

Academy of Scientific Research
And Technology



MoU between ASRT & MC Egypt for the establishment of Agriculture Incubator



The Academy of Scientific Research & Technology " ASRT " has signed aMoU with & MC Egypt, for the establishment of an agriculture incubator. This incubator is targeting **business teams, researchers and university staff**, who would like to take their ideas to **business**. Those who have an idea linked to bio fertilizers, bio pesticides, bio remediation and nano bio fertilization or any new bio innovation or those who want to start or develop a business in this sector, are invited to apply for an acceleration.

The Acceleration period is six months in which the applicant will receive high level business and technical mentorship with an access to governmental labs and land as well as MC Egypt's premises and mentors.



Anhydrous Ammonia

Why Anhydrous Ammonia

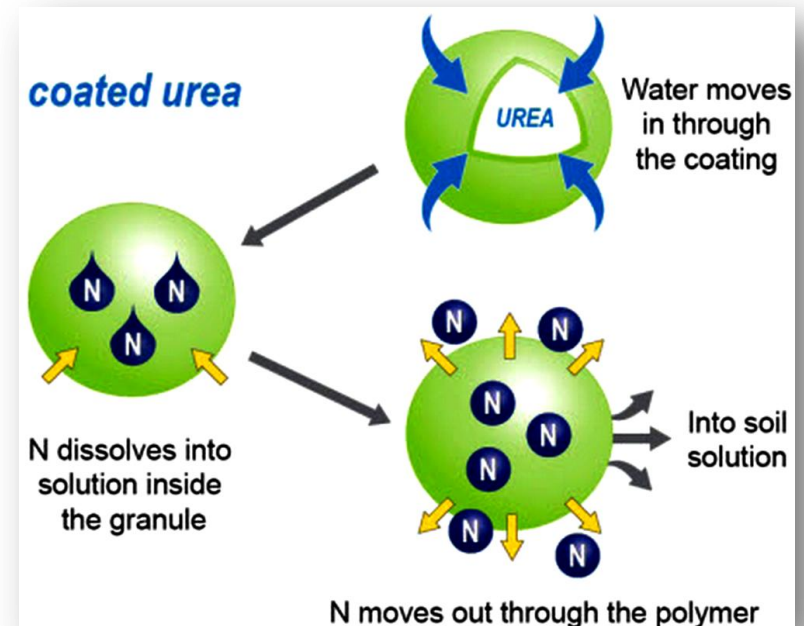
- 1- It's the most efficient.
- 2-It's the most environmentally friendly choice.
- 3- It's relatively easy application.
- 4-It's the way to solve the fertilizer problems.

- 1- Have alternative fertilizer.
- 2-To generalize the utilization of mechanization.
- 3- To save energy.
- 4- Encourage investors to establish technology companies for ammonia.

**Long-Acting Cost-Effective Biodegradable
Polymers Coated Urea Fertilizer**

Urea, a nitrogenous fertilizer, is widely used in agriculture because of its high nitrogen content (45%). **However**, about 50–70% of the applied urea fertilizer is lost to the environment, causing serious pollution and increasing costs. The losses are due to leaching, decomposition and ammonium volatilization in soil and air, in addition to the loss during handling and storage.

One of the very promising solutions includes the use of **controlled release** formulations of Urea. This will decrease the frequency of their use thus decreasing the cost, increasing the efficiency of urea uptake and will also decrease the pollution caused by the excessive consumption of this agrochemical.



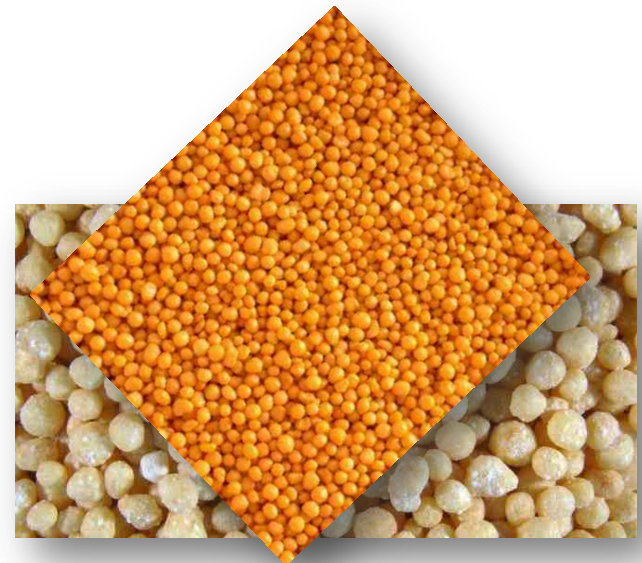
The main **objective** of the project is to develop newly efficient long-acting, and cost-effective biodegradable polymers-coated urea fertilizer.

The targeted coated urea formulations will allow;

- (a) Use of natural polymers of low cost, desired biodegradability isolated in high yield from local algal and plant waste,
- (b) Sustained release of urea for controllable long periods,
- (c) Controllable degradation pattern of the coating polymeric materials with degradation products beneficial for the soil,
- (d) High stability on storage.

Other objectives of the project include:

- (I) **Economic objectives** such as reducing the urea consumption, and increasing productivity per acre
- (II) **Environmental objectives** through reduction of the nitrogenous gaseous emissions, and avoiding the contamination of water sinks, ground and surface waters; and
- (III) **Social objectives** which will include creating new direct and indirect jobs opportunities, in addition to linking scientific research directly to industry towards solving farmers problems.



