PRESENTATION

Session:
Cotton Production In The Growing Regions

Title:
Innovations in Uzbekistan's cotton sector

Speaker:
R.A. Gulyaev, Cotton science-innovation Center (Uzbekistan)

Conference Organization
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– International cotton conference Bremen 2024 –

INNOVATIONS IN UZBEKISTAN'S COTTON SECTOR

R.A. Gulyaev – Director, Cotton science-innovation Center

Cotton Science-Innovation Center

Bukhara Agrocluster

Ministry of agriculture

Ministry of higher education, science and innovation

Uzbekistan Textile and Garment Industry Association

Paxtamash

– March 2024 –

UZBEKISTAN IS A NEW GLOBAL COTTON & TEXTILE PLAYER WITH DIVERSIFIED EXPORTS

Diversified and growing textile exports…

6th largest cotton producer

~ 3,5 m metric tons of seed cotton

~ 1,0 m metric tons of cotton lint in 2023

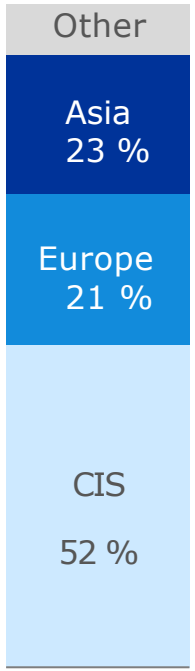
~ 3,6 tn/ha seed cotton yield in 2023

Source: IMF, WorldBank

2 x textile export growth over 5 years ($ 3bn+ in 2022)

Diversified exports with focus on EU, CIS, China, North Africa, Gulf countries, supported by trade agreements (GSP+, FTA, etc.)

Structure of textile exports

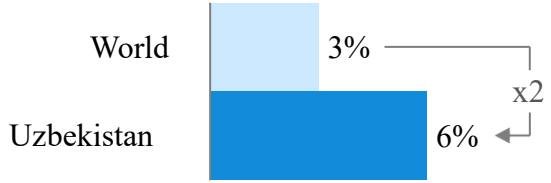


…supported by fundamental drivers

2% annual growth of 36 mln population

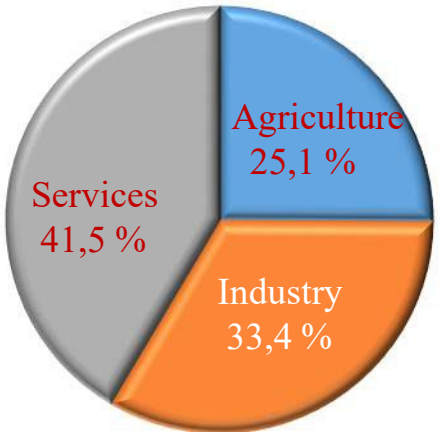
29 y.o. Average age: young and growing labor force

