Asian and Pacific Workshop on Whole-Process Mechanization of Potato Production

Accelerating the promotion of China's Potato Production Mechanization

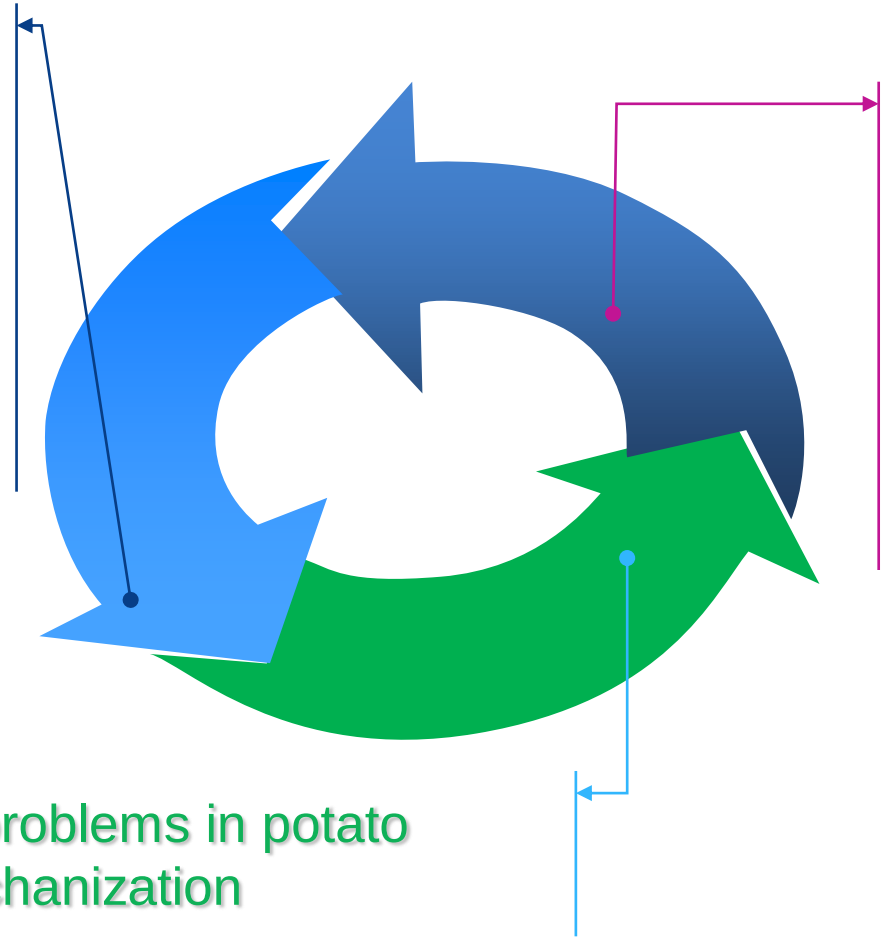
Center of Agriculture Machinery Extension of the Ministry of Agriculture

Li Anning

27-28 June 2016, Kunming, China

Contents

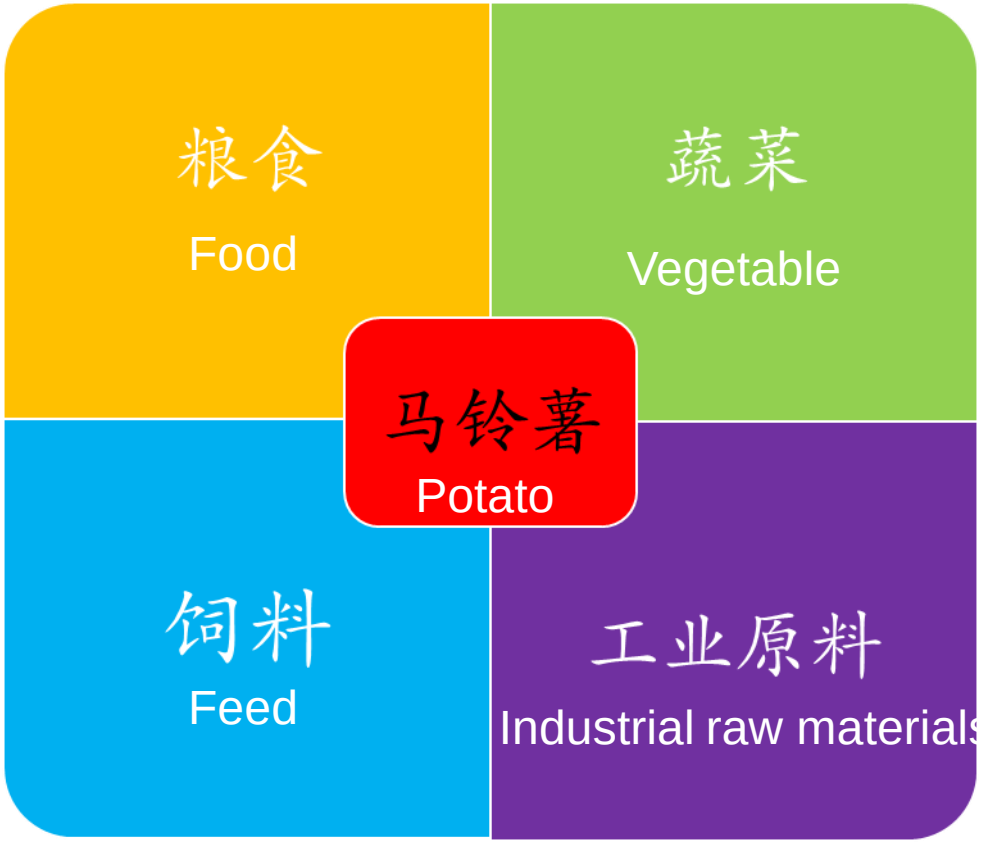
Acknowledge the progress of potato production mechanization



