



Conceiving a Framework of ASTIP-International

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I. Food and Agriculture in China and Role of Science

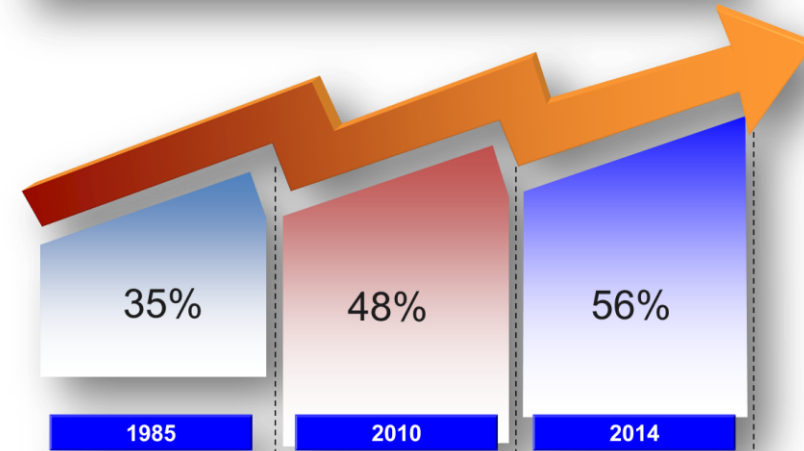
Agricultural S&T is an important pathway to achieve new development of agriculture

S&T progress is a major driving-force of agricultural development , which has been always support Chinese modern agricultural development

2017:

- Contribution ratio of agricultural Sci.-Tech. progress exceeded **57%**
- Improved variety coverage rate of main crops reached **96%**.
- The yield of grain crops increased up to **5.45 ton/ha**, and the contribution rate of improved varieties reached **43%**.
- The comprehensive mechanization level of plowing, sowing and harvesting in the agriculture was as high as **66%**.

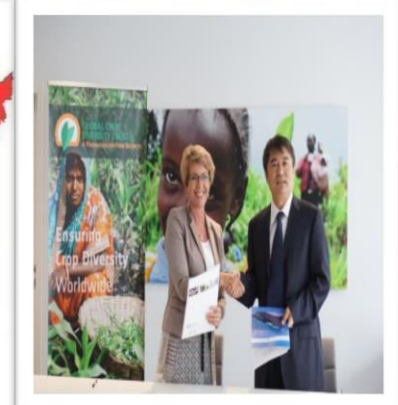
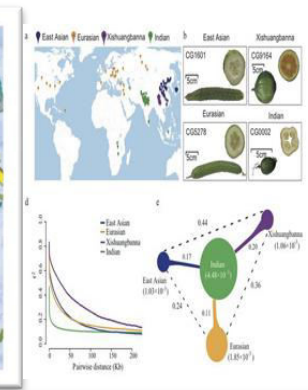
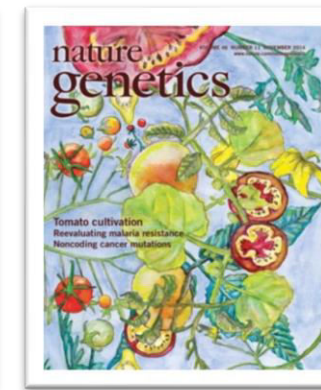
Contribution Rate of ARD to Agricultural Production



II. Role CAAS in NARS and Agricultural Development

Three major roles of CAAS in Chinese agricultural development

- ① Serve as a national team and Center of excellence in national agricultural science and technology innovation
- ② Serve as a national think tank for agricultural related policy formulation
- ③ Serve as flagship for International cooperation to lead Chinese agricultural institutions with international partners



A New Era for CAAS

"As the national team on agricultural science and research, CAAS shall face the global frontier of agricultural science and technology, aim at national strategic demands, and focus on modern agriculture development.

CAAS shall accelerate the endeavor to build world leading disciplines and scientific research institution.