Rapid growth of local economy



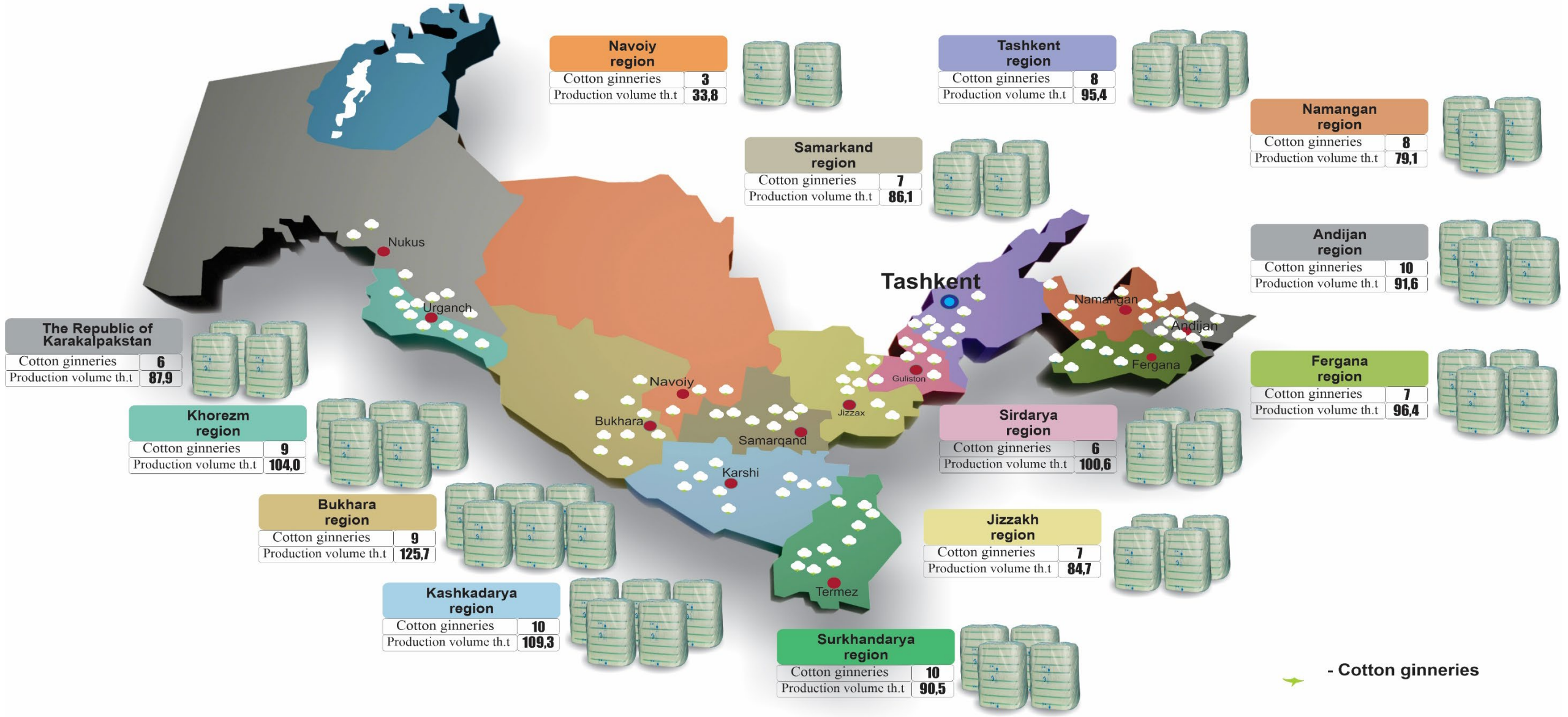
Average GDP growth, 2015-22E

GDP Structure in 2023



Stable and predictable political establishment

Production of cotton fiber: volumes by regions



COMPETITIVENESS THROUGH VERTICALLY INTEGRATED CLUSTERS

15
clusters
in 2018

96
clusters
in 2020

142
Clusters
In 2024

EXPANDING THE HORIZONS OF THE CLUSTER

KYRGYZSTAN
KAZAKHSTAN
TAJIKISTAN
AZERBAIJAN
AFGHANISTAN

BetterWork
Started
project
in Uzbekistan

better cotton
15 clusters
implementing
Better Cotton
standards

SUCCESSFUL CLUSTERS

Bukhara Agrocluster

INDORAMA CORPORATION

khantex GROUP

HAJ TEX

UZTEX

GLOBAL TEXTILE

ART SOFT CLUSTER HOLDING

posco INTERNATIONAL TEXTILE LLC

SUPPLY CHAIN

imabari towel Japan

THE NORTH FACE

Lufthansa

COTTON COUNCIL

COTTON PRODUCTION COUNCIL UNDER THE PRESIDENT OF THE REPUBLIC OF UZBEKISTAN

Ibrahim Abdurakhmanov

Minister of Agriculture, Head of Cotton Council

13 districts | **29** cotton-textile clusters

32 foreign experts were involved | **26** affiliated scientific organizations | **67** scientific projects are linked

3 foreign experts › considered member of the Council

Keshav R. Kranthi	**USA**	The International Cotton Advisory Committee – ICAC
Venkatesh Kulkarni	**India**	Vice President and Advisor of the “Nath Biogenes” company
Indranil Majumdar	**India**	Director of the Joint Enterprise "Indorama Agro" LLC

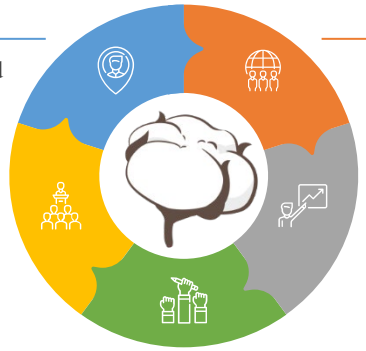
The experience, knowledge and potential, proposals and descriptions of foreign experts are widely used for the introduction of a new system for increasing cotton productivity

Regional working groups

Assignments, reports, statistics and analysis to the working group

Council members

Council resolutions, statements, assignments, etc



Foreign experts

Dialogue window with foreign experts

Scientific organizations

Scientific works, projects, scientific results and their application

Clusters

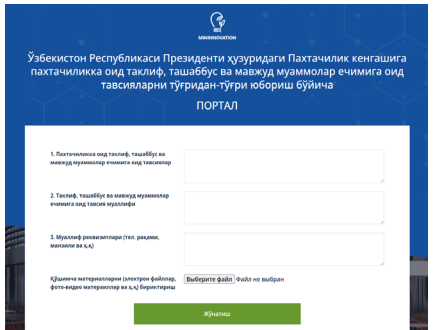
Dialog with clusters, reports, indicators, orders and more

Scientific Centers

+39 pc

Laboratories

+58 pc



An **electronic interactive portal** for direct submission of suggestions, initiatives and recommendations related to the solution of existing problems to the Cotton Board has been launched.