The expected project outcomes can be summarized as follow:

1. Successful fabrication of coated urea fertilizers.
2. Precise controlling of the size, morphology, surface composition, of the coated urea.
3. Successful utilization of coated urea in agriculture.
4. Innovation of new biodegradable polymer coating formulation (Egyptian know-how) for urea fertilizers.

The impact of this project on local industry & academic research will involve:

- The collaboration between academic researchers at Zewail City and industrial facilities at (Egyptian Petrochemicals Holding Company, ECHEM & Misr Fertilizers Production Company, MOPCO) to help moving the novel theoretical technologies to the applied Egyptian industrial field.
- Transfer of knowledge for urea coating processes which will help the Egyptian industry to implement new technologies.
- Reduction of Egypt consumption of urea fertilizers which will improve the Egyptian economy.

Fertilizers Distribution using Subsidies Mobile Wallet

Cairo Orange Labs



How to get your fertilizers

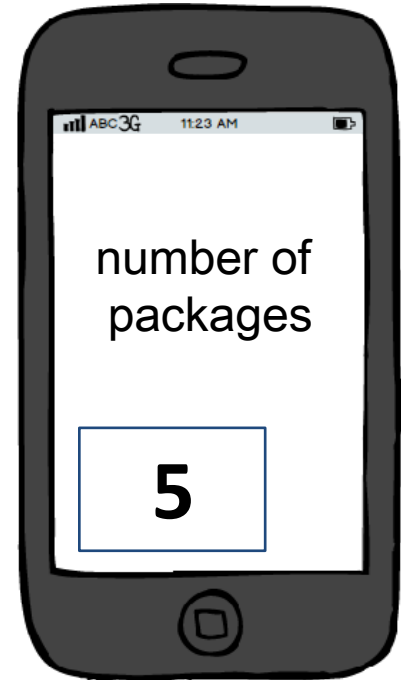


1

The Farmer goes to the distribution outlet to receive his or her pre allocated fertilizers packages



How to get your fertilizers



2

Merchant scans Farmer Card, retrieve the profile, and enter the order



How to get your fertilizers



3

the farmer listen to playback of the transaction, through the merchant mobile device