President XI Jinping in his congratulation letter to CAAS's

60th Anniversary

May 26, 2017

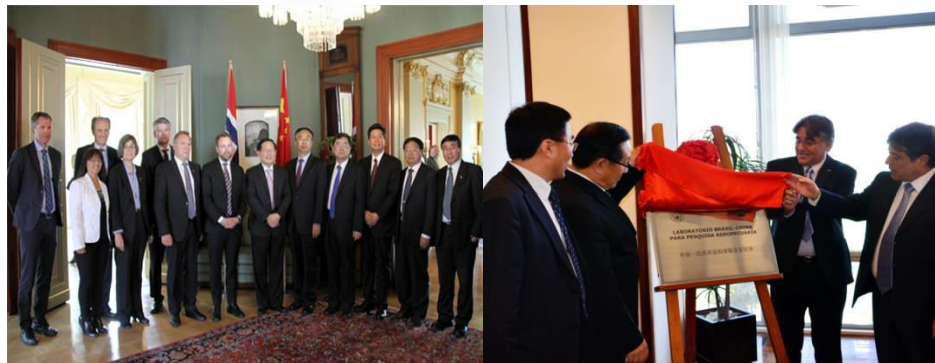
III. International Cooperation: Current situation

1. CAAS: Towards world frontier

being a national-level international agricultural S&T center for scientific innovation, international Cooperation, and talents cultivation height



- ❑ Cooperation with: **83** countries and regions, **38** international organizations, **7** MNCs and Gates Foundation with **82** agreements signed
- ❑ **13** representative offices of international organizations
- ❑ **62** joint laboratories / joint research centers with counterparts from the UK, United States, Canada, Japan, etc., and also some international organizations
- ❑ **4** overseas joint laboratories were established in Brazil, Belgium, Australia and Kazakhstan
- ❑ **6** FAO and OIE reference labs.



International partners and platforms

- Sino-Japanese Sustainable Agriculture Center
- Sino-German Agricultural Sci-Tech Innovation Center
- China-UK Center for Sustainable Innovation on Agriculture

- Bill Melinda Gates Foundation Project
- CGIAR Strategic Projects
- UK Newton Fund
- EU Horizon2020
- China-US Flagship Programs
- China-Netherlands Key Programs
- China-Norway Sino- Grain Programs etc



- China-Brazil Joint Laboratories on Agriculture Science
- CAAS-CIMMYT Joint Laboratories on Wheat Quality
- CAAS-CABI Joint Laboratories on Biosecurity

- RDA Beijing Office
- CIP Beijing Office
- ICRAF Beijing Office
- IPNI Project Office

III. International Cooperation: Current situation

2. CAAS: taking the national lead in agricultural cooperation

International



- ❑ Responsible for cooperation with **CGIAR**
- ❑ Host Country Agreement of CIP-China Center for Asia Pacific (**CCCAP**) & CCCAP infrastructure plan
- ❑ Being Co-Chair of **China-EU Task Force on Food, Agriculture and Biotechnology**
- ❑ Being Lead Shepherd of APEC Agricultural Technology Cooperation Working Group (**ATCWG**)

Domestic



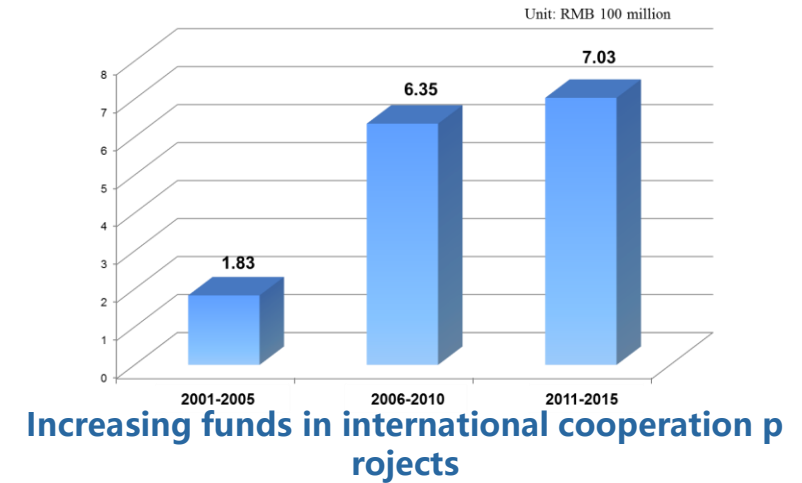
National Network of Agricultural S&T
International Cooperation