A DIGITAL ELECTRONIC PLATFORM is being developed, which stores cotton seeding, variety selection, tillage, fertilizing, and irrigation works in a single database and provides services in an interactive way.

Information on a digital platform

seeds
Seed varieties

fertilizers
Fertilizer types

statistics
various statistics on this field

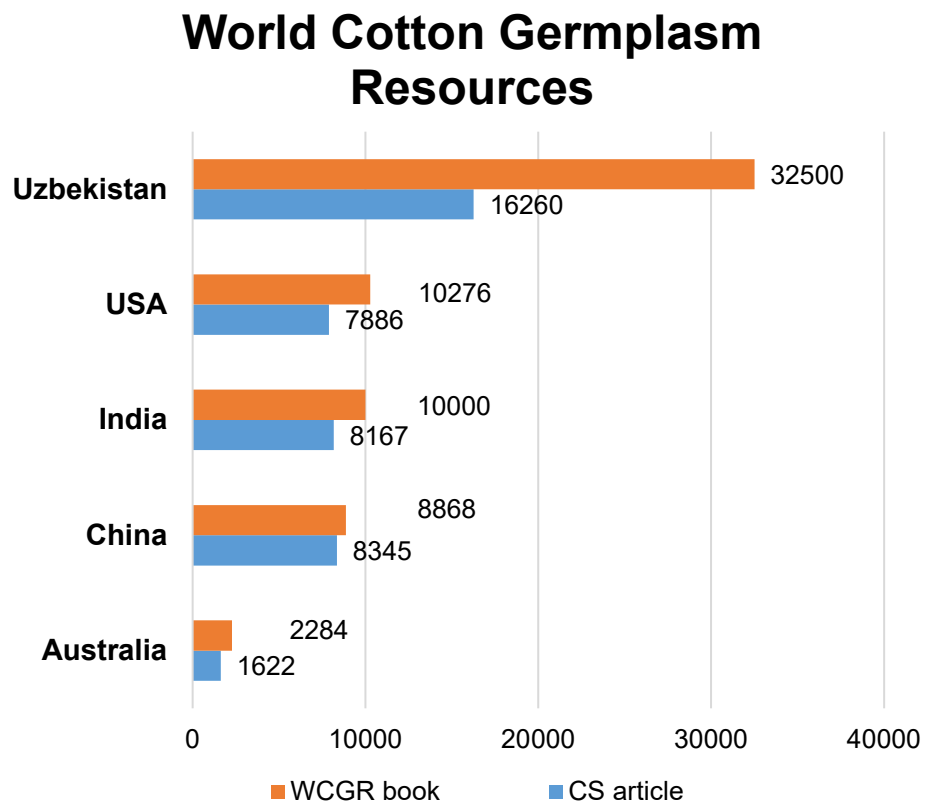
integration
Integration with external Databases

scientific developments
Scientific projects and developments

analysis
Analytical data

quality standards
Quality standards information

DEVELOPMENT OF NEW COTTON VARIETIES



18 871
Variety/wild
Cotton Breeding, seed production and Agro technology Institute

7 509
Wild and landrace stocks
Institute of Genetics &PEB

1 181
Cytogenetic/genetic stocks
National University

8 576
Biotech/MAS/mapping
Center of Genomics and Bioinformatics

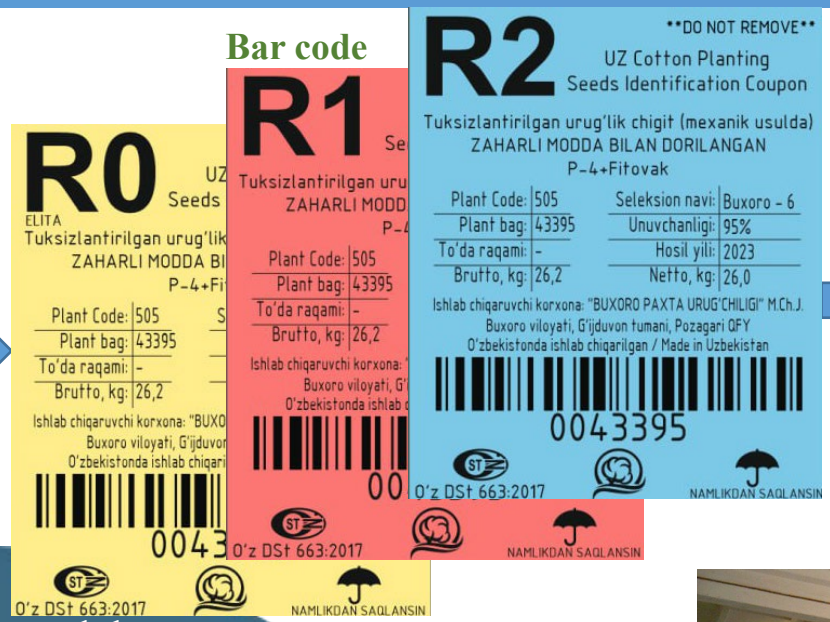
Development of new crop varieties adapted to diverse soil and climatic conditions, pest and disease-resistant, the safe for the environment and people based on modern molecular and cellular engineering, molecular markers, genome and virtual selection.