How to get your fertilizers



4

The Farmer Approve the transaction by scanning his or her card again



How to get your fertilizers

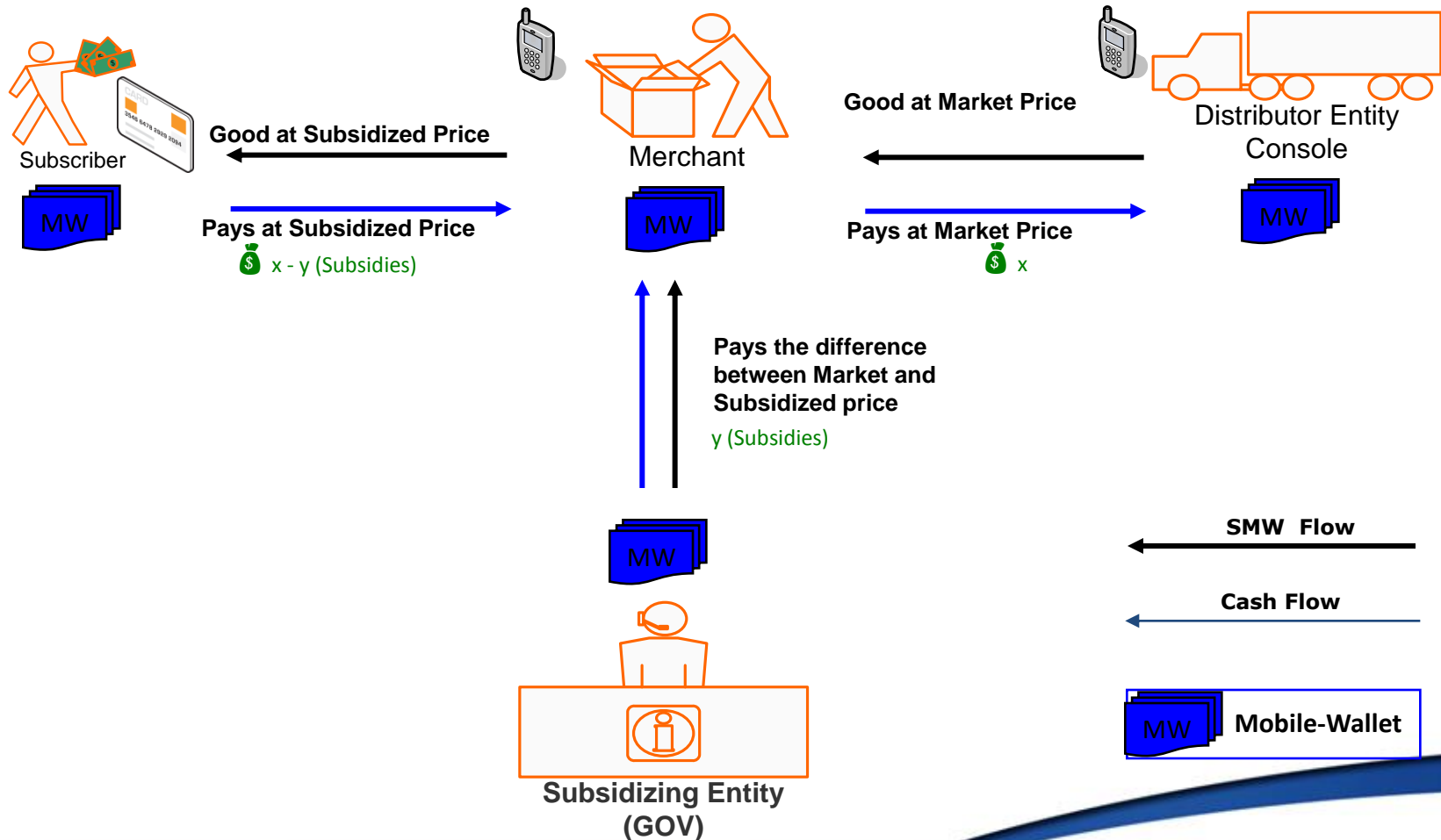


5

- Goods moves from Merchant wallet to farmer wallet
- After system confirm the transaction, farmer pays only subsidized price.



Transactions overview



Wheat Cultivar Policy allover Egypt Season 2014/2015



The main target of wheat breeding program

To develop new cultivars with high yield potential, resistant to wheat diseases especially rusts and either widely adapted or site specific cultivars.

Therefore, varietal policy of wheat cultivar all over country is as below:

Bread wheat :

Giza 168:

Widely adapted, planted all over Egypt and tolerant to water deficit.

Gemmiza 9:

Widely adapted, resistant to rusts, planted all over Egypt.

Gemmiza 10:

Could be grown in Delta, Fayoum and Giza governorates.

Misr 1:

Cultivar with high yield potential, widely adapted, resistant to rusts and resistant to stem rust race Ug99, recommended to south Egypt.

Misr 2 :

Cultivar with high yield potential, widely adapted, resistant to rusts and resistant to stem rust race Ug99, recommended to all country.



Gemmiza 11:

Newly released cultivar, adapted to Delta region characterized by high yield potential, resistance to rusts and good quality.

Gemmiza 12:

Newly released cultivar, adapted to Delta region characterized by high yield potential, resistance to rusts and good quality.

Shandaweel 1:

Newly released cultivar with highly yield potential, widely adapted resistant to rusts recommended to all country.

Giza 171:

Newly released cultivar with highly yield potential, widely adapted resistant to rusts recommended to all country.

Sids 13:

Newly released cultivar, Widely adapted, resistant to rusts planted allover Egypt.

Sakha 94: Widely adapted, resistant to rusts planted allover Egypt.

Sids 1: Could be grown in middle Egypt.

Sids 12: widely adapted, and planted to south Egypt.

Durum Wheat:

Banisweif 1 Could be grown in Middle and Upper Egypt.

Bani Sweif 5 Could be grown in Middle and Upper Egypt.

Bani Sweif 6 Could be grown in Middle and Upper Egypt.



Raised beds planting method By Drill planting machine



Raised beds planting method by drill machine

planting on raised beds with 100-120 cm width and planting wheat seeds in hills over the beds or by drilling machine.



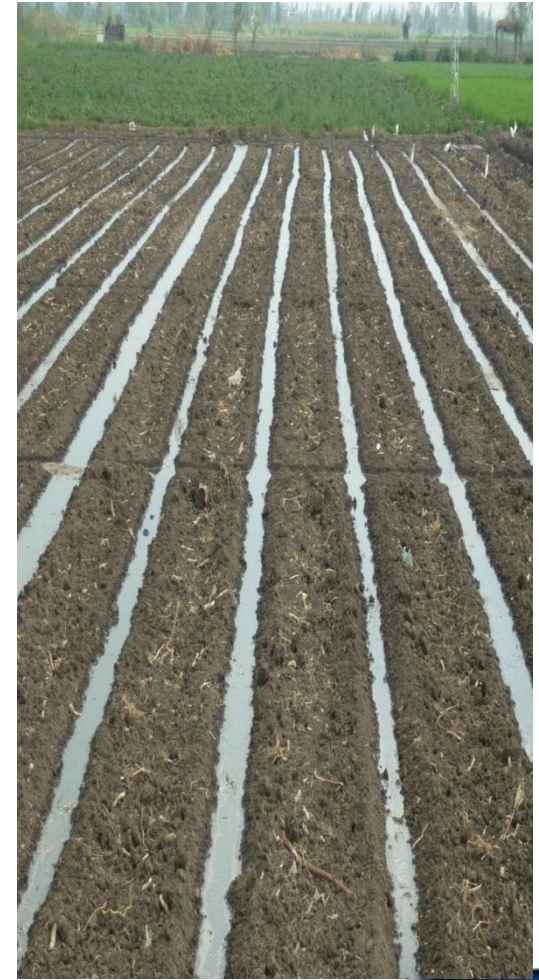
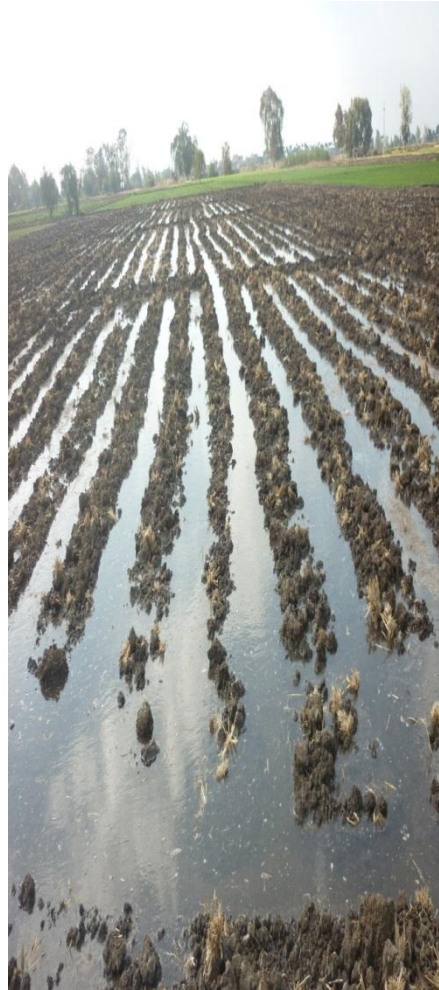
This method will:

1. save 40-50% of amount of seeds used in broadcasting or drill.





2- Save 20-30% of irrigation water.



3- decrease N fertilizer losses caused by leaching,

lead to high tillering, bigger spikes, higher kernel weight and more kernels/spike.



4- Decrease losses and minimize time of harvesting and to increase farmers' net income.



Production of Spare Parts for Agricultural Equipment from Advanced Iron Casting



ASTM 897 property table for ADI

Grade	Tensile Strength (MPa/Ksi)	Yield Strength (MPa/Ksi)	Elong. (%)	Impact Energy (B/lb-ft)	Typical Hardness (BHN)
1	850/125	550/80	10	100/75	269-321
2	1050/150	700/100	7	80/60	302-363
3	1200/175	850/125	4	60/45	341-444
4	1400/200	1100/155	1	35/25	366-477
5	1600/230	1300/185	N/A	N/A	444-555




مشروع التعاونية 152 في قطع العيار المنتجات الرئيسية
 من الزايت المتكاملة من المستودعات

استشارة استشاريين لقطع العيار 152 في المنتجات الأخرى المستودعات

الترخيص: 152
 النوع: 152
 تاريخ: 152

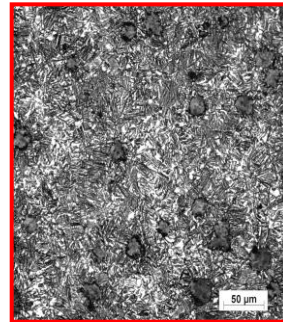
ملاحظات خاصة بالمستودعات:
 1- الاسم:
 2- ملاحظات:
 3- ملاحظات:

ملاحظات خاصة بالمنتجات و قطع العيار:
 1- ملاحظات:
 2- ملاحظات:
 3- ملاحظات:
 4- ملاحظات:
 5- ملاحظات:

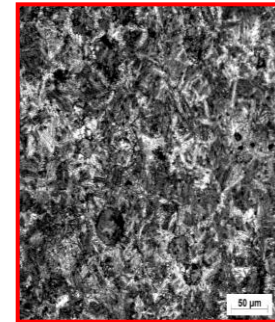
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ملاحظات خاصة بالمنتجات و قطع العيار:
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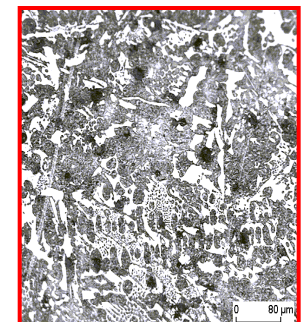
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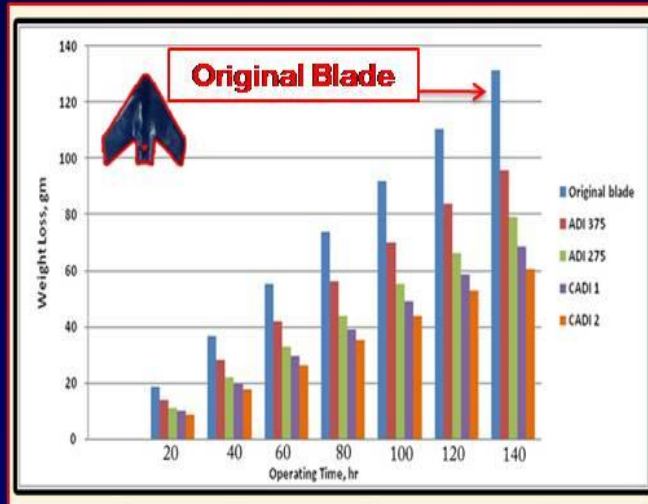
ADI -375



ADI -275



CADI -I



Crop Distribution using Subsidies Mobile Wallet

Cairo Orange Labs



How to Sell your Crops



1

In the farm : The authorized expert accepts the crops, determines the weight, quality, and agree on the price with farmer

How to Sell your Crops



2

Using mobile wallet, expert scans farmer card, retrieve his or her profile, then enters the detailed of the purchase order

