Reach 20 million smallholders and enable them to increase productivity by 50%



Help people stay safe

Train 20 million farm workers on labor safety, especially in developing countries



Look after every worker

Strive for fair labor conditions throughout our entire supply chain network

Potato Healthy Tuber (PHT)

the
good
growth
plan

Potato Healthy Tuber – what did we set out to do?

Strategy



PHT



Current practice

PHT solution



+30%
yield

3:1
ROI

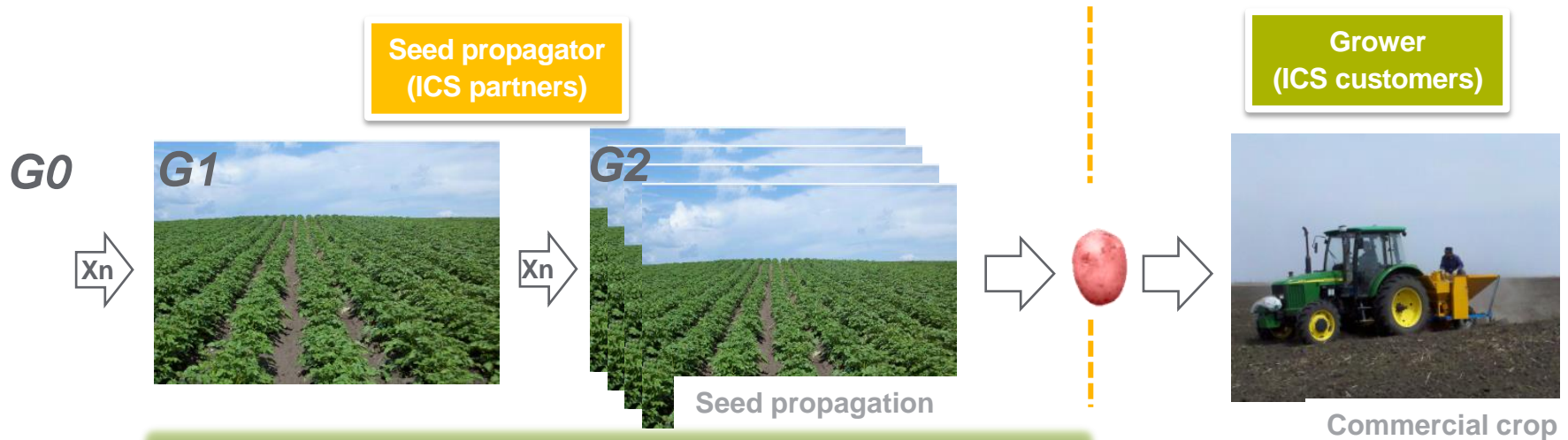
Healthy seed: Seed partnerships

Seed care:  **Cruiser**[®]  **Maxim**[®]

Crop Protection: In-furrow and foliar  **Amistar**[®]  **Revus**[®]

Food chain: Partnerships with processors

PHT Sustainable Programs - Broad portfolio used in propagation & commercial field crop production



Defined Syngenta Protocols
Include 3rd party products

<p>Seedcare</p> <ul style="list-style-type: none"> Celest® Cruiser® Vibrance® 	<p>Foliar Fungicides</p> <ul style="list-style-type: none"> Revus® RidomilGold® Sandozeb Dacotec 	<p>Foliar Insecticides - Aphids</p> <ul style="list-style-type: none"> KarateZeon® Actara® 	<p>Herbicides</p> <ul style="list-style-type: none"> Reglone® DualGold®
<p>In Furrow</p> <ul style="list-style-type: none"> AmistarTop® 	<ul style="list-style-type: none"> BravoTop® 	<ul style="list-style-type: none"> Plenum® 	
	<ul style="list-style-type: none"> Renman* Shirlan® 	<ul style="list-style-type: none"> Alika® Mineral Oil* 	<p>Storage</p> <ul style="list-style-type: none"> Tecto®

□ Registrations expected 2016-2020

* 3rd party products

PHT – Virus control platform to improve tuber quality



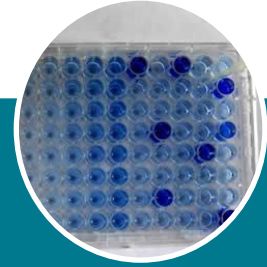
Aphid Control

- Understand and monitor aphid population
- Establish insecticide protocols with good rotation
- Assess mineral oil
- Development of new products to extend products available for the grower



Sanitation, roguing & crop management

- Disinfection of planting equipment
- Guidelines on roguing
- Guidelines on proper disposal of infected field material
- Guidelines on field placement
- Guidelines on weed control