Improvement of cotton fiber quality by introduction of high quality cotton varieties (increasing of high grades share, staple length, improvement of micronaire index).

PREPARATION OF PLANTING SEEDS

Bar code console

Bar code



Seed Warehouse

Bar code reader

Database

Information for each bag of planting seeds

- Variety
- Date of production
- Quality (germination, moisture/trash content)
- Reproduction (Super elite, Elite, R1, R2, R3)
- The type of seeds (seeds of traditional selection, genetically modified seeds, hybrids, etc.).
- Fuzziness of seeds (bare, slightly pubescent, pubescent)
- The chemicals used during the treatment (fungicides, insecticides, stimulants, etc.)
- The type of treatment (chemical or mechanical)
- Producer/Supplier of planting seeds
- Seed buyer (farm)

Workshop for preparation of planting seeds

Farm

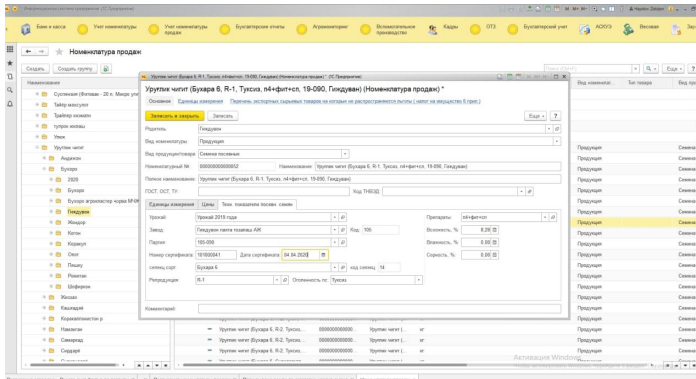
17

Mechanical treatment

7

Chemical treatment

«UZPAXTA-1C» Software Database (UZCOTTON – 1 C)