Recognize the content of potato production mechanization

Solve the key problems in potato production mechanization

The progress of potato production mechanization



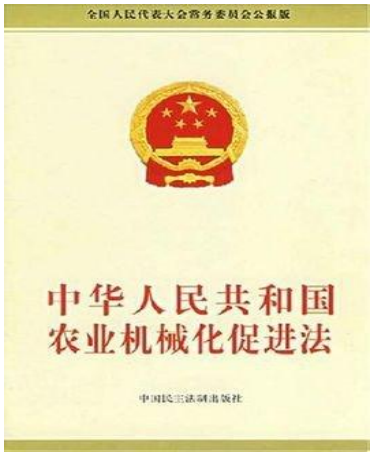
Planting area：83.6 million acres

Yield：19.1 million ton

Location：Nationwide

Global ranking：area and yield occupies 1/4，ranking in the first place

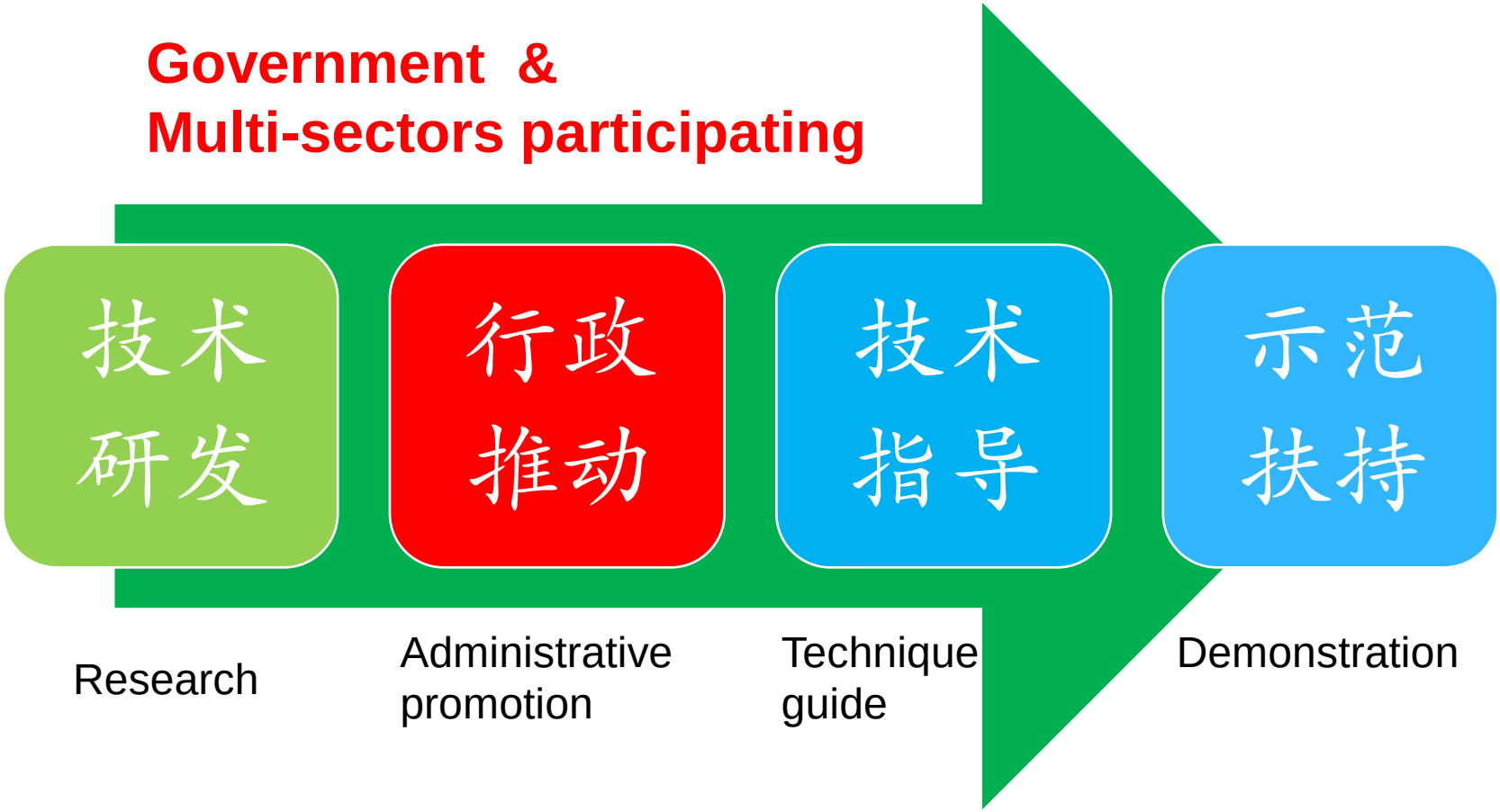
Development after 21st century



Market demand+ Government promotion

Government leading with various methods

Government & Multi-sectors participating



Research

1, The tenth “five year plan” key program

Research & development on the key facilities in the whole-process mechanization of potato production

2, The eleventh “five year plan” key program

Research & demonstration on the technology of mechanized digging & harvesting

3, National Public Welfare Industry special program

Study on the upgrading of the key technology and facilities in rhizome crop’s mechanization

4, National modern agriculture program on potato industry technology system

5, Provincial & enterprise’s research

Administrative promotion

- The comment of accelerating potato industry's development from MOA（Oct. 2006）
- Regional layout planning of national advantaged agricultural products（2008—2015）
- National potato production mechanization meeting（2009.9.25 Inner Mongolia）
- MOA promotion of main crop and technology（2011）

Technical guidance

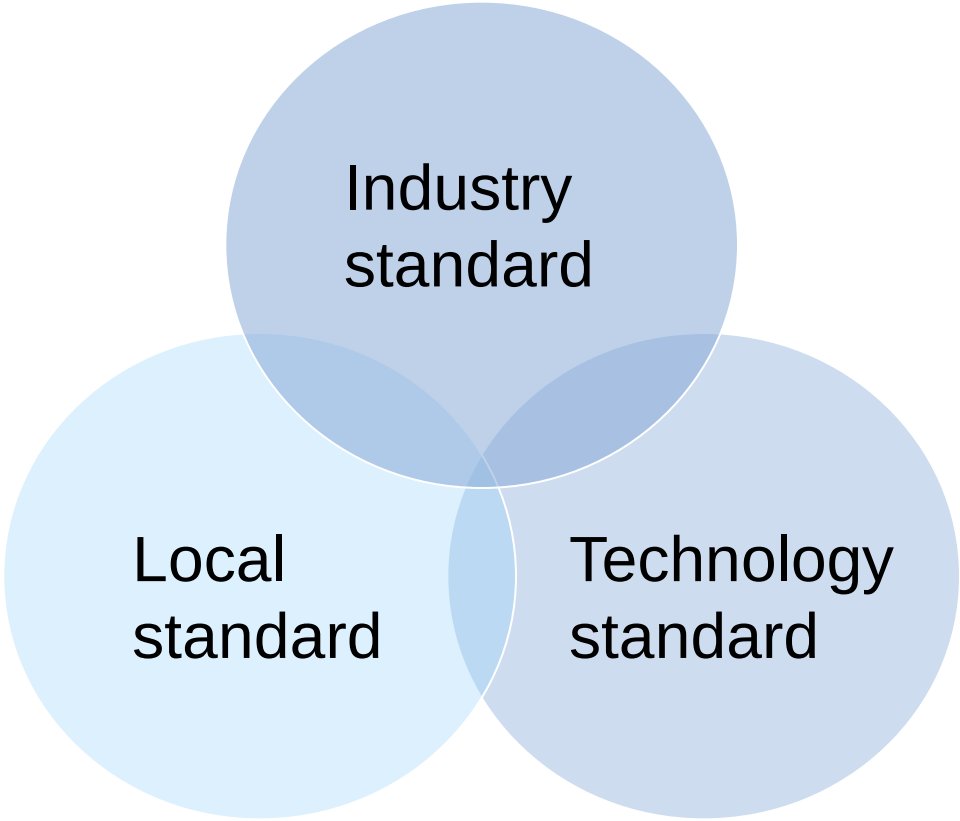
中华人民共和国农业部
Ministry of Agriculture of the People's Republic of China

索 引 号： 07B110403201200637 信息所属单位：
信息名称： 农业部办公厅关于印发马铃薯机械化生产技术指导意见的通知
文 号： 农办机[2012]29号
生成日期： 2012年06月26日 公开日期：
内容概述： 马铃薯是我国第五大粮食作物，同时也是重要的经济作物。加快马铃薯生产机械化，对促进马铃薯增合，提高马铃薯机械化生产科技含量，我部组织有关专家研究提出了马铃薯机械化生产技术指导意见

农业部办公厅关于印发马铃薯机械化生产技术指导意见的通知

农办机[2012]29号

各省、自治区、直辖市和计划单列市农机（农业、农牧）局（厅、委、



Demonstration

Allowance of purchasing machine

Allowance of Working

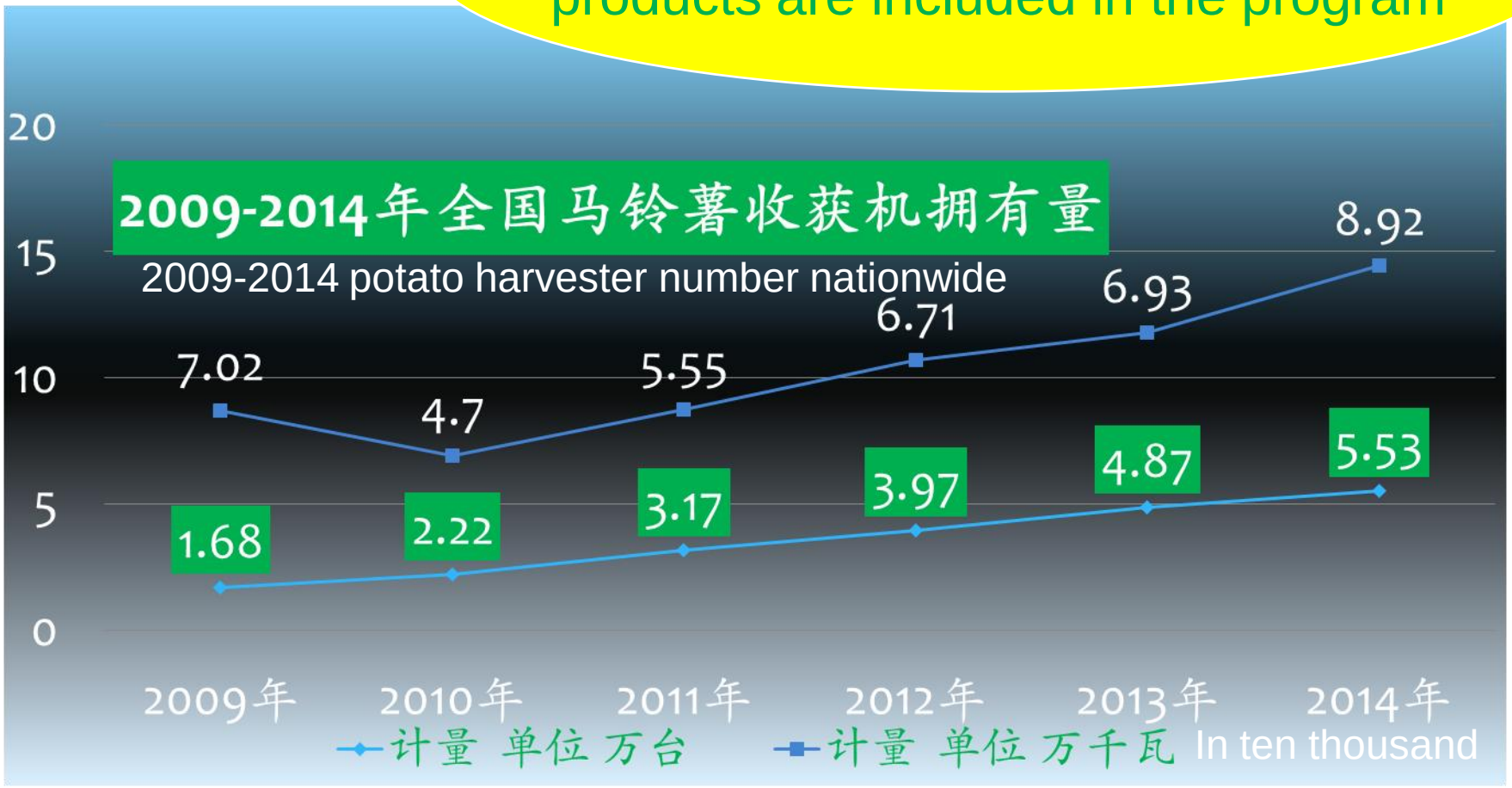
Allowance of Production

Demonstration programs (20 national districts)