- ❑ Initiated "National Network of Agricultural S&T International Cooperation " and hold workshops annually
- ❑ China-Africa 10+10 initiative

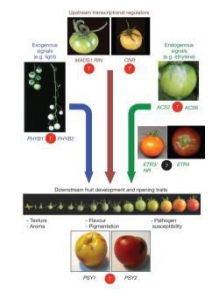
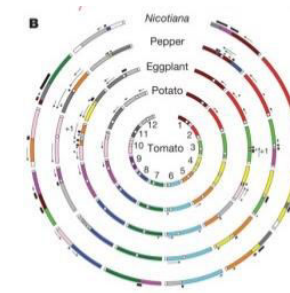
III. International Cooperation: Current situation

3. CAAS: organize to implement major cooperation projects and expand cooperation research fields

- ◆ **2,343** international cooperation projects with over **1.521** billion RMB budget since 2010
- ◆ Coordinate domestic organizations to cooperate with 13 representative offices of international organizations to conduct over **250** projects throughout **20** provinces
- ◆ Participate in over **50** projects of EU framework programme, with over **55** million RMB funds
- ◆ Implement the “**Green Super Rice**” project funded by the Gates Foundation to promote super rice in 15 target countries in Asia and Africa
- ◆ Participate in the **genomic sequencing** of wheat, cotton, oilseed rape, cucumber as a key player
- ◆ Promote cooperation for China-UK Newton Fund, CISRO Flagship Program, China-Canada Research and Innovation Action Plan



“Green Super Rice is a gift to the world via China's agricultural innovation”



III. International Cooperation: Current situation

4. CAAS: host several international events and play a key role worldwide

- Successfully hosted and organized many **high-level international academic conference**, such as *"Global Land Science Conference"* , *"International Crop Science Conference"* and so on.
- Initiate "Global Forum of Leaders for Agricultural Science and Technology (**GLAST**)" , which is co-organized with FAO and CGIAR, and was successfully held for **5 times**.
- Host over 200 **scientist summits** and **academic seminars**, such as the "China-CGIAR Cooperation High-level Seminar" and "China-EU Bio-economy Technology Seminar" , which demonstrates CAAS is a good example of international agricultural cooperation and exchange.



III. International Cooperation: Current situation

5. CAAS: “Go Global” to enhance openness for the outside world

“Going Global” : Many technologies have been transferred to the other countries, including hybrid rice, animal epidemic disease control technology and vaccine production, facility horticulture, agricultural machinery and bio-gas tech.

- ✓ successful plant experiments of **hybrid rice** in **Vietnam, Laos** and **the Philippines**
- ✓ Successful use of **EIA vaccine** in **Cuba**
- ✓ Successful use of **avian flu vaccine** in **Vietnam** and **Egypt**
- ✓ Assist **Vietnam** in building **seed processing** machinery production factory
- ✓ 21 international **bio-gas technique training classes**, training 587 peoples from 89 countries
- ✓ Assist Angola in agricultural development planning, participate in the preparation of China **Agricultural Technology Demonstration Center** in Mozambique and Liberia
- ✓ Hold **practical agricultural techniques training courses** in about 20 African countries with training over 200 peoples



III. International Cooperation: Current situation

6. CAAS: strengthen the cultivation of talents with international perspective

Study abroad

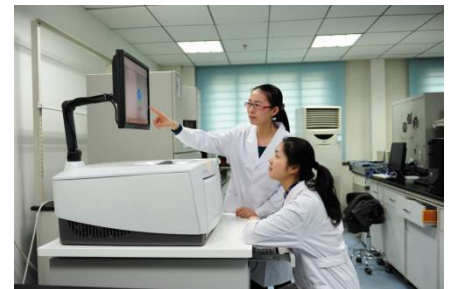
- Assigned **more than 260** young and mid-aged scientists to study abroad
- Send over **80** young scientists to have short study visits in CGIAR centers