COTTON CULTIVATION: WATER SAVING TECHNOLOGIES

New lands assesment

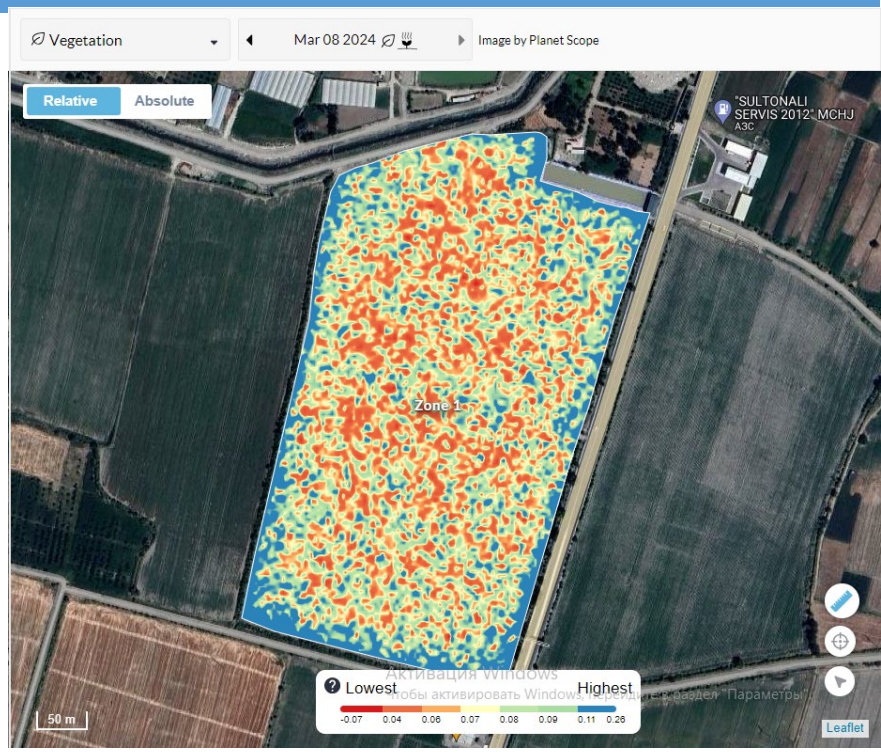
+33,6 Thous.ha

Cotton farmers

29 292 pc

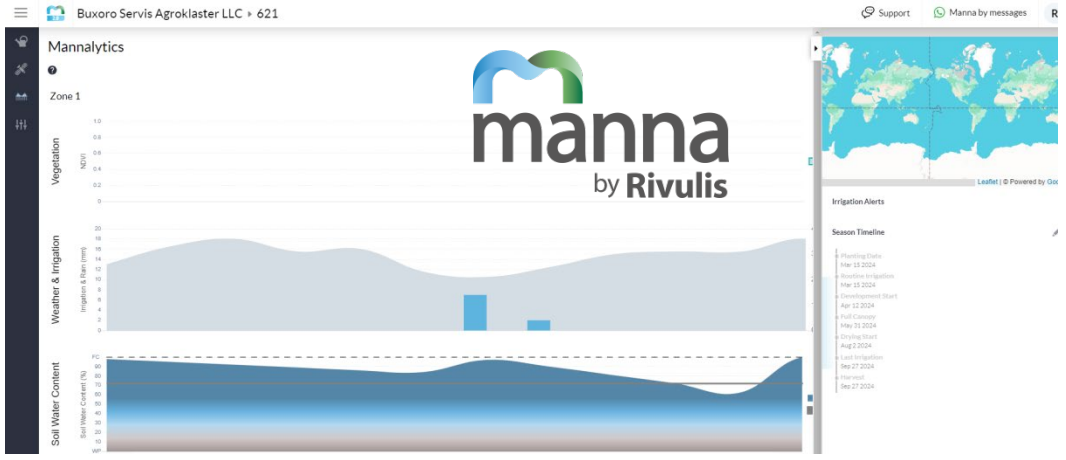
Advantages of drip irrigation system:

1. Saving from 20 to 50% of water resources in comparison with traditional irrigation method;
2. Increasing of quantity and quality of crop;
3. Reduced fertilizer and machinery costs.



Cotton area Thous.ha		
Total	Clusters own land	Contract farms
972,9	150,8	822,1
Introduction of water saving technologies		
163,0	46,3	116,7
Laser planning		
238,4	68,9	169,1

Based upon our proprietary satellite models and sensor-free approach, Manna provide growers with a high-resolution, integrated view of the entire field rather than readings from isolated disparate locations. Growers get dynamic, crop and site-specific irrigation recommendations anywhere and anytime.