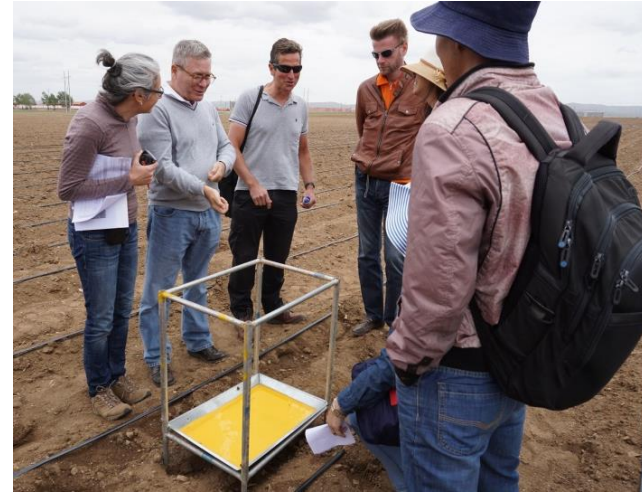


Virus testing

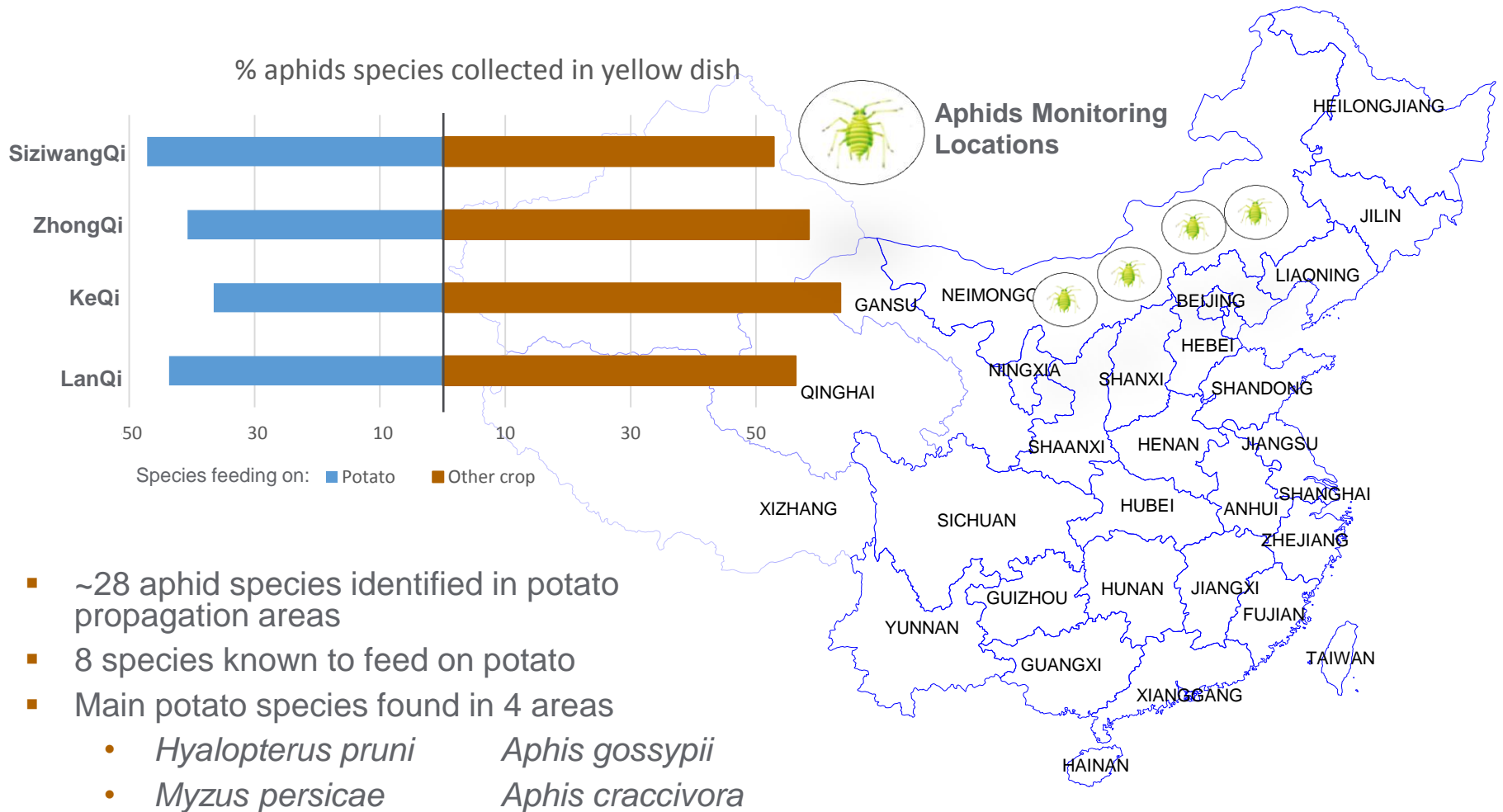
- Establishing protocols to monitor virus at planting, during the season, at harvest & storage for tuber propagation
- Evaluate ELISA, PCR & GenChip to increase speed and accuracy while reducing costs