Foreign students

- Cooperate with Wageningen University and University of Liège in doctoral education program: **19** and **17** doctoral students has been accepted separately
- There are **245** foreign students in the graduate school of CAAS, out of which, **216** are doctoral students, from **47** countries of Asia, Africa and South America, covering **36** disciplines and **29** research institutes

Talent Introducing

- Being praised by the State Administration of Foreign Expert Affairs for advances in bringing in foreign brains. 9 institutes are given the name of "***Demonstration Base for Intelligence Introducing***".
- **Elite Youth Program**: to introduce young academic leaders and innovative talents who is younger than 40 years old with international perspective and adaptability to the future



IV. International Cooperation bears crucial role in Agricultural Innovation

1. International cooperation should play a bigger role in promoting science -led agricultural development

With new trends in agricultural development at home and abroad, technology and innovation have become an important pathway to address challenges, and effective international cooperation is the key to promote agricultural innovation.

Although CAAS has achieved great results in international cooperation, it still faces an arduous and long-term task to build itself into a world leading scientific research institute:

- ❑ *Unbalanced development among institutes and disciplines*
- ❑ *Institute Operating mechanism needs to be improved for building a top-notch scientific research institution*
- ❑ *The agricultural talents capacity building is still need to be strengthened*
- ❑ *Operating of joint international labs is not effective enough*

Facing these problems, CAAS will:

- *Adhere to the basic principles of cooperation, development and win-win*
- *Improve the cooperation mechanism for agricultural technology global strategic partnership*
- *Strengthen connection with international scientific research programs, initiate international major agricultural science & technology cooperation action plans*
- *Accelerate cooperation in agriculture with countries along the "Belt and Road"*
- *Bring in advanced agricultural technologies and "Go Global" in agricultural product safe supply, green production and ecological safety*
- *Capability building in multiple ways to cultivate talents with international perspective*

Agricultural S&T Innovation Programme (ASTIP)

--A pathway toward world leading Institution, 1 of the 3 National Innovation Programs

In 2017, ASTIP amounts 112 Million USD, accounts for 24% of CAAS public budget

Plan

2013-2025, in 3 phases

Mission

Meet industries' major demand for S&T, leap forward to the high-end of the world's agricultural S&T

**8 disciplinary cluster, 107 subjects
332 teams**

**Innovation
tasks**

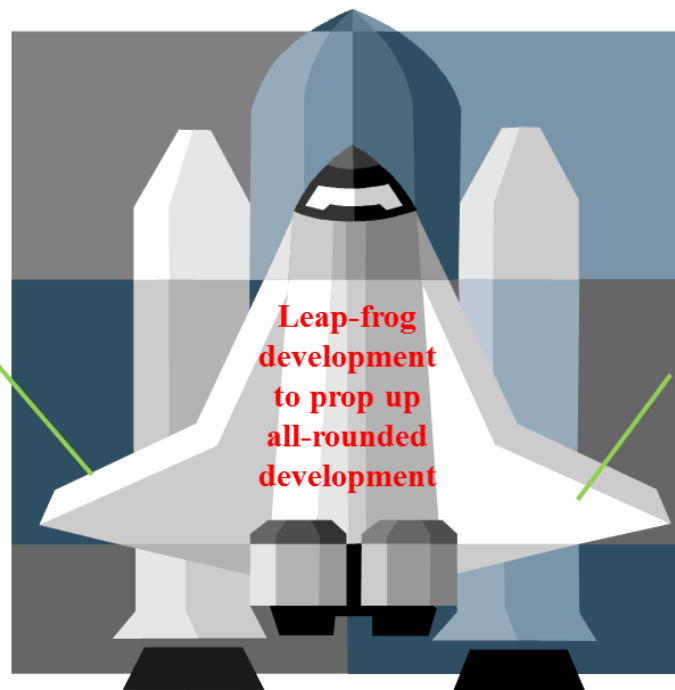
**Top-notch modern
academy and institutes**