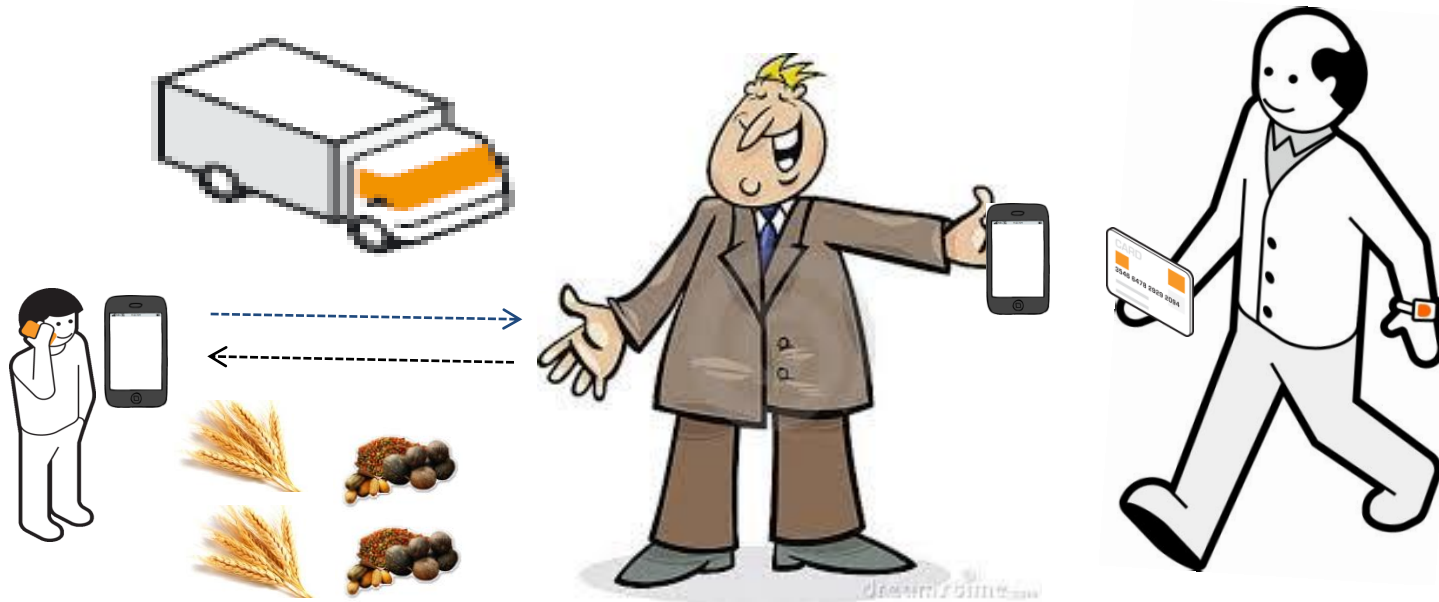
How to Sell your Crops



3

The farmer listens to playback of the transaction, through the expert mobile device