Ensuring quality assessment during all stages of potato propagation

PHT - Monitoring aphids using yellow sticky and dish traps

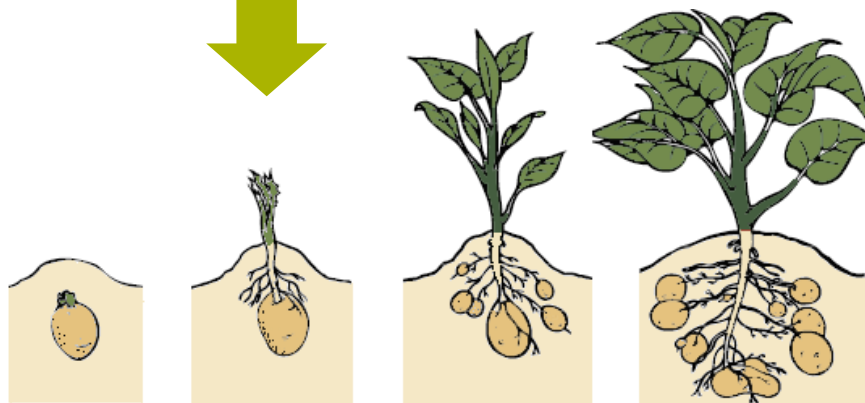


PHT – understanding aphid species & population dynamics to assess virus risk



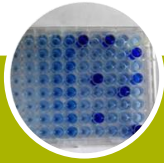
PHT – Providing crop protection programs for best aphid control ensuring resistance management

Weekly insecticide applications following plant emergence



3 Syngenta test programs		Plant Emergence 6/10	6/17	6/24	7/1	7/8	7/15	7/22	7/29
SYN1	Cruiser	Kung Fu	Kung Fu	Flonicomide	Flonicomide	Alika	Alika	Plenum	Plenum
SYN2	Cruiser	Kung Fu+ Mineral oil	Kung Fu+ Mineral oil	Flonicomide + Mineral oil	Flonicomide + Mineral oil	Alika + Mineral oil	Alika + Mineral oil	Plenum + Mineral oil	Plenum + Mineral oil
SYN3	Cruiser	Kung Fu	Kung Fu	Mineral oil	Plenum	Plenum	Mineral oil	Alika	Alika

PHT – Virus testing comparison of methods to optimize tuber quality



ELISA



PCR



GeneChip*

Time (h)	12	5	5
Extraction	Grinding samples by hand	Grinding samples by machine	Grinding samples by hand
Number Virus / test	1	2-3	8
Sensitivity	Low	High	High
Accuracy	Low	High	High
Tissue stage	Leaf	Leaf and tuber	Leaf and tuber
Disadvantage	Low sensitivity	Primer design	Samples grinding and no high throughput today

* GeneChip developed by GeneTop

PHT – Stewardship on crop protection products as part of sustainability



Application technology training in Snow Valley Farm July 2017

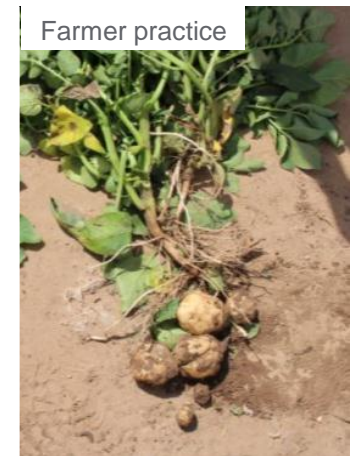
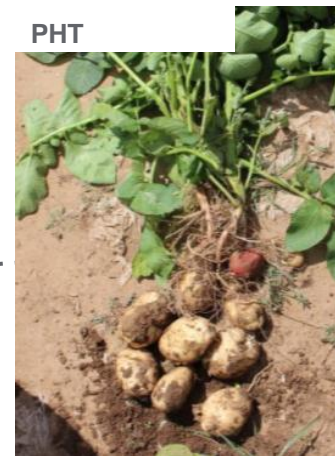
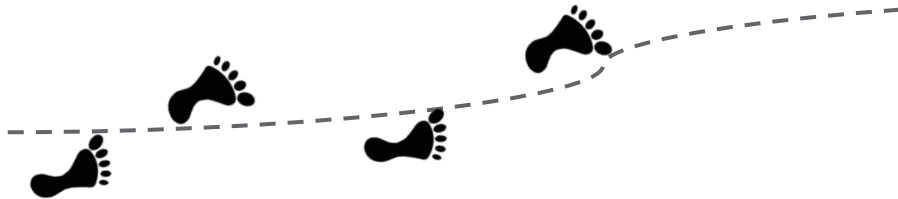
Application technology training in Zheng Feng Farm July 2017



Our journey together for better potato production

- Enhancing potato productivity while ensuring sustainability:
 - **Collaboration & commitment with local and international partners** to meet the challenge
 - **Bring technology and knowhow** to Chinese potato growers to improve their production and yields
 - Re-evaluate traditional production systems and **implement proven management practices with innovation to achieve sustainable productivity in potato**

- **Through Potato Healthy Tuber**



Bringing plant potential to life