COTTON CULTIVATION

100 %

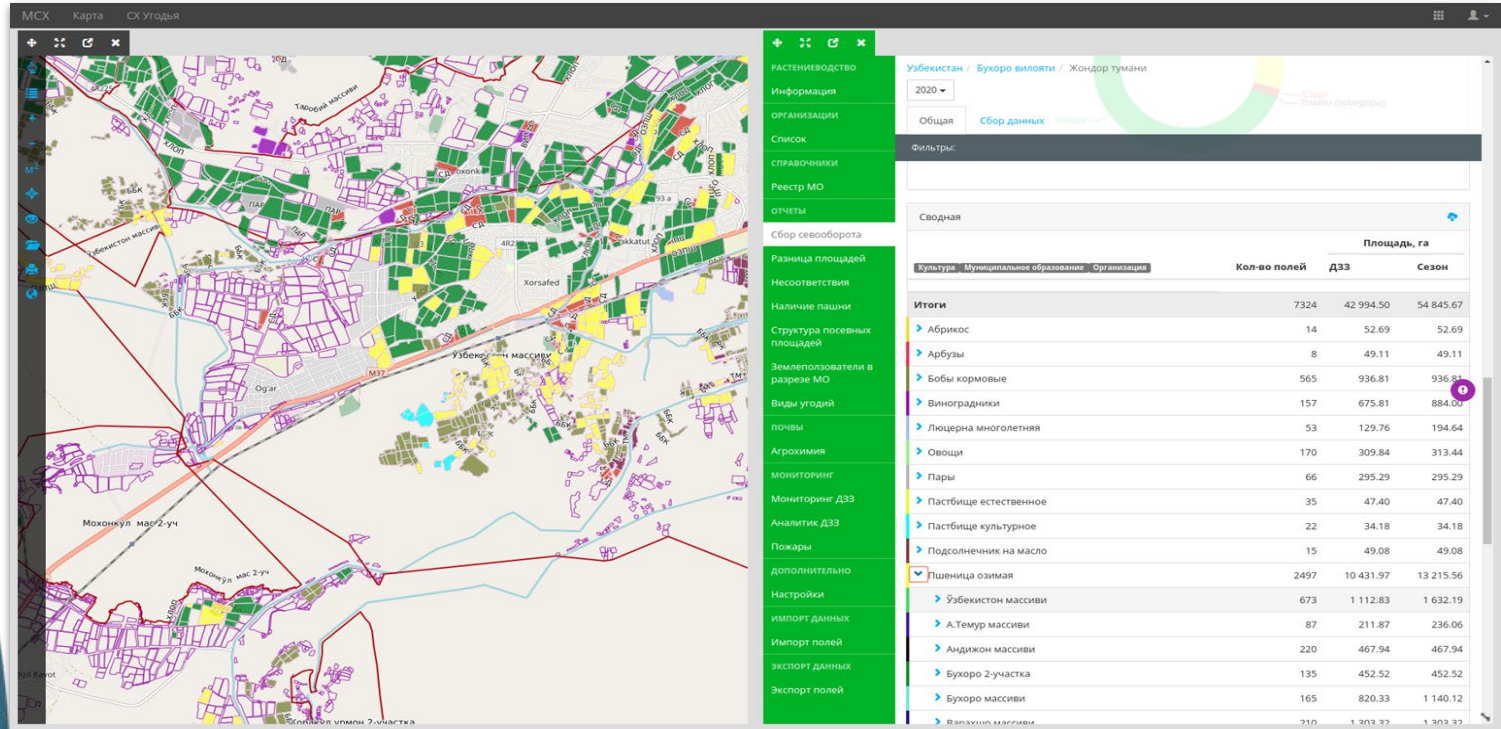
Under control

Variety placement maps by crop types have been formed, as a result of which detailed information about each contour and the previous and current condition of the crops are formed on multi-layered maps.

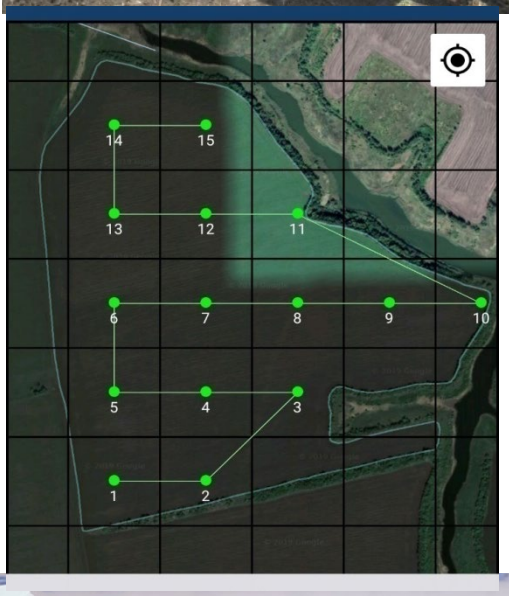
GPS systems

Information for each contour (field):

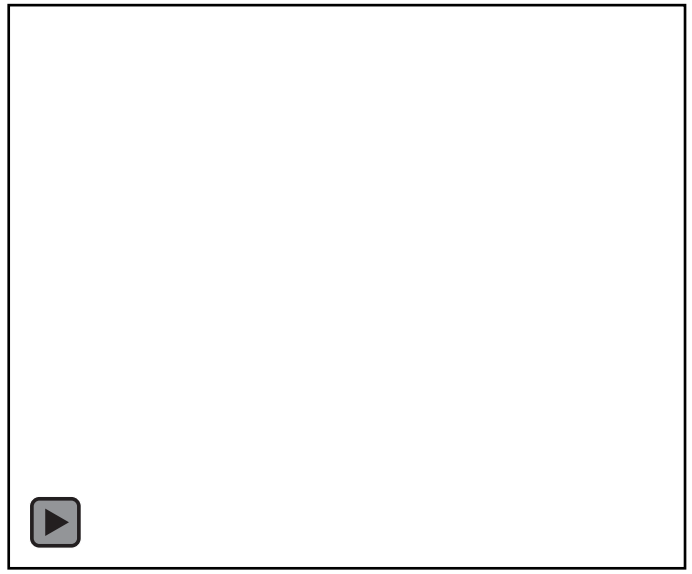
- Culture (cotton, wheat)
- Cotton or other crop development (NDVI)
- The content of macro, mezo and microelements in the soil (phosphorus, nitrogen, potassium, boron, magnesium .....)
- Agrochemical maps
- Salinity maps
- Water maps (irrigation, drip irrigation, without irrigation)
- Water, Seed, Fuel, Fertilizer consumption
- Salary expense
- Agrotechnical measures (technological map)
- Yield



COTTON CULTIVATION: AGROCHEMICAL INSPECTION OF SOIL



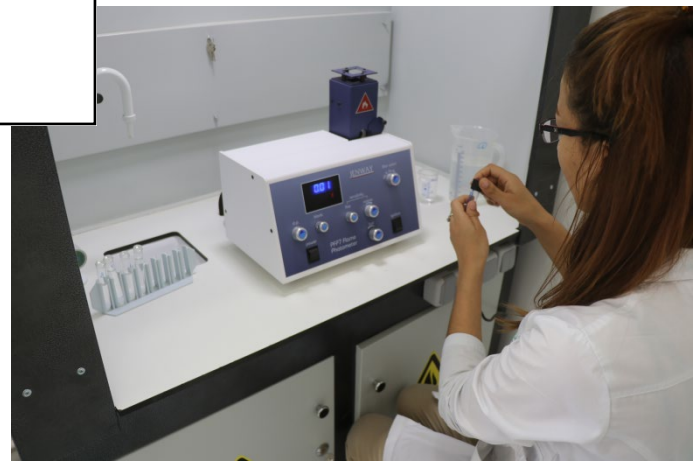
Determining soil sampling points in contours