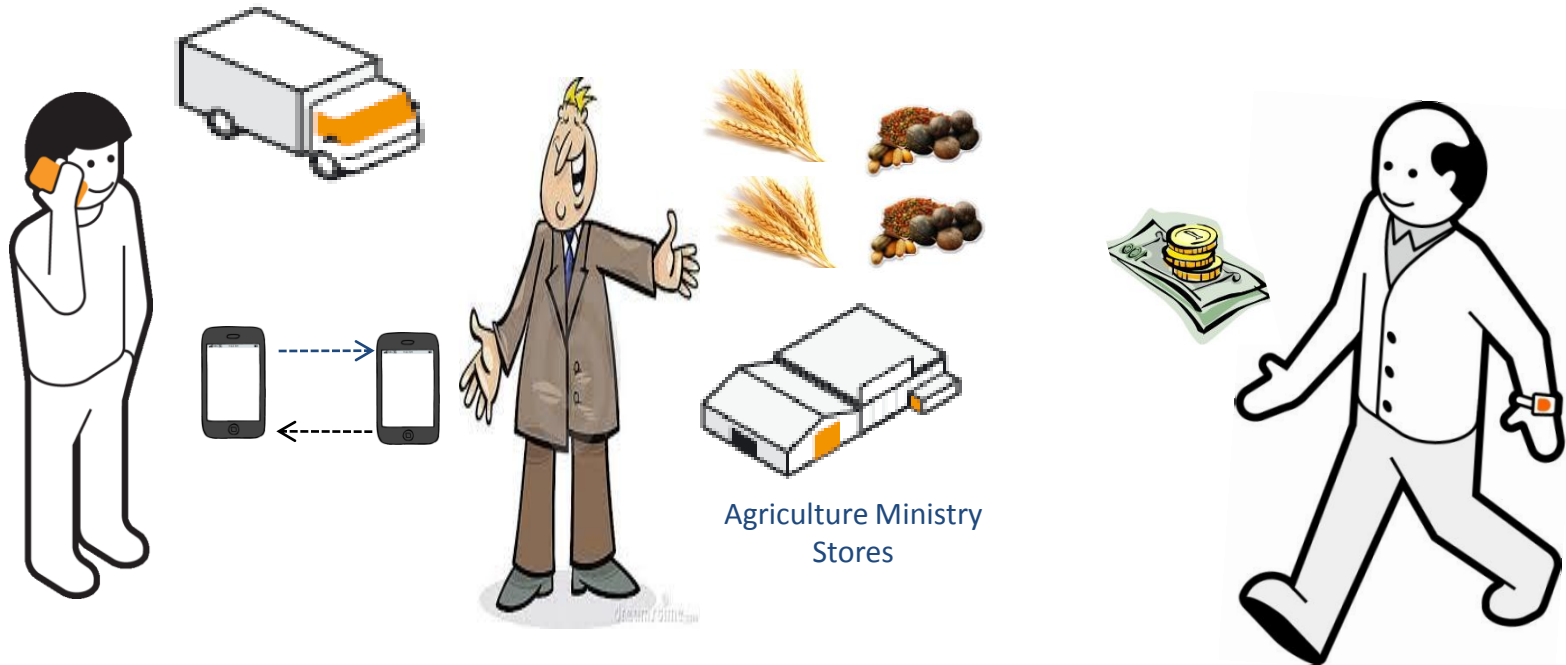
How to Sell your Crops



4

- The Farmer approves the transaction by scanning his or her card again
- Goods moves from Farmer wallet to expert wallet
- Fleet Management system carry the goods to warehouse
- Expert transfers crops to driver wallet

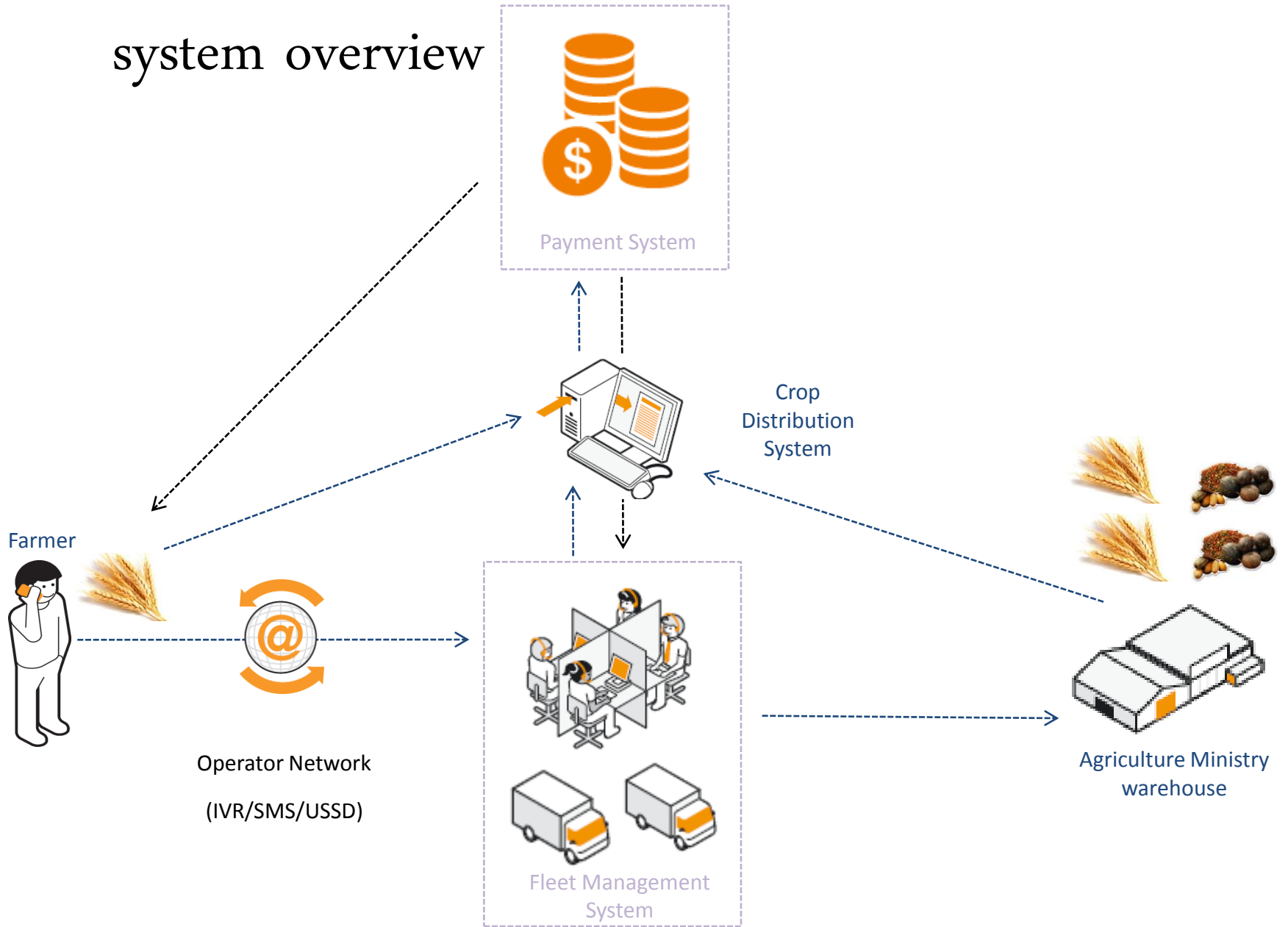
How to Sell your Crops



5

- Using the mobile wallet application , driver transfers the crops to the warehouse wallet.
- Warehouse expert accepts the goods on his mobile wallet.
- Farmer invoice is due for payment.

