



国家粮食和物资储备局
National Food and Strategic Reserves Administration



BILL & MELINDA
GATES foundation



United Nations
World Food Programme
联合国世界粮食计划署

Centre of Excellence
For Rural Transformation
农村发展卓越中心

CERFAM
CENTRE D'EXCELLENCE REGIONAL
CONTRE LA FAIM ET LA MALNUTRITION

中国稻谷绿色储藏管理体系 Management System on Green Storage of Rice in China

国家粮食和物资储备局
安全仓储与科技司
张成志

National Food and Strategic Reserves Administration of China
Department of Storage and S&T
Zhang Chengzhi



Sharing for Learning



目录

Contents

01

前言
Preface

02

稻谷绿色储藏管理政策体系
Green Storage Management Policy System of Rice

03

稻谷绿色储藏管理技术体系
Green Storage Management Technological System of Rice

04

稻谷绿色储藏管理实践
Practices in Green Storage Management of Rice

05

未来展望
Prospects



国家粮食和物资储备局
National Food and Strategic Reserves Administration



United Nations
Office for South-South Cooperation

BILL & MELINDA
GATES foundation



United Nations
World Food Programme
联合国世界粮食计划署

Centre of Excellence
For Rural Transformation
农村发展卓越中心

CERFAM
CENTRE D'EXCELLENCE REGIONAL
CONTRE LA FAIM ET LA MALNUTRITION

01

前言 Preface



粮食安全

Food Security



《中国的粮食安全》 *Food Security in China*

- ✓ 新粮食安全观
A new food security policy
- ✓ 确保谷物基本自给
Ensure basic self-sufficiency of grain
- ✓ 口粮绝对安全
Absolute security of staple food
- ✓ 国家粮食安全战略
A national strategy on food security



国家粮食和物资储备局
National Food and Strategic Reserves Administration



United Nations
Office for South-South Cooperation

BILL & MELINDA
GATES foundation

WFP
United Nations
World Food Programme
联合国世界粮食计划署

Centre of Excellence
For Rural Transformation
农村发展卓越中心

CERFAM
CENTRE D'EXCELLENCE REGIONAL
CONTRE LA FAIM ET LA MALNUTRITION

稻谷 Rice

中国重要的口粮品种之一
One of China's important staple food



新华社民族品牌工程·中国好粮油专项行动
“China Good Grain and Oil” ,
National Brand Project of Xinhua News Agency

可持续发展 Sustainable Development

《2030年可持续发展议程》
2030 Agenda for Sustainable Development





国家粮食和物资储备局
National Food and Strategic Reserves Administration



BILL & MELINDA
GATES foundation



United Nations
World Food Programme
联合国世界粮食计划署

Centre of Excellence
For Rural Transformation
农村发展卓越中心

CERFAM
CENTRE D'EXCELLENCE REGIONAL
CONTRE LA FAIM ET LA MALNUTRITION

02

稻谷绿色储藏管理政策体系

Green Storage Management Policy System of Rice



法律法规

Laws and Regulations



减少损失浪费

Reduce food loss and waste

《中华人民共和国反食品浪费法》

Law of the People's Republic of China on Food Waste

加强质量检测

Enhance quality inspection

《食品安全法》

Food Safety Law

加强流通管理

Strengthen grain circulation administration

《粮食流通管理条例》

Regulation on the Administration of Grain Circulation



行政规范

Administrative Regulations

仓储管理政策措施

Measures on administration of storage

“一规定两守则”

“One Regulation and Two Measures”

政府储备粮食仓储管理办法

*Measures for Administration of Government
Storage of Grain*



中央储备粮管理条例

*Regulation on the Administration of Grain
Circulation*

粮油仓储管理办法

*Measures for Administration of Grain and Oil
Storage*



行政规范 Administrative Regulations

仓储设施建设
Storage facilities construction



《国有粮油仓储物流设施保护办法》
Measures for the Protection of State-owned Grain and Oil Storage and Logistics Facilities
《高标准粮仓建设技术要点（试行）》
Technical Essentials for High-standard Granary Construction (for trial implementation)



相关标准

Relevant Standards

GB

国家标准

收储品质标准

Purchase and Storage Standards

GB

国家标准

储藏技术标准

Storage Technical Standards

GB

国家标准

设施设计标准

Facilities Design Standards

《大米》 (GB/T 1354-2018)

Milled rice (GB/T 1354-2018)