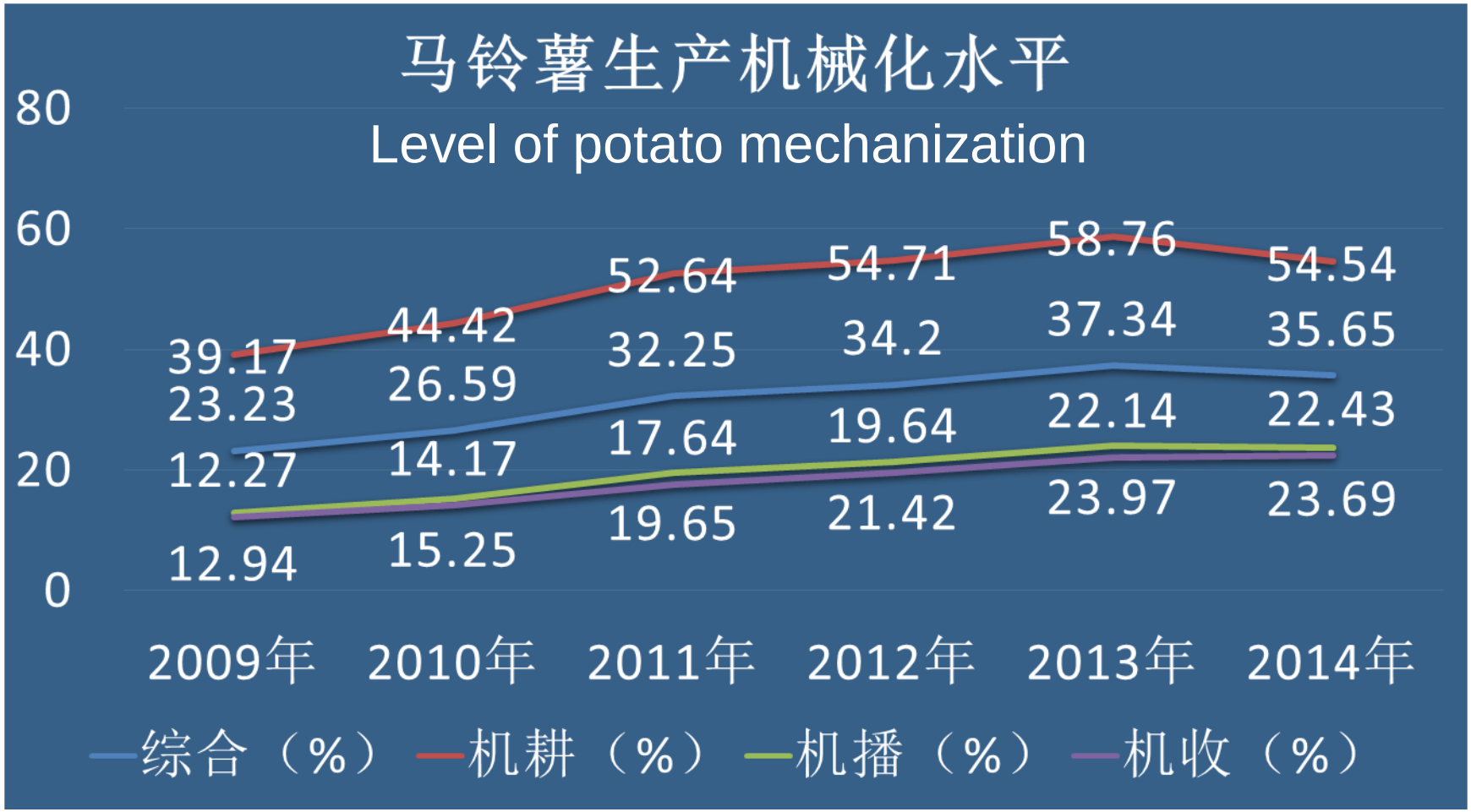
Base construction (Wuchuan\ Guyang)