**Leap-frog
development
to prop up
all-rounded
development**

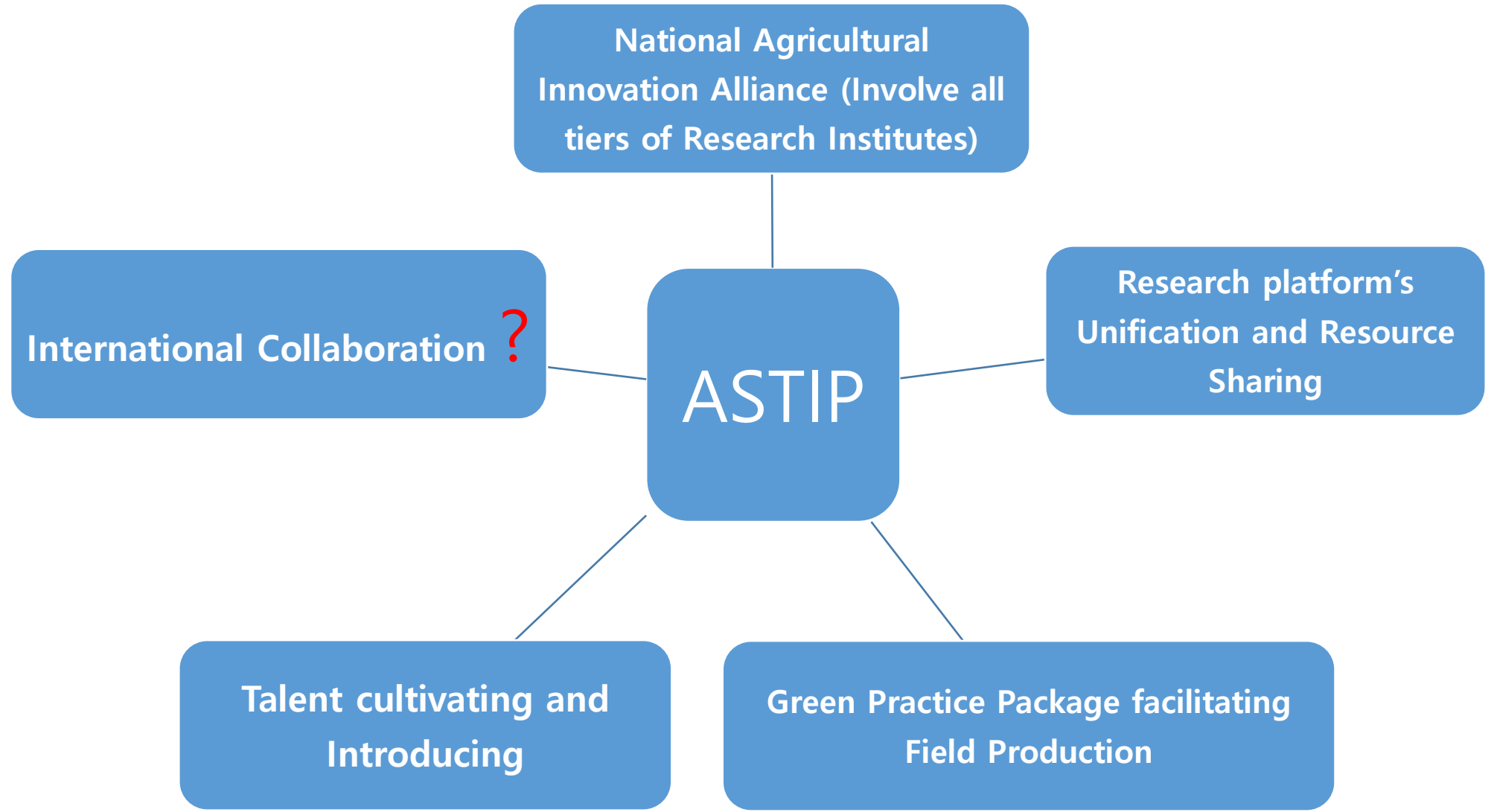
**Elite Youth Program to recruit
outstanding talents**