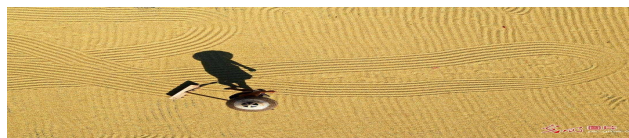
《稻谷》 (GB 1350-2009)

Paddy (GB 1350-2009)

《稻谷储存品质判定规则》 (GB/T 20569-2006)

Guidelines for Evaluation of Paddy Storage

Character (GB/T 20569-2006)



相关标准

Relevant Standards

GB

国家标准

收储品质标准

Purchase and Storage Standards

GB

国家标准

储藏技术标准

Storage Technical Standards

GB

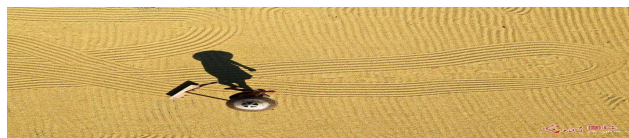
国家标准

设施设计标准

Facilities Design Standards

《粮食储藏技术规范》（GB/T 29890-2013）
*Technical Specification for Grain and Oil-seeds
Storage (GB/T 29890-2013)*

《平方仓隔热技术规范》（GB/ T26879-2011）
*Grain and Oils storage – Technical Specification of
Heat Insulation in Warehouse (GB/ T26879-2011)*





相关标准

Relevant Standards

GB

国家标准

收储品质标准

Purchase and Storage Standards

GB

国家标准

储藏技术标准

Storage Technical Standards

GB

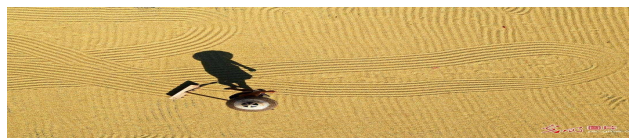
国家标准

设施设计标准

Facilities Design Standards

《粮食平方仓设计规范》 (GB 50320-2014)
Design Specification of Grain Storehouses
(GB 50320-2014)

《粮食钢板筒仓设计规范》 (GB 50322-2011)
Design Specification of Grain Steel Silos
(GB 50322-2011)