Progress

30 factories and more than 100 products are included in the program



Progress



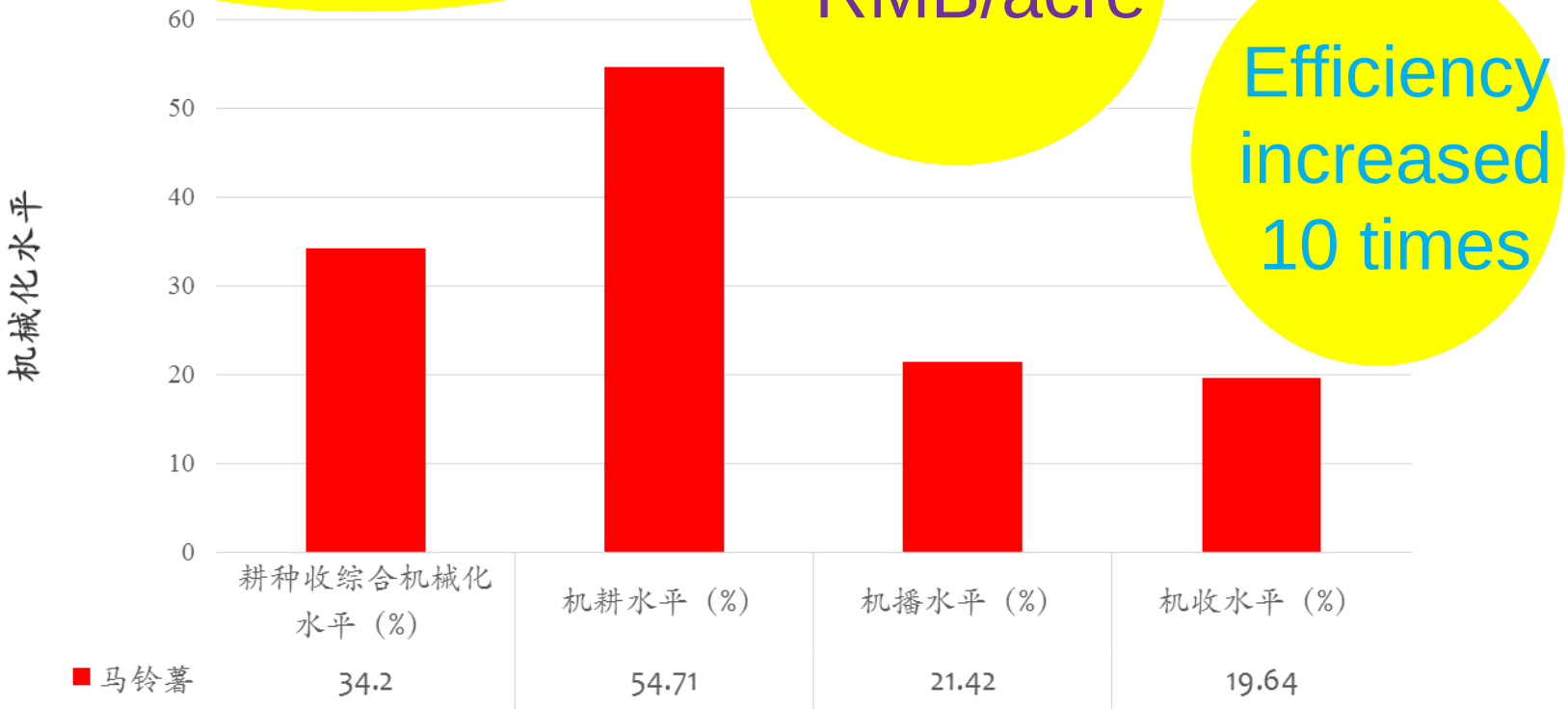
Complex Farming Seeding Harvesting

The mechanization of potato production to achieve positive progress

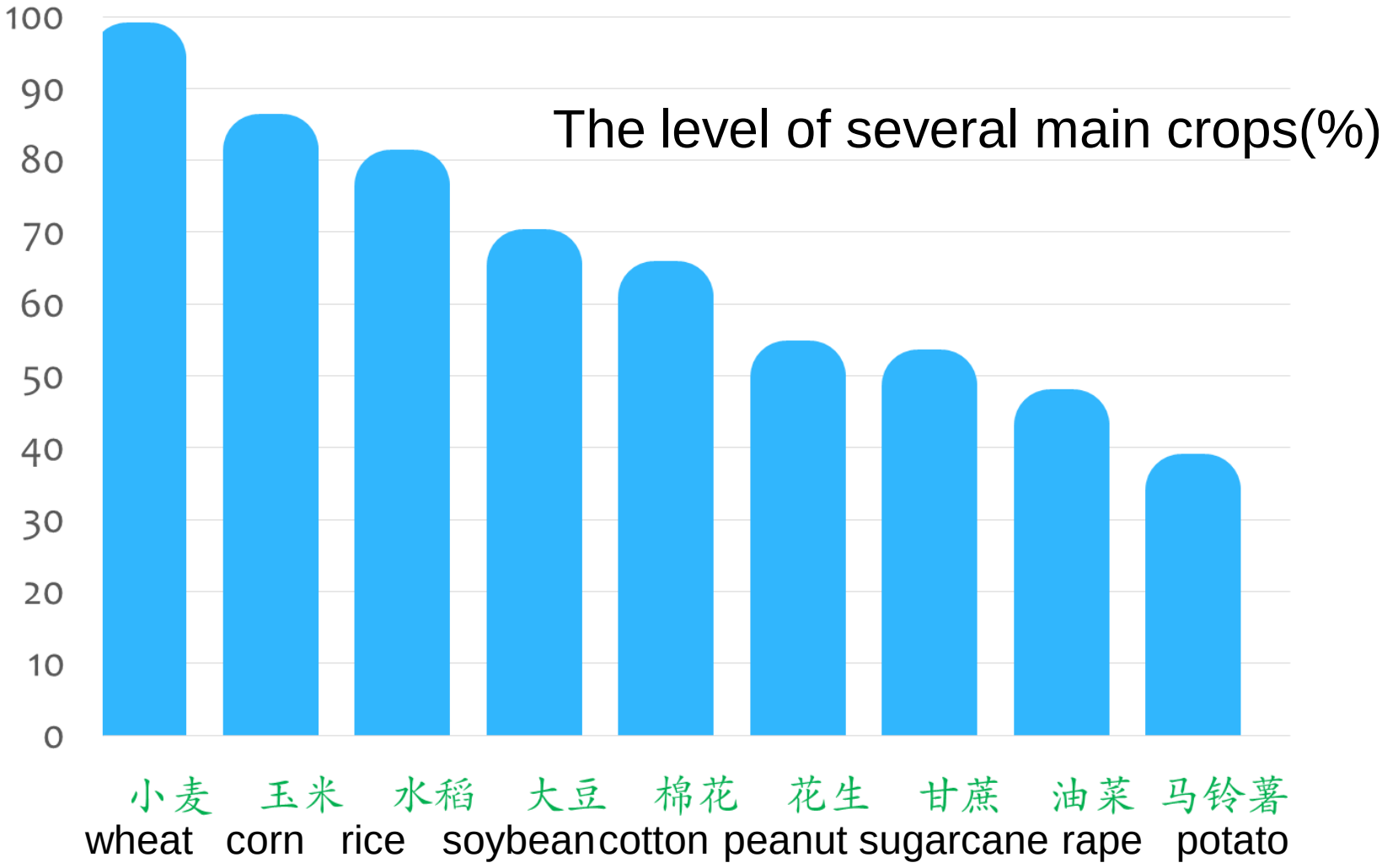
Yield increased 500 kg/acre

Saved 600 RMB/acre

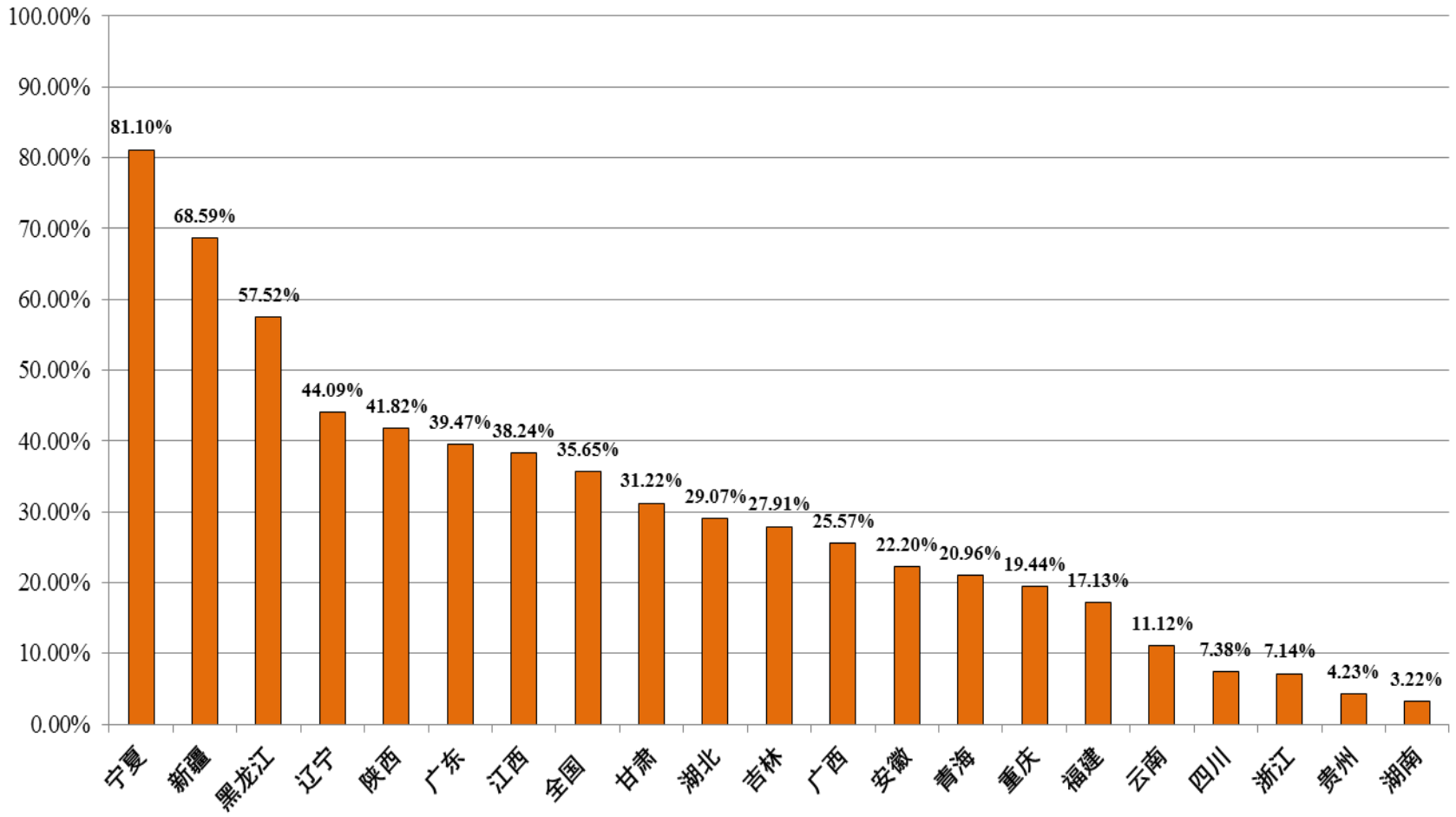
Efficiency increased 10 times



The overall level of potato mechanization is still low



Imbalanced development among provinces



Potato mechanization level in China's provinces in 2014（%）

New progress

Step to middle level

Step to whole process

Step to industrialize

whole process mechanization of main restricted

1,The supply of machinery

2,The blend of machine and Agronomic

3,The change in running business

4,The matching of saving, transporting and machining

Chances

Four modernizations

Transfer of rural labor force

Development of agricultural mechanization

Key point：use machine to take the place of labor force

Agricultural production method：
From human and animal force to mechanization

Agricultural production rely more on machinery

Farmer’s demand on machinery increase

Mechanization level influence famer’s willing of production as well as industry’s stable development

Mechanization lead to the revolution of variety breeding, cultivation model, production method and operation method

2010-2014 potato production cost and benefit

(National potato production)

item	单位	2010	2011	2012	2013	2014
Net benefit	元	1058.13	1000.75	1072.37	1315.74	1000.09
Total benefit	元	2989.16	2218.02	2233.65	2761.37	2430.48
Average yield	KG	1708.07	1819.27	1670.6	1641.42	1753.44
Total cost	元	1131.03	1214.27	1161.28	1355.46	1400.39
Direct cost	元	799.19	869.43	760.08	783.56	839.13
Planting fee	元	264.93	333.36	313.96	326.23	339.60
Fertilizer fee	元	160.16	207.02	195.55	160.02	184.8
Indirect fee	元	41.03	40.33	22.82	43.08	37.55
Manpower cost	元	290.81	304.51	370.38	528.82	491.98
Family labor	元	249.14	260.49	339.31	329.61	321.84
Employ fee	元	41.67	44.02	39.07	199.21	168.70

《Comment from MOA about promoting agricultural mechanization》

- **Variety：** 9 main crop and 5 main economic plants
- **Process：** 5 main procedure: Tillage, plant, harvest, protection, dry
- **Aim：** demonstration area