**Capacity
building**

**Mechanism
innovation**



Portfolios derived from ASTIP



Pursue a better performance through International Collaboration:

What can International Collaboration do in exercising Central Government' s strategies and boosting CAAS' s development?

Status quo:

- ❑ *Unbalanced development among institutes and disciplines*
- ❑ *Scaling up of research outputs lacks behind corporate companies*
- ❑ *The supporting role for agricultural economy has not been sufficiently leveraged*
- ❑ *Institutional policies needs to be improved (CAAS is not the only one affected)*
- ❑ *The agricultural talents capacity building needs to be strengthened*
- ❑ *Operating of joint international labs is not effective enough*
- ❑

Effective measures that can be practically adopted

- *Improve global strategic partnership---e.g. through global programmes*
- *To play a stronger role in promoting research results' industrialization both at home and abroad*
- *To develop practical package of agriculture production technologies (best practices) towards field production*
- *Capability building in multiple ways to cultivate talents with international perspectives, and to educate "professional farmers"*

A global programme under conceiving



Rationale

- No international collaboration activities specifically identified in ASTIP programme tasks
- CAAS leadership decided to list out International collaboration portion in the funding
- There is urgent need to launch a cross-disciplinary programme that involves global intelligence to generate more advanced technologies, to tackle global/domestic challenges and to build stronger partnerships
- CGIAR is one of the most appropriate partners in facilitating CAAS to launch international programme, upon our firm partnership, for its tremendous research and team capacity, favorable international influence, as well as the strong network worldwide

A Road Map of ASTIP-International

CAAS side

- Literature research (**Undergoing**)
- Collect ideas on research topics and collaborative needs from CAAS scientists (**Already done**)
- Draft a preliminary concept note on implementing ASTIP-International (**Almost done**)
- Organize a workshop to learn experience from sister NARS and IOs, learning VS ideas generating (**To do on June 25-26**)
- Further discussion after the workshop and perfect the concept note
- Expert verification for the concept note and submit to CAAS management board
- Concrete the concept note in to project proposal
- Contract signing with partners
- Launching on the occasion of 6th GLAST (Global Forum of Leaders on Agricultural S&T), to be held in October 2019 in Chengdu

First 3 subjects conceived for **ASTIP International**

1. S&T Innovation Enables Sufficient Food (STESF)

Objective: *To ensure absolute food security against resources&environmental constraint, consistently explore excellent traits for better performance and productivity, to improve feed crops productivity (maize, soybean, etc), to enhance the nutritional and economic value of small crops (beans, legumes, pulse, etc). To promote the S&T advance combining with field production, industrialization and International Cooperation.*

Partners: CIMMYT, IRRI, ICRISAT, ICARDA, Bioversity, CIAT, INRA, WUR, EIAR.....

Sub-projects:

1. Safety conservation of genetic resources and Management of Gene bank
2. Breeding of new species of legumes with resistant traits
3. General Methodology' built up for breeding water-saving and disease-resistant crops
4. Fruit tree' s resources collection and utilization
5. Purple Alfafa' s Genetic modification on drought resistance

First 3 subjects conceived for **ASTIP International**

2. S&T Innovation Promotes Nutrition and Health

Objective: *To secure world population' s nutrition and health through better food and food behavior; to combat health problems including malnutrition, deficiency of nutritional elements, obesity, overweight by S&T tools, to exercise a better and efficient food processing practice in entire value chains(e.g. crop-livestock integrated production system).*

partners: IFPRI, ILRI, IAEA, WUR, NIBIO, CIARD, Guelph University, Teagasc, MTT/Finland, London School of Hygienic&Tropical Medicine, Kansas State University,