国家粮食和物资储备局
National Food and Strategic Reserves Administration



United Nations
Office for South-South Cooperation

BILL & MELINDA
GATES foundation



United Nations
World Food Programme
联合国世界粮食计划署

Centre of Excellence
For Rural Transformation
农村发展卓越中心

CERFAM
CENTRE D'EXCELLENCE REGIONAL
CONTRE LA FAIM ET LA MALNUTRITION

03

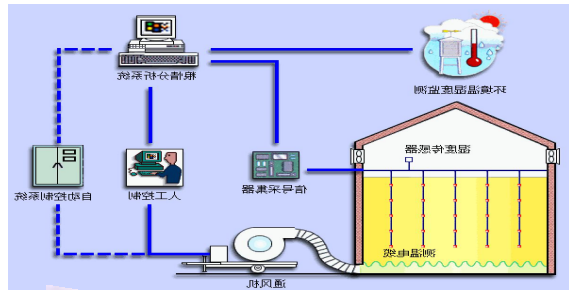
稻谷绿色储藏管理技术体系

Green Storage Management Technological System
of Rice

管理技术体系

Technological System for Management

低温储粮技术
Low temperature storage technology



非化学防控技术
Non-chemical prevention and control technology

气调储粮技术
Controlled atmosphere storage technology



智能信息化技术
Intelligent information technology



管理技术体系

Technological System for Management

低温储粮技术

Low temperature storage technology

仓顶隔热改造

Thermal insulation retrofit of silo roof

仓顶空调及谷物冷却技术

Silo roof AC and grain cooling technology

仓门气密性改造

Airtightness modification of silo gate

内环流控温储粮技术

Internal circulation temperature control technology

仓体隔热改造

Thermal insulation retrofit of silo body

地(水)源热泵低温储粮技术

Ground/water-source heat pump and low-temperature grain storage technology



管理技术体系

Technological System for Management



气调储粮技术

Controlled atmosphere storage technology

降低氧气浓度

Reduce oxygen concentration

抑制粮食呼吸

Inhibit grain respiration

实现虫霉防治

Prevent and control pest and mold

延缓粮食品质变化

Slow down grain quality deterioration



管理技术体系

Technological System for Management

非化学防控技术

Non-chemical
prevention and control
technology

物理防治
Physical



生物防治
Biological

习性防治
Habitual



管理技术体系 Technological System for Management

智能信息化技术 Intelligent information technology

智能出入库系统

Intelligent system for out-put and in-put of silo

粮食数量在线自动监测系统

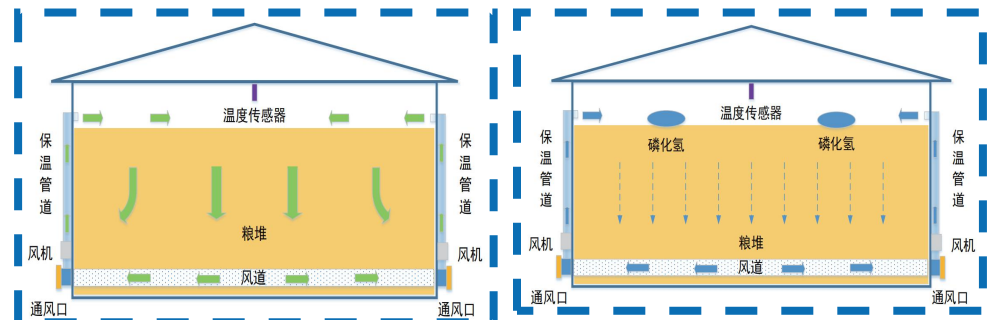
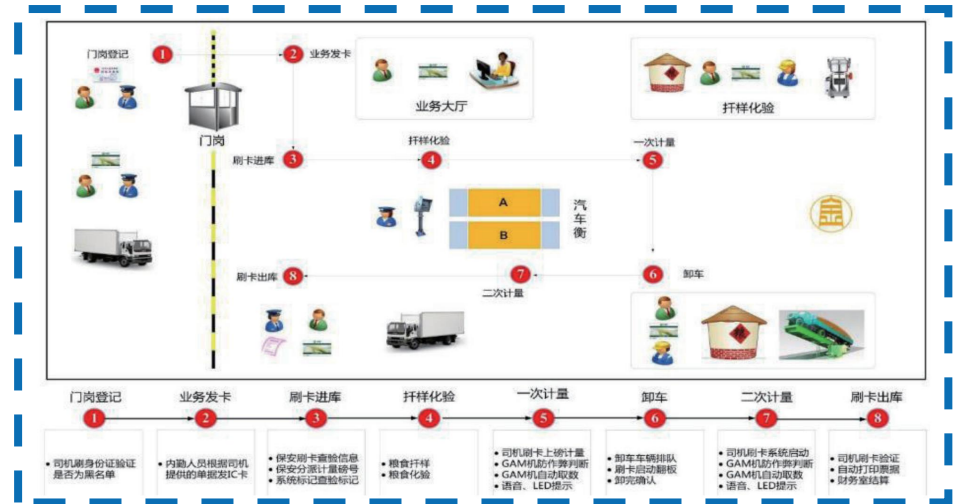
Online automatic quantity monitoring system

多参数粮情自动检测系统

Multi-parameter automatic measuring system for stored grain condition

智能通风降温系统

Intelligent ventilation and cooling system





国家粮食和物资储备局
National Food and Strategic Reserves Administration



United Nations
Office for South-South Cooperation

BILL & MELINDA
GATES foundation



United Nations
World Food Programme
联合国世界粮食计划署

Centre of Excellence
For Rural Transformation
农村发展卓越中心

CERFAM
CENTRE D'EXCELLENCE REGIONAL
CONTRE LA FAIM ET LA MALNUTRITION

04

稻谷绿色储藏管理实践

Practices in Green Storage Management of Rice

管理实践

Management Practices

农户科学储粮

scientific grain storage
for farmers' households

26个
26



2%
2%

2007年
2007



1000万套
10M





国家粮食和物资储备局
National Food and Strategic Reserves Administration



United Nations
Office for South-South Cooperation

BILL & MELINDA
GATES foundation

WFP
United Nations
World Food Programme
联合国世界粮食计划署

Centre of Excellence
For Rural Transformation
农村发展卓越中心

CERFAM
CENTRE D'EXCELLENCE REGIONAL
CONTRE LA FAIM ET LA MALNUTRITION

管理实践

Management Practices

优质粮食工程

Quality Grain Project

粮食产后服务中心（5500多个）

Post-harvest service centers (over 5,500)