Promoting the mechanization of main crops

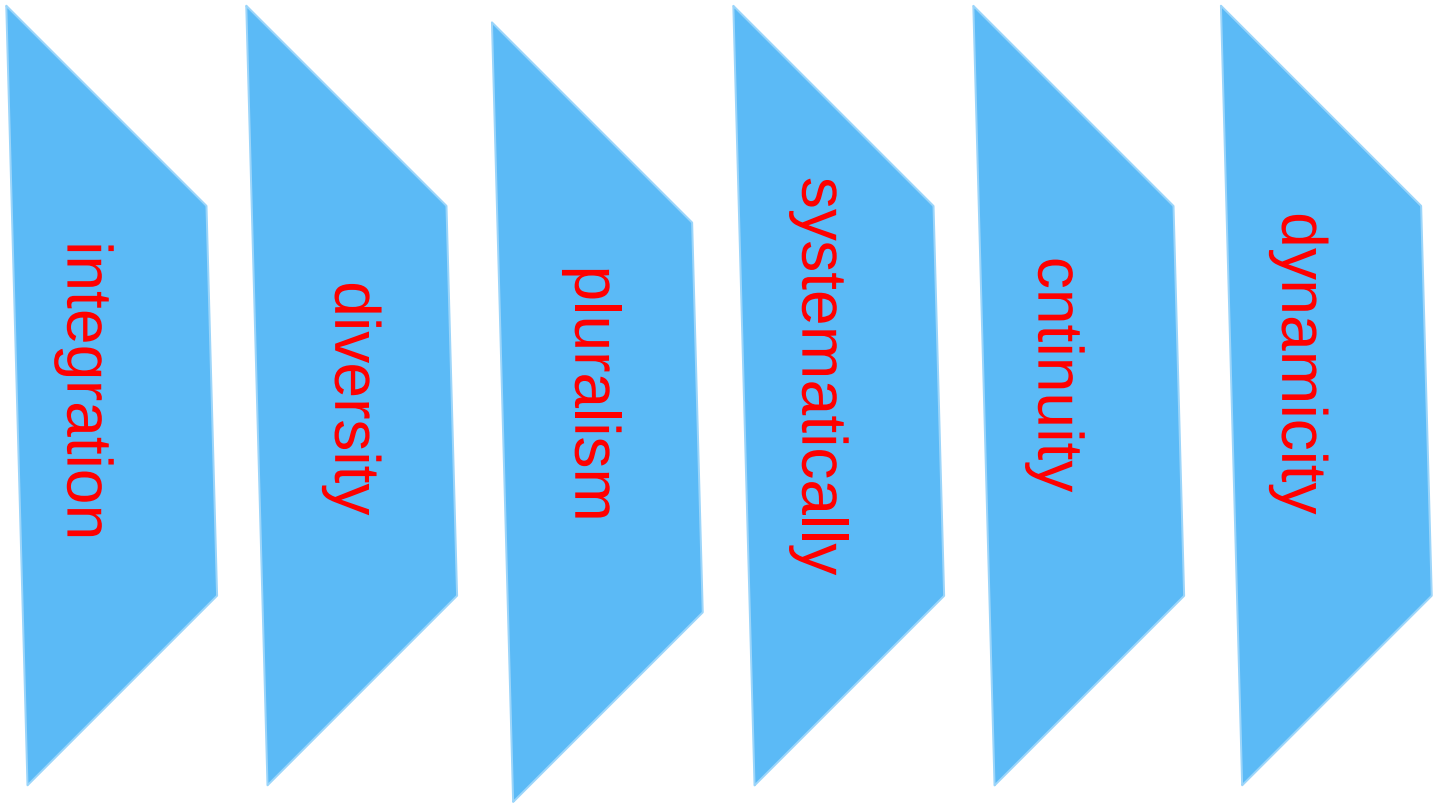
- Mile stone in the development
- Lead to the change of variety, plant, operation and management
- Lead to the change of research, production, promotion, logistic, application and management. Especially the industry of Agricultural Mechanization
- The key work of 13th five year plan

《 Comment from MOA about promoting potato industry 》

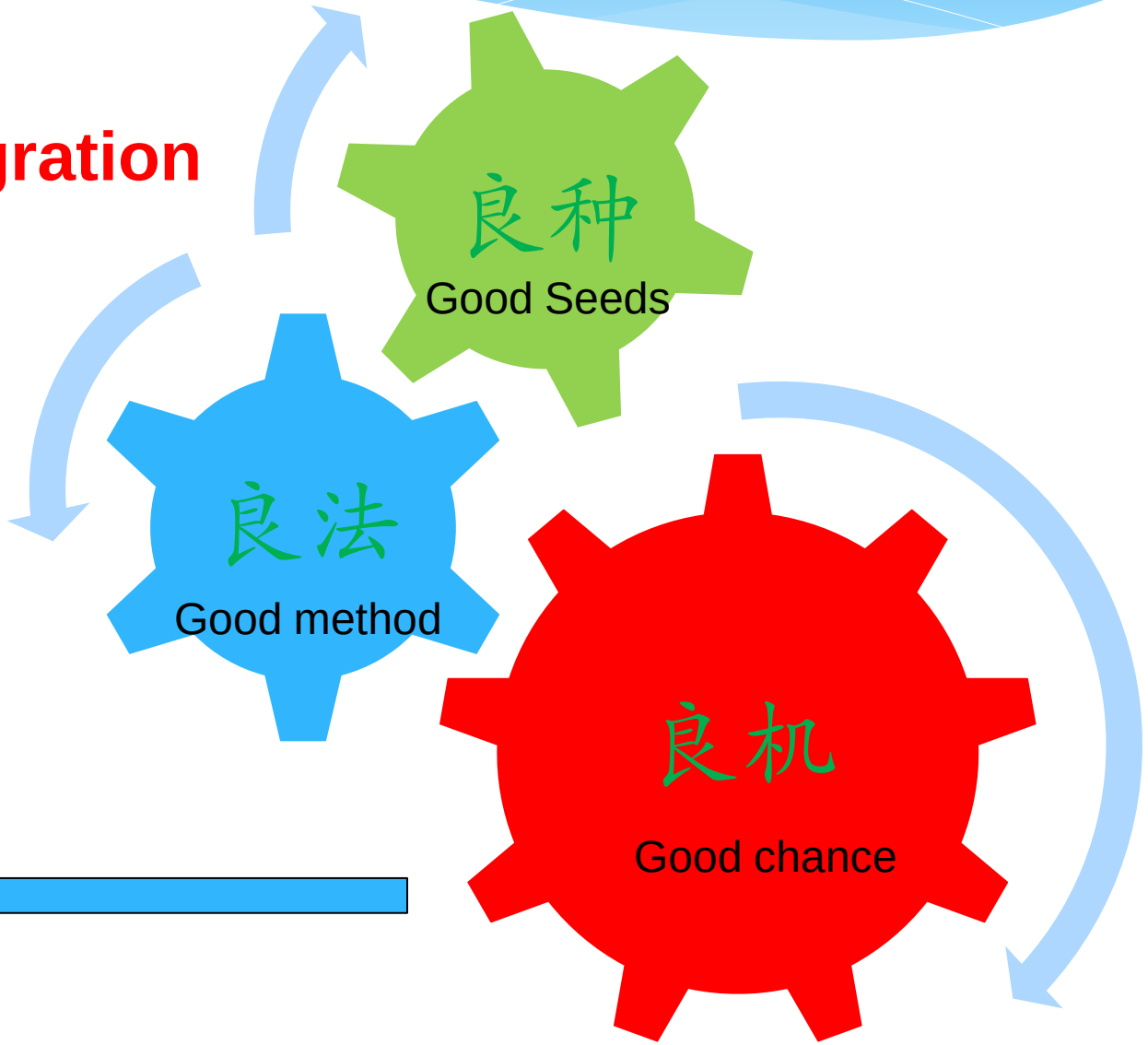
2020 aim

- Planting area reach 100 million acre, increase 15 million acre
- Staple food reach 30% of total production
- Consumption as staple food reach 30% total consumption of potato
- Specialization, Regionalization, mechanization, Industrialization, focus on staple food