Sub-projects:

- 1. Development of zinc-rich rice varieties with assistance of fluorescent technology*
- 2. Risk assessment of Biotoxin hindering children's growth*
- 3. A4NH research project*
- 4. Policy, Institutions and Marketing Research Plan on Nutrition and Health*

First 3 subjects conceived for **ASTIP International**

3. Green Agriculture

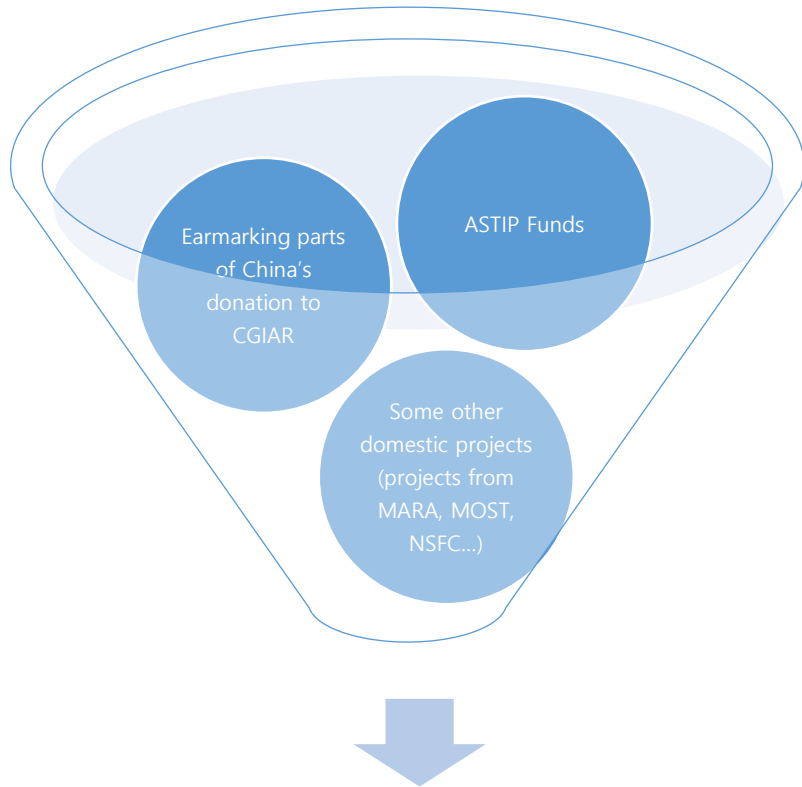
Objective: To promote and practice green development through S&T tools, develop appropriate substitutes for fertilizers and pesticides, to promote precise agricultural production, develop more advanced technologies in reuse of agricultural disposal, arable land restoration, water-saving cultivation, so as to achieve “climate-smart agriculture” .

partners: World Bank, UNEP, UNFCCC, CIAT, ICRAF, ICRISAT, IWMI, Tottori University, LUKE, University of Sydney, University of Murdoch, Cornell university, Oxford University.....

Sub-projects:

1. Construction of early warning system and drought risk management under the context of climate change
2. Study on livestock waste recycle technology based on fermentation treatment
3. Development of key technology for improvement of ecological function in production base with heavy metal contamination
4. Ecological function and its restoration of biodiversity on agro-ecosystem

Resource applicable for ASTIP-International



Starting phase of ASTIP International

General Idea on Resource Mobilizing

- 3-5 years project expansion
- Leveraging existing resources in the starting phase
- Gradually attract various sources investment

Specific use of both CAAS and partner' s funds

- CAAS could undertake a great amount of joint work at home (help CRPs to conduct trainings for developing countries, conduct some genetic sequencing at home, sponsor Chinese scientists doing part-time job for CRPs, introducing in CGIAR scientists for a certain time each year, jointly publishing papers, etc.
- CGIAR takes counterpart work on CG side

Administrative Structure



To be Discussed.....

Any ideas are more than
welcomed
Thank you