水稻产区

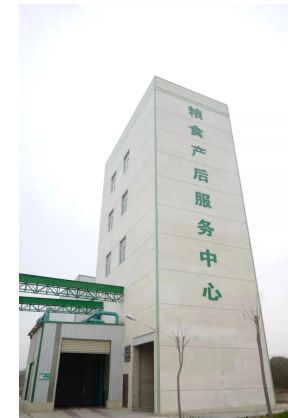
Rice producing areas

2300多个

Over 2,300

烘干能力超过8万吨/天

Drying capacity of over 80,000 tons/day





国家粮食和物资储备局
National Food and Strategic Reserves Administration



United Nations
Office for South-South Cooperation

BILL & MELINDA
GATES foundation

WFP
United Nations
World Food Programme
联合国世界粮食计划署

Centre of Excellence
For Rural Transformation
农村发展卓越中心

CERFAM
CENTRE D'EXCELLENCE REGIONAL
CONTRE LA FAIM ET LA MALNUTRITION

管理实践

Management Practices

仓储设施建设

Storage facilities construction

仓储设施改造建设
Renovation and construction



“危仓老库”维修改造

Repair and renovation of decrepit depots

粮库智能化升级

Upgrading of grain depots using intelligent technology



管理实践

Management Practices

仓储设施建设

Storage facilities construction

先进科技应用示范

Advanced Technology Application Demonstration



低氧储粮技术-3500多万吨

Low oxygen grain storage: over 35M tons

内环流控温储粮-2000万吨

Internal circulation temperature controlled storage:
over 20M tons

准低温储粮-1亿吨

Quasi-low temperature storage: 100M tons

管理实践

Management Practices

科技创新

Technology Innovation

粮食丰产科技工程（产后）

Increase crop yield through science and technology projects
(post-harvest)



管理实践

Management Practices

科技创新

Technology Innovation

粮食公益性行业科研专项
Special research projects in the grain industry



粮库进出粮作业事故模拟试验研究
Study on accident simulation test of filling and emptying operation in grain depots



系列糯米专用粉关键生产技术研究
Research on key production technology of special glutinous rice flour

管理实践 Management Practices

科技创新 Technology Innovation

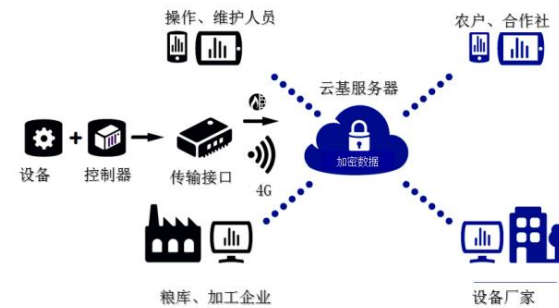
重点研发计划专项
Key Research and Development
Programs



新型节能环保变温一体化智能干燥机
New energy-efficient and environment-friendly variable
temperature smart dryers



粮食质量数量信息数据系统
Grain quality and quantity information data system



粮机设备云平台架构
Grain facilities cloud platform framework





国家粮食和物资储备局
National Food and Strategic Reserves Administration



United Nations
Office for South-South Cooperation

BILL & MELINDA
GATES foundation



United Nations
World Food Programme
联合国世界粮食计划署

Centre of Excellence
For Rural Transformation
农村发展卓越中心

CERFAM
CENTRE D'EXCELLENCE REGIONAL
CONTRE LA FAIM ET LA MALNUTRITION

05

未来展望
Prospects



未来展望 Prospects

存在问题
Problems

磷化氢



农户储粮
grain
storage for
farmers'
households



化学药剂
Chemicals



仓储设施
Storage
facilities

未来展望 Prospects

解决办法
Solutions



适度加工
Moderate
processing



绿色仓储
Green storage



低温储藏
Low-
temperature
storage



国家粮食和物资储备局
National Food and Strategic Reserves Administration



BILL & MELINDA
GATES foundation



United Nations
World Food Programme
联合国世界粮食计划署

Centre of Excellence
For Rural Transformation
农村发展卓越中心

CERFAM
CENTRE D'EXCELLENCE REGIONAL
CONTRE LA FAIM ET LA MALNUTRITION

谢谢大家！ Thank you!



联系电话：010-68979267

电子邮箱：z_chengzhi@126.com

地址：北京市西城区月坛北街25号院

邮政编码/Zip code: 100000

Tel: 010-68979267

Email: z_chengzhi@126.com

Address: No.25 Yuetan North Street,
Xicheng District, Beijing, China

Postal code: 100000



Sharing for Learning