Determination of time and timing of application of mineral fertilizers containing micro and macro elements

Recommendations for producers of agricultural products, based on soil and agrochemical studies of soil cover

Determination of soil salinity, development of measures to prevent salinization



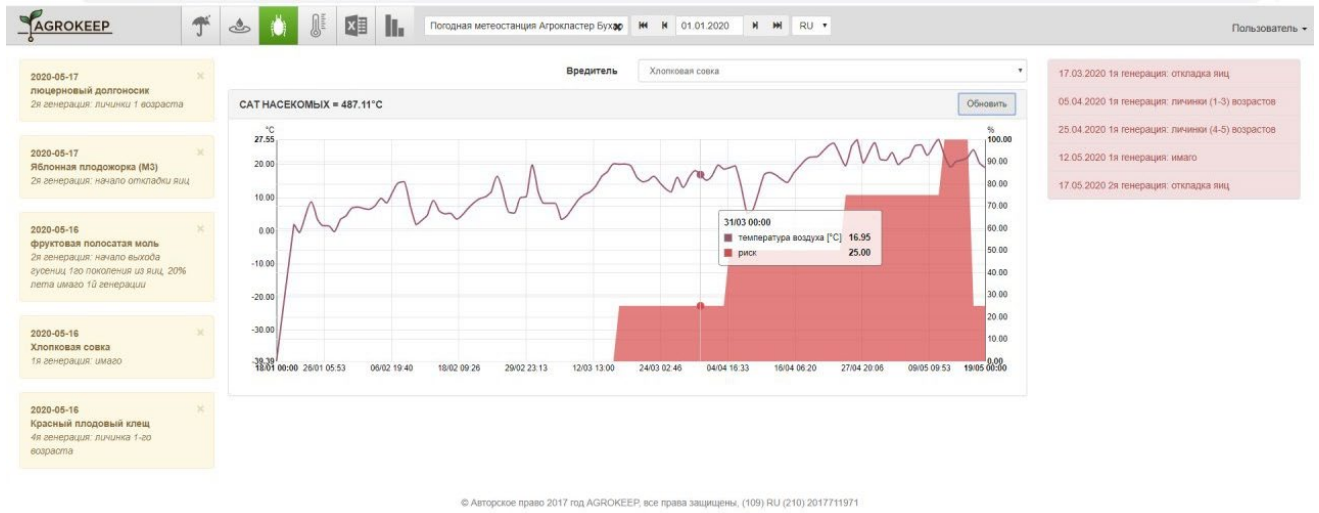
Result:

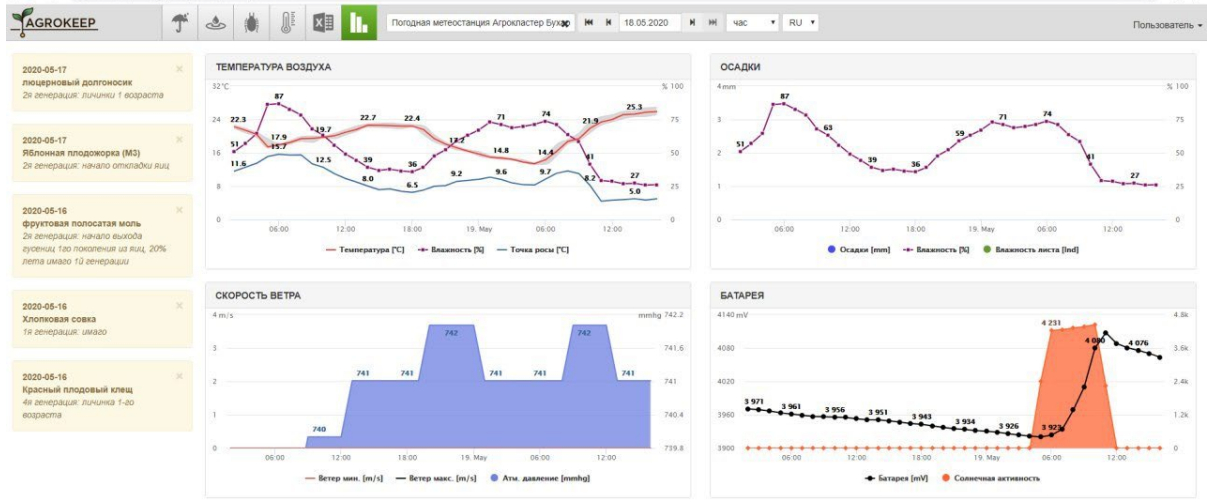
1. Maintaining soil fertility by preventing increment of salt in the ground and erosion.