Recognize the content of potato production mechanization

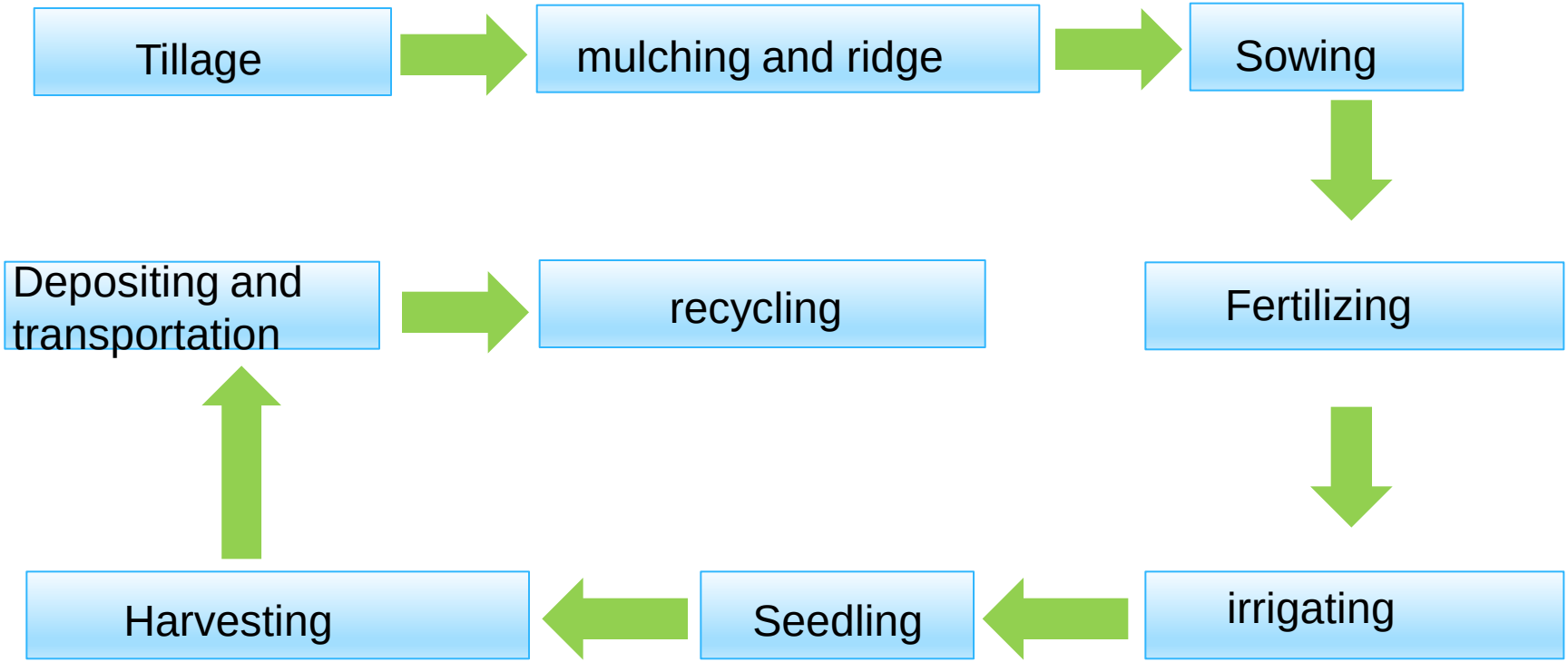


Technology integration



Better agricultural mechanization technology

Whole process mechanization of potato production

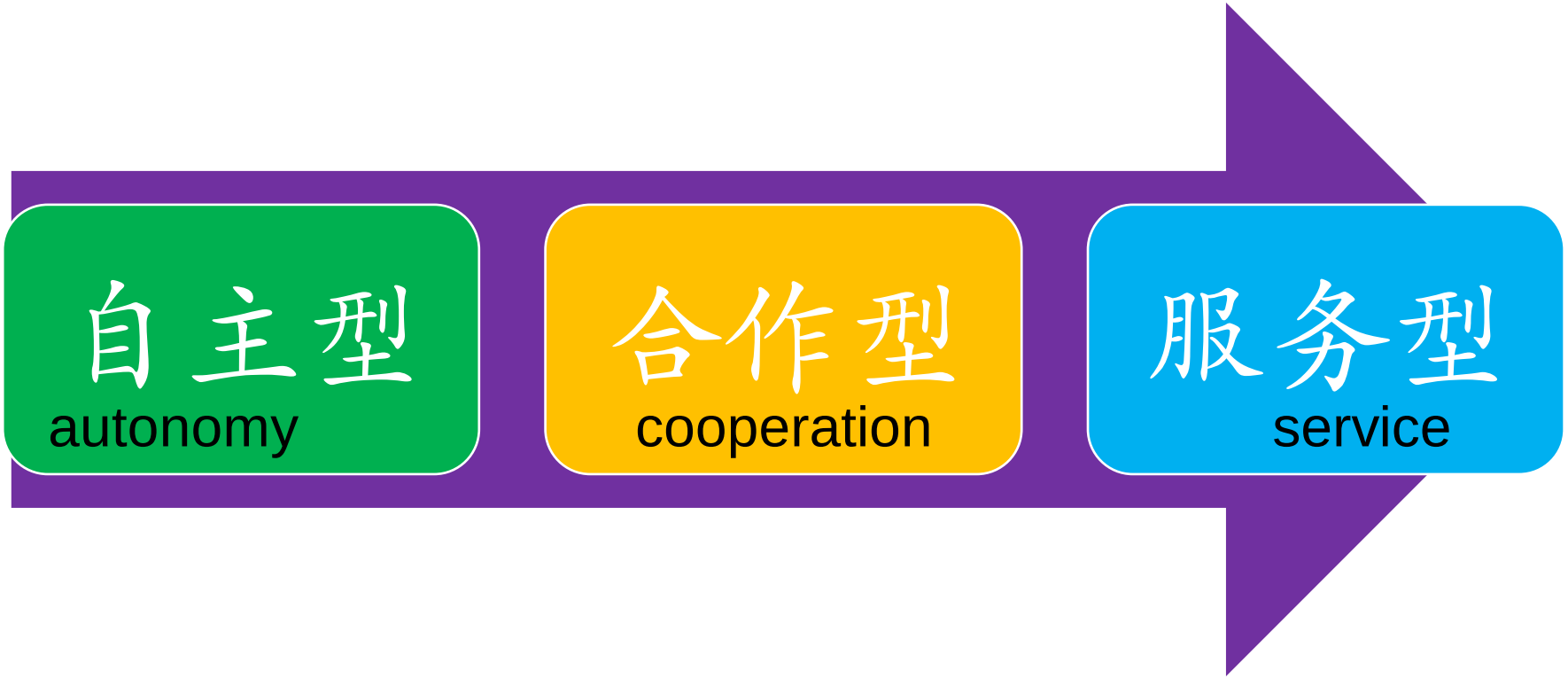


Area variety

North-one harvest area	Hei Longjiang、Jilin、Inner Mongolia、Gansu、Ningxia、Liaoning 、 Hebei 、 Shanxi 、 Qinghai 、 The north of Shanxi、 The north of Xinjiang
Central-two harvest area	Henan、Shandong、Jiangsu、Zhejiang、Anhui、Jiangxi, Liaoning、Hebei、Shanxi、The earth of Hunan、The earth of Hubei
South west-mix area of one and two harvests	Chongqing、Sichuan、Guizhou、Yunnan
South-winter harvest area	Guangdong、Guangxi、Hainan、Fujian