system overview

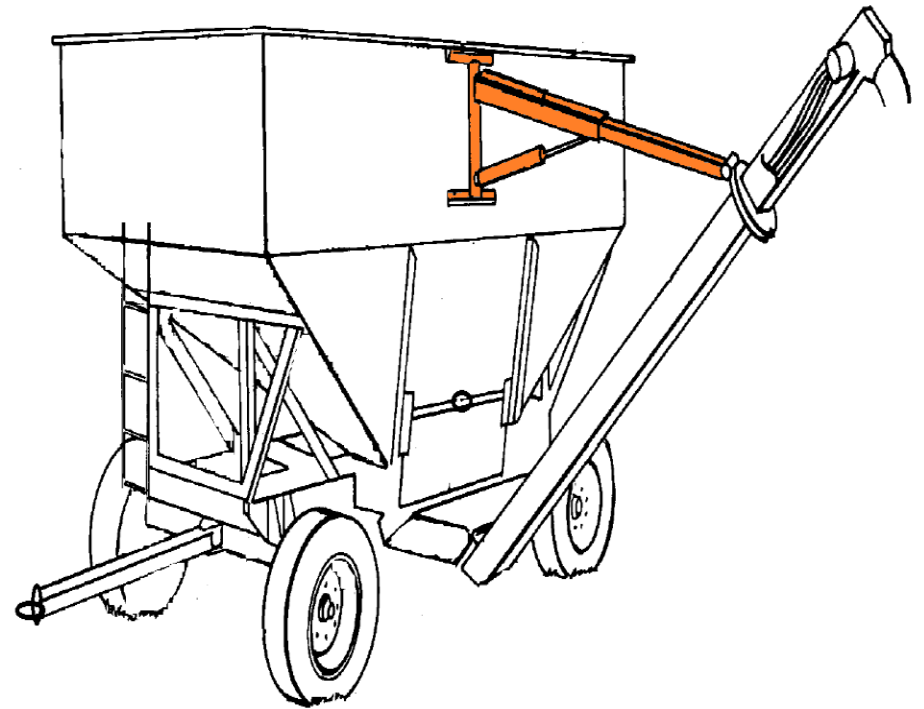


Design and manufacturing of Innovative trailer for wheat transportation from points of production to points of storage

Project Objectives

- 1- Development of a locally produced grain cart with innovative system for charging and discharging.
- 2- Overcome the problem of current costly wheat transportation system.
- 3- Securing the local wheat supplies which granting high quality subsidized bread.
- 4- Decreasing the grain losses during transportation in hoven bags.
- 5- Creating new job opportunity for the industrial sector.
- 6- Matching the plan of Increasing the national storage capacity.

Traditional wheat transportation method and the proposed grain cart design



**Development of Local Technology
for the Production of Spare Parts
used in Flour Grinding Equipment**

Role of the project Partners

1. **Central Metallurgical R & D Institute (CMRDI):** contributes to the selection of demonstrator components, specifications and characterizing of selected parts, material selection, casting design and production of the prototypes, heat treatment and machining of prototypes, and laboratory testing take part in field performance evaluation under actual operational conditions.
2. **Flour Grinding Sectors:** selection of demonstrator components and evaluation of performance of prototypes.
3. **El-Nasr Casting Co. (ENC):** pattern making of the selected components, implementation of the developed technology in mass production.
4. **Helwan Co. for Machine Tools (Factory No. 999) – Military Production Sector:** machining of prototypes produced at ENC and CMRDI.

Methodology & GANTT Chart

Task N ^o .	Task Title	Start Date	End Date	Duration (Months)	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	Expected measurable outcomes of successful implementation of the task
1	Selection of demonstrator components																3 demonstrator components selected jointly by the research team and representatives from the flour grinding sectors.
2	Specification determination of selected parts																Physical and mechanical specifications of the selected components.
3	Prototype manufacturing																Prototypes of the 3 selected components completely manufactured (cast, heat treated and machined) ready for the field performance assessment.
3.1	Alloy selection and purchase of raw material																
3.2	Determination of optimum production technology																
3.3	Design of casting systems																
3.4	Pattern making																
3.5	Casting of prototypes																
3.6	Heat treatment																
3.7	machining																
4	Field performance evaluation																Performance evaluation report from the end-users.
5	Technology transfer to commercial foundry for mass production																Comprehensive technology package ready to be transferred to ENC.
6	reporting																Final report.

Project Title

**Mixing rates of barley flour with
wheat flour for bread production**

Different barley varieties will be evaluated with wheat flour to produce bread.

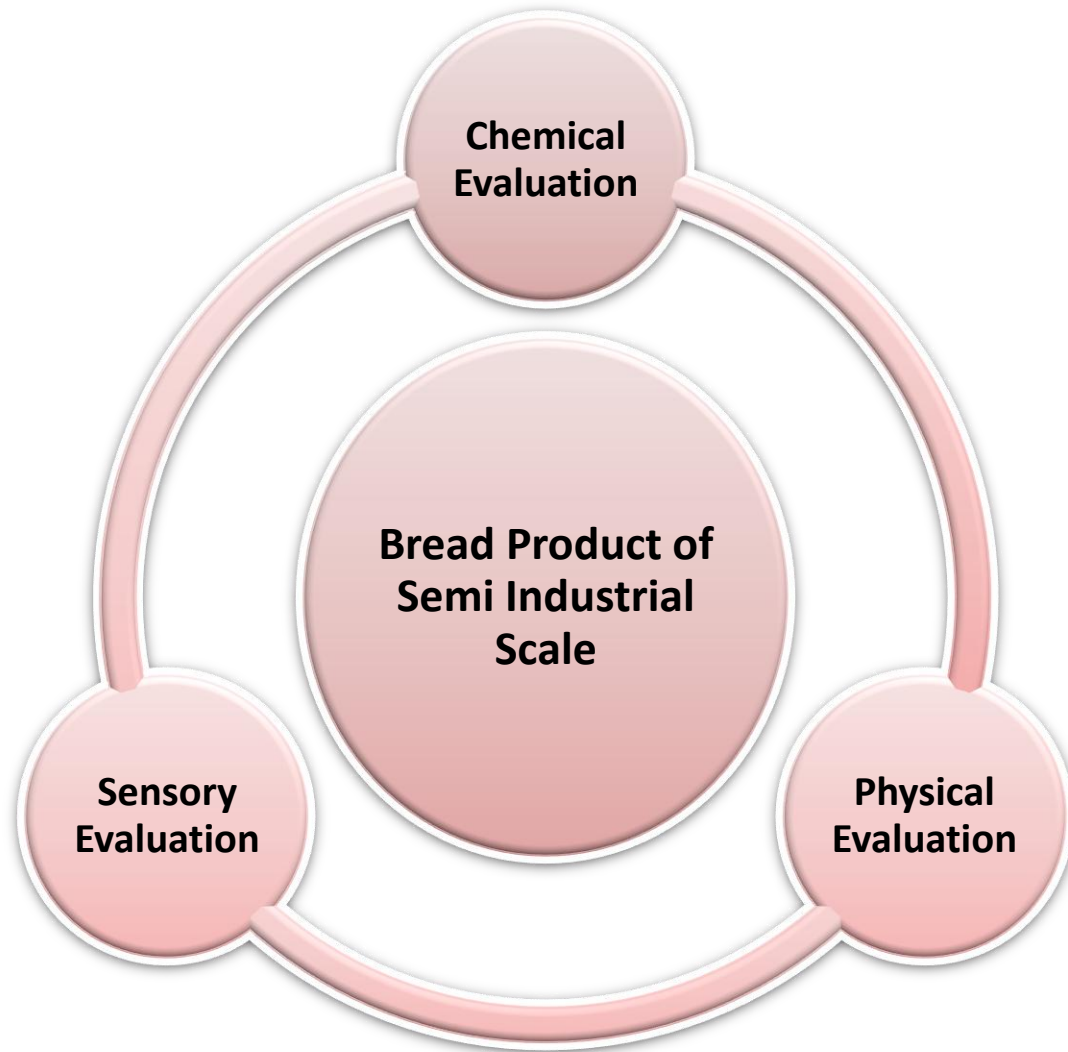
After which, whole meal and 72% extract barley flours will be prepared to produce two type of bread (Balady bread and white bread).

Rheological properties (Farinograph, Extensograph, mixolab, RVA and DSC), physical properties (baking quality, Hunter color and Texture Analyzer) sensory evaluation, Freshness and chemical analysis will be evaluated to optimizing mixing rate of barley flour with wheat or wheat that mixed with maize flour (commercial wheat flour of balady bread now mixed with 20% maize flour).

Feasibility Study will be carried for producing two type of bread that obtained from best mixing rate

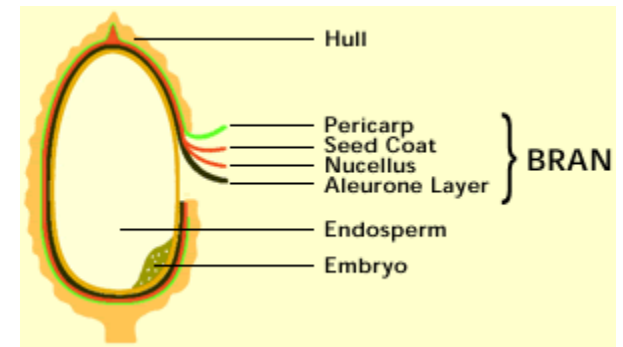
This Project is aiming to improve the nutritional, healthy values and quality of Balady bread by replacing wheat flour with barely flour, with the possibility of completing shortages of wheat raw material. The chemical, rheological, sensory, stalling properties and biological evaluation of the obtained Balady bread will be evaluated.

This project will be carried out mainly in Food Technology Department at National Research Centre, where all of the facilities concerning analysis, pilot plant and plant could be found.



Rice Bran in EGYPT

*Total Rice Cultivated area in Egypt is more than 1.5 Million Acres annually, giving more than 500 000 MT rice bran.



*However due to non stabilization it is still discarded or used as animal feed despite its high content of bioactive substances

* Rice bran was studied (projects cost more than LE 5 M) where great part of its UNTOLD WEALTH of vitamins, minerals, bioactives were revealed and published as well as providing evidence for its potential health activity for alleviation of major illness symptoms; (**CVD, DM type II, elevated Cholesterol levels, Anti inflammatory & Hypertension**) and recently (2014) increasing brain cells mitochondrial mass.

Food Products:

- 10 biscuit formulas.
- 6 corn flakes formulas.
- 5 crackers formulas.
- 5 tortilla chips formulas.
- 3 formulas of pasta.
- Proximate composition, amino acids and mineral contents of the most promising products.
- Sensorial, rheological and functional properties of products.
- Microbiological tests
- Biological evaluation of protein value of the products.
- Results of acute toxicity tests of oil and unsap.



Thank you.