2. Cost reduction through targeted application of mineral fertilizers.

3. Achieving high yields by improving soil cover.

COTTON CULTIVATION: INFORMATION FROM WEATHER STATIONS





Meteorological module - special weather tools calculate the probability of the development of diseases and pests to take timely preventive measures as a result of the formation of weather forecasts

Predicting disease development based on software algorithms

COTTON HARVESTING & PROCUREMENT

Machine harvested cotton

678 035 tn

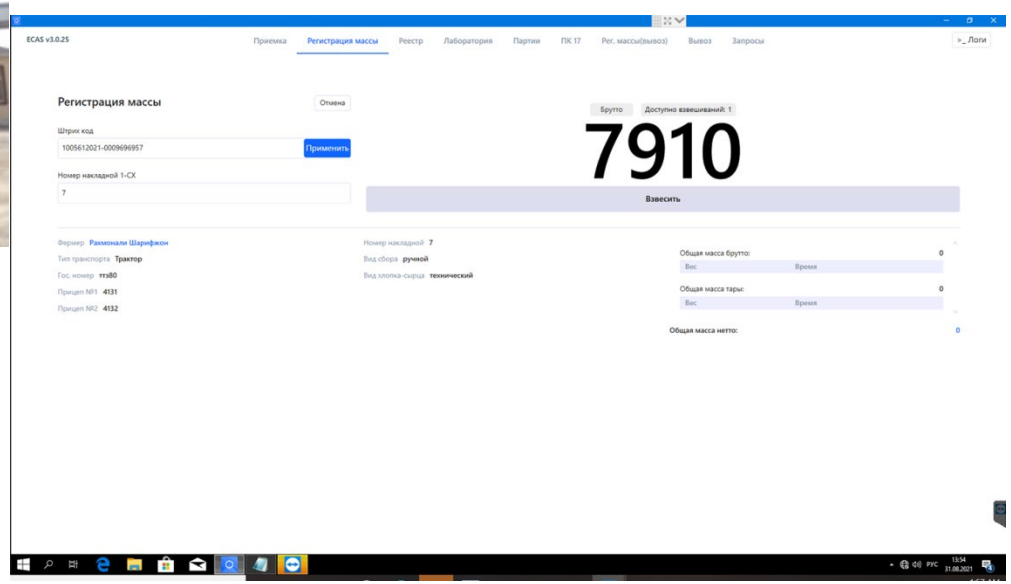
19,2%

1115 pc

MACHINE PICKED COTTON
MASHINADA TERILGAN PAXTA

COTTON PROCUREMENT

Upon arrival of the vehicle carrying the cotton, the operator reads the farmer's ID card. The software loads the required indicators from the directory. The operator enters information on the type of transport, number of trucks. The balances – indicate the weight of seed cotton (netto).

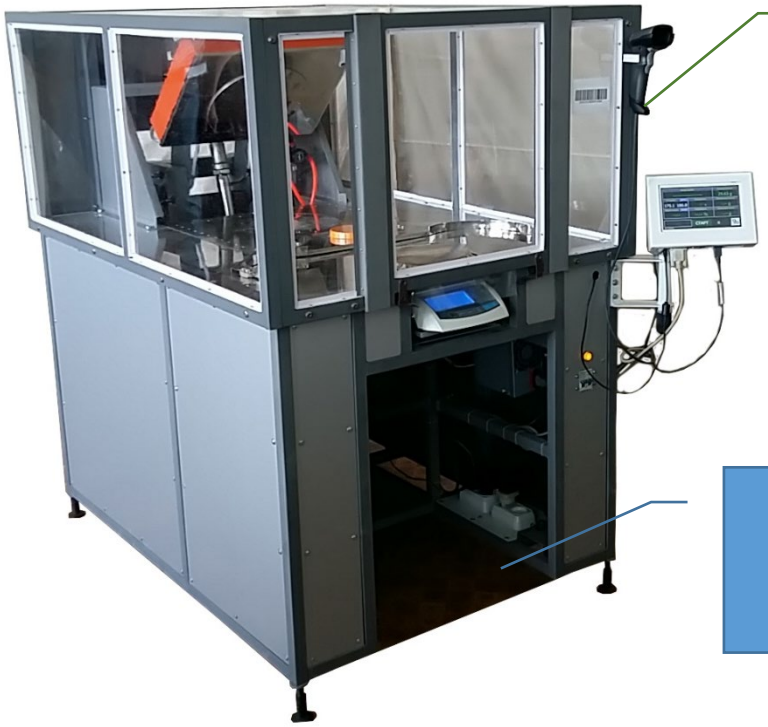


Information for each lot (truck) of seed cotton:

- Region
- Farmer
- Contour (field)
- Cotton picking type (manual, machine)
- Variety
- Grade (colour)
- Class (moisture and trash content)
- Reproduction
- Technical cotton or for sowing purposes
- Price

The transport is weighed a second time after seed cotton has been unloaded (tara). The operator scan barcode forms signed by the classifier. The camera fixes the trolley number on the scales. If the data on the numbers match, the data on the scales is stored in the software, the cameras fix the time the weight is measured, and the photograph is stored in the directory with a process barcode. Data on Tara, Netto, Brutto, Conditioned masses, quality indicators are recorded in the