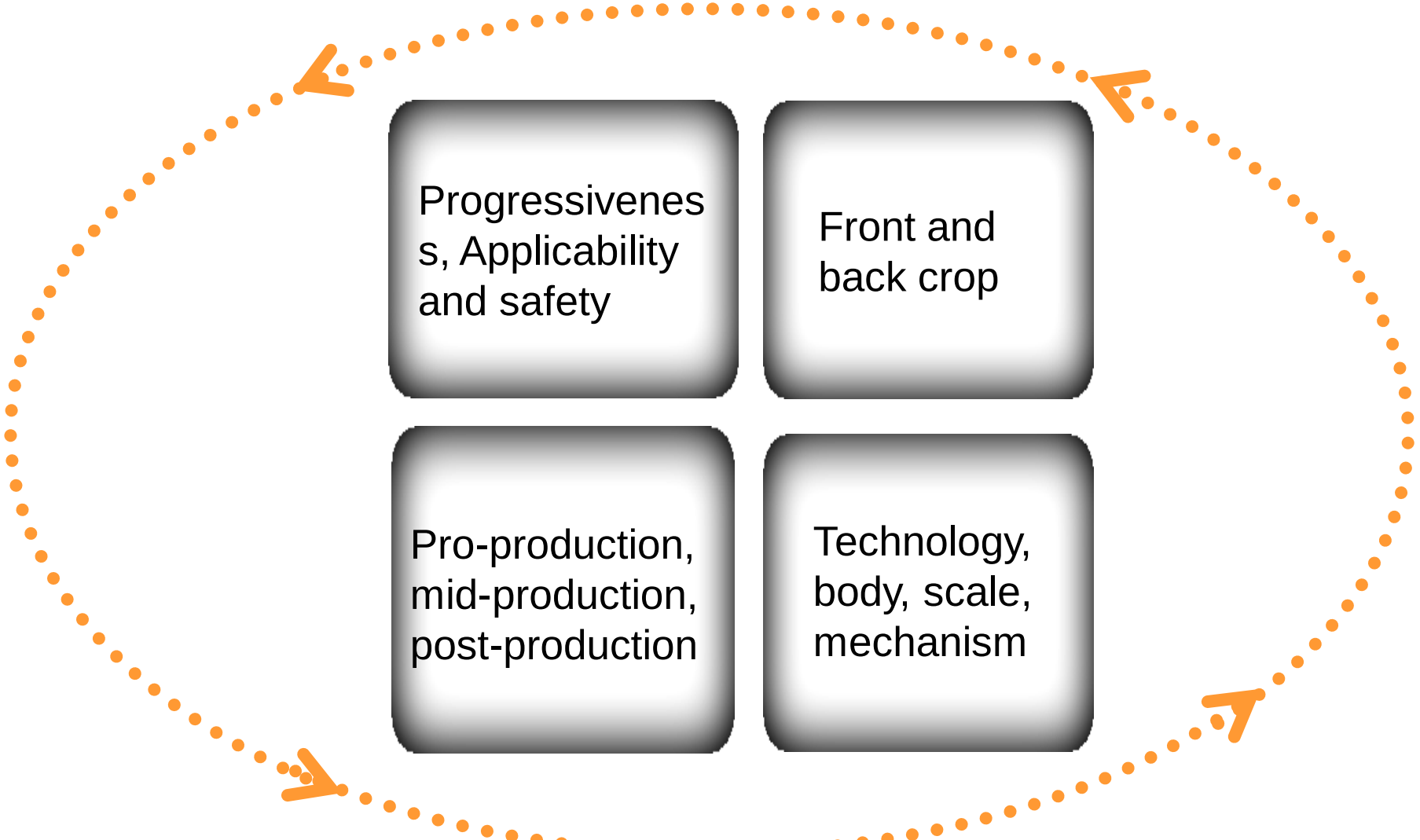
Body variety

Land scale management：Transfer、trusteeship、Shares



Whole process mechanization of production

systematic technology

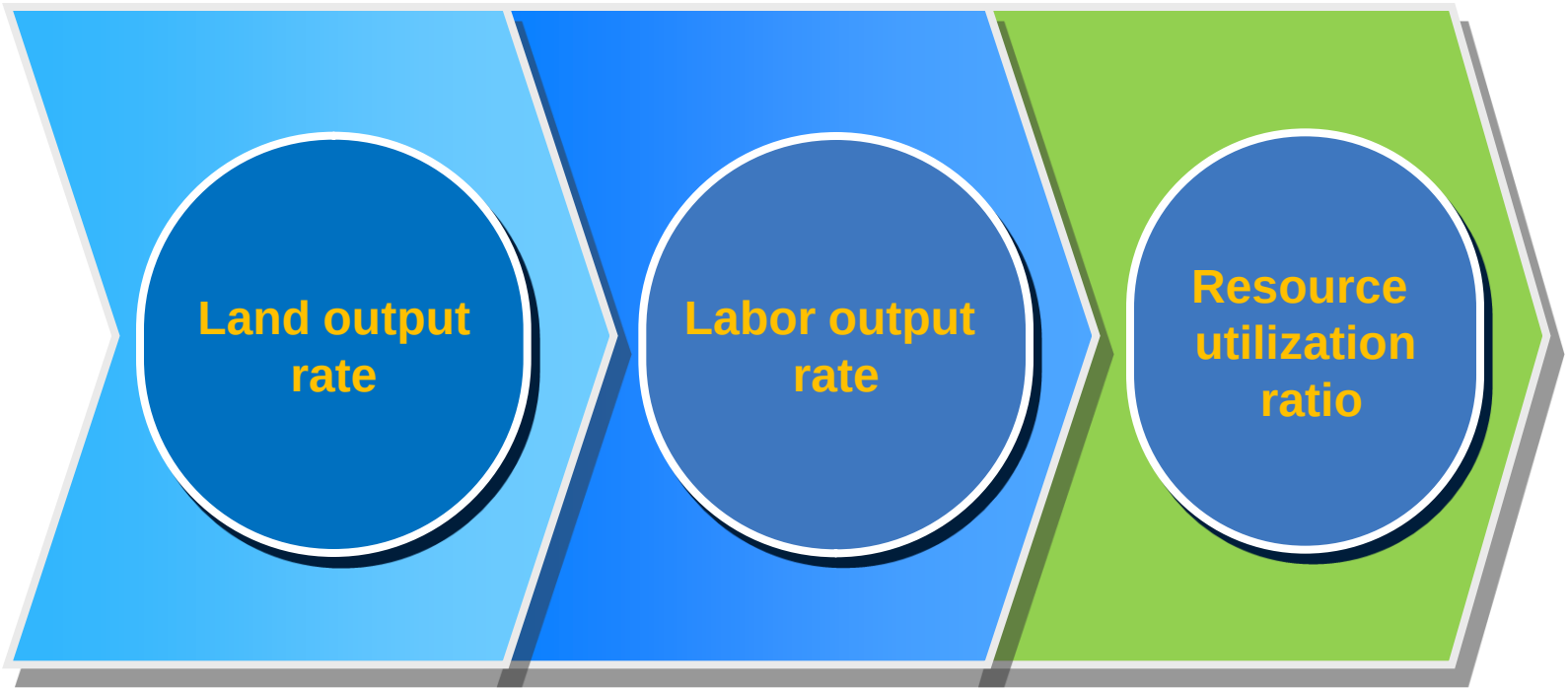


Sustainability

Economical

safe

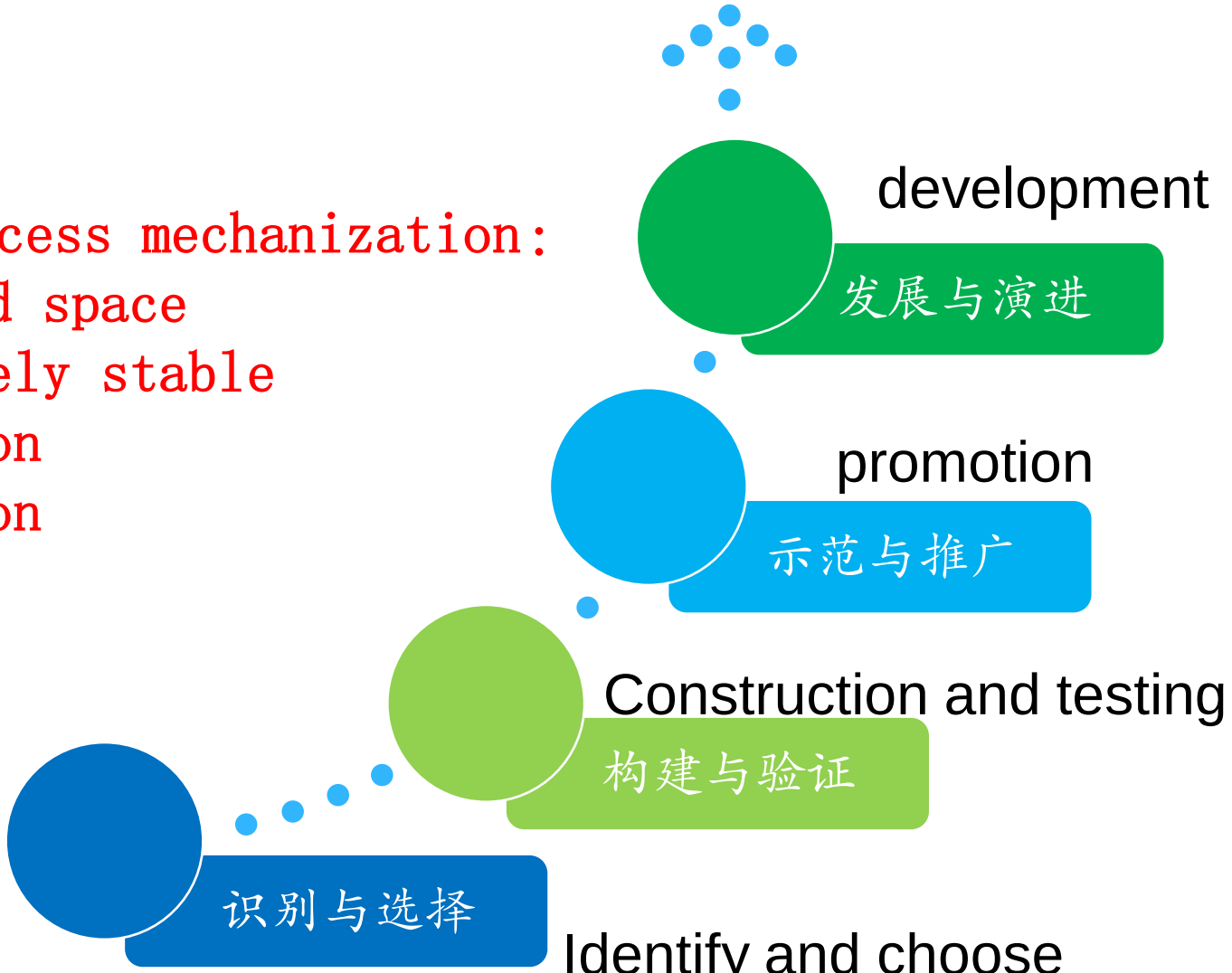
green



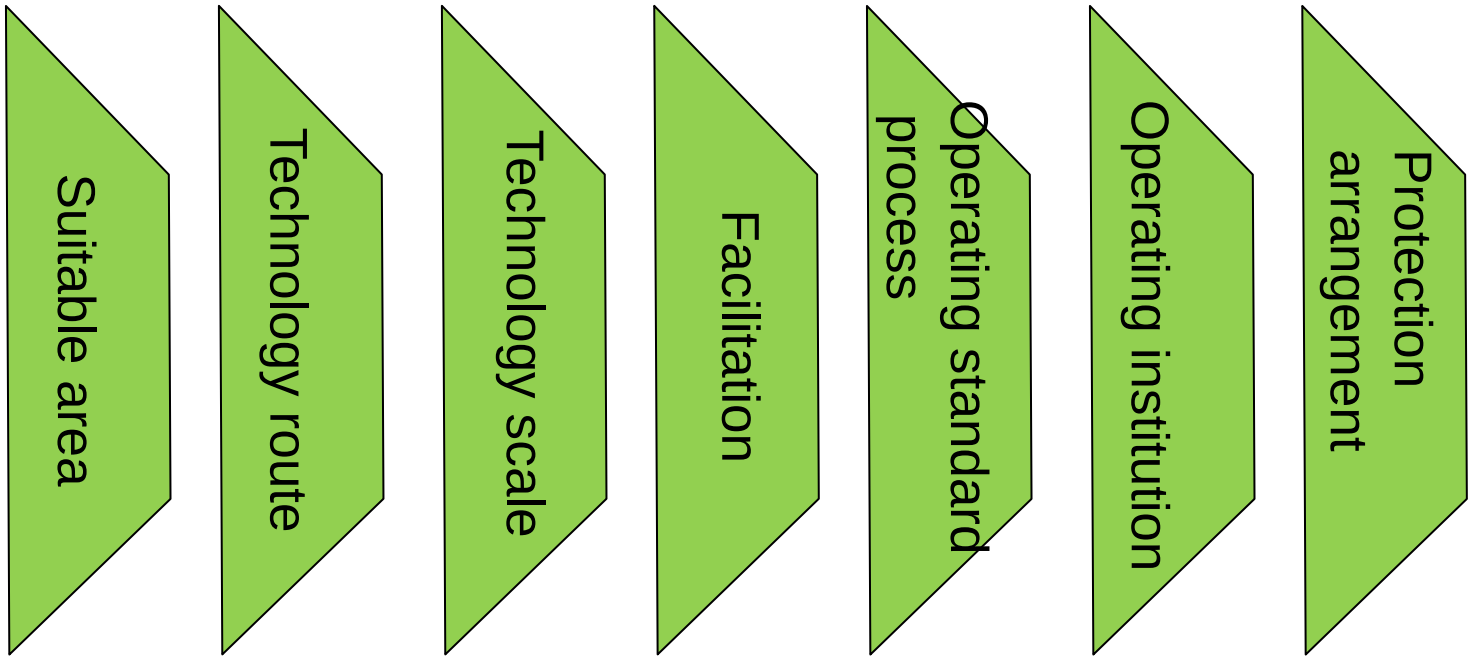
Dynamic model

Whole process mechanization:

- Time and space
- Relatively stable
- Radiation
- Evolution



Solution for main crop whole process mechanization



洪珠农机

马铃薯全程机械化展示——大型机

一、适宜区域

根据马铃薯主产区天然资源前提、种植规模、工业化基础等基本前提，2008年至2015年我国马铃薯优势区域布局规划中，共分为五大优势区：东北、华北、西北、西南和南方。其中东北、西北马铃薯优势区，地处高寒、日照充分、日夜温差较大，出产马铃薯品质优良，一般为一年一熟，春季4月或5月初播种，9月、10月上旬收获。华北马铃薯优势区，年均温度4℃-10℃，泥土以栗钙土为主，除山东外大部分为一年一熟，春季2月中下旬播种，5月上旬收获。山东一年两熟，秋季8月中下旬播种，11月上中旬收成。西南、南方马铃薯优势区，地势复杂，海拔高度变化大，无霜期长，雨量充分，特别适合马铃薯出产，一年四季均可种植，已形成周年出产、周年供给的产销格式。各优势区可根据实际情况选择种植模式，有大垄双行和大垄单行两种模式，本套大型机适合于大垄单行种植模式。

二、工艺线路和技术模式

时间	5.1-5.5	5.6-5.20	5.20-10.10	5.20-10.10	10.1-10.5	10.1-10.15
工艺环节	耕整地	播种	中耕培土	滴灌植保	马铃薯秧苗还田	收获
工艺路线	旋耕成垄地	开沟施肥、起垄播种、下颗粒农药和除草剂	中耕除草，结马铃薯垄培土。共3-4次	滴管灌溉喷农药	特殊甩刀粉碎秧苗	收获捡拾
图片						

三、操作规程

工艺路线	耕整地	播种	中耕培土	滴灌植保	马铃薯秧苗还田	收获
操作规程	一次性完成深耕、破土整平作业；深耕：200~350mm；破土率：≥65%耕后地表平整度≤5cm	一次性完成开沟、施肥、起垄、播种作业。每次播四垄，每垄上播一行。	起垄25——30cm，垄形周长约110cm.要求土壤含水率≤25%，建议作业速度4—6km/h。土壤使用于华北、东北、西北等地区。	一般浇水2次，最大水压，将垄底浸灌最适宜。开花后，补施追肥，20—25kg。喷农药。	高速运转的甩刀产生负气，靠高速旋转的刀片将秧苗粉碎还田。	一次性完成挖掘、筛分作业，根据马铃薯生长深度调解挖掘铲的入土深度。调解薯土分离输送装置振动幅度，保证马薯率和减少破皮率

四、配套机具

机器种类	型号及图片		主要参数
1104拖拉机	WZ1104		90马力以上。110马力，1.5千米/小时，0.5kg柴油/亩地
播种机	2CM-4/4A		垄距（mm）：800-900（可调）；播种深度（mm）：80-150;肥箱容量:900L
中耕培土机	3MZ-360		垄距(mm)：900;作业幅度（mm）：3600;作业速度（km/h)：4－6
杀秧机	1JH-360		工作幅宽（mm）：3600；工作行数：4行；滚筒转速：2000r/min；20-30亩//小时
收获机	4U-170A		垄宽：≤700mm收获宽度：1700mm明薯率≥96%伤薯率≤1.5%破皮率≤1.5%工作效率：6-8亩//小时

电话：0532-88222518 客服热线：400-667-1266 网址：www.hznyjx.com
邮箱：hznyjx1992@163.com 地址：山东省胶州市胶莱镇工业园

马铃薯的根本出路在于机械化，青岛洪珠农业机械有限公司主推马铃薯全程机械化。

Solve the key problems

供给侧改革 Supply-side reform

政策精准发力 Policy support

协同制度创新 Institutional Innovation

Supply side reform

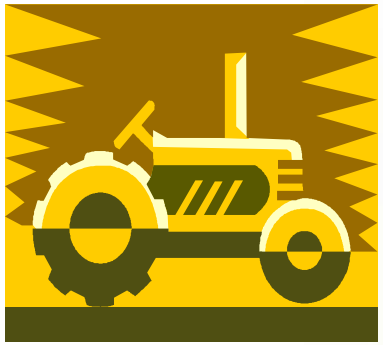
demand of agricultural mechanization VS shortage of new technology supply

Need technology progress

Supply side reform

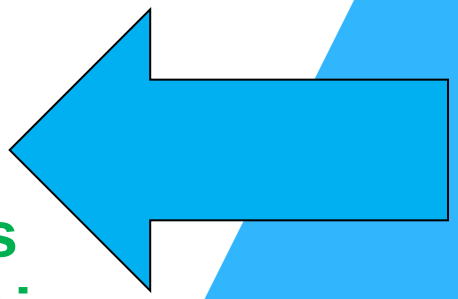
Increase quality and efficiency of agricultural supply

- Technology innovation
- Production innovation
- Service innovation
- Operation innovation
- Human resource innovation



Policy support

prove
main
crop
whole
process
mechani
zation



购机补贴	Allowance on purchasing machinery
示范区建设	Construction on demonstration area
技术创新	Technology innovation
作业补助	Working subsidy
新型主体扶持	Support new body
绩效考核	Performance appraisal

- Allowance on purchasing machinery ： lower scale、lower amount、increase open-up. Mainly subsidize main crop’s key process, no limitation on urgent needs.
- Construction on demonstration area.

- Integrated subsidies, finance, insurance and facilities of agricultural business entities to a single policy system
- Performance appraisal on the whole process agricultural mechanization
- Technology innovation and subsidies

Institutional innovation

- Multi-background expert group
- Enterprise as the main body to innovate
- Demand leading research and assessment
- Multi-background expert group
- PPP, government purchase and other cooperation
- Negotiation on key problems

- Enterprise leading, research and industry cooperate, integrate resources.
- Demand leading research and assessment, make promotion staff has more power in project establishing, executing and assessing.

* **Actively construct the collaborative development mechanism of public welfare and business promotion. Implement policy support according to law, support and encourage schools, scientific research institutions, production enterprises, cooperatives, social groups to carry out technical popularization; explore the services of public welfare in a variety of forms, strengthen planning guidance, project driven, work plan, business guide, promote the national promotion agencies and multiple main bodies to form a joint force.**

- **Establish and improve the Department consultation, discipline coordination system, oriented by problem, construct a inter-discipline communication, coordination and cooperation mechanism among agricultural and agronomic departments. Focus on the overall solutions, promote scientific research, teaching, marketing and producing. Make consensus and division of labor**

Lead by government, promotion agency, enterprise and industrial organization

CAME
中国农机推广

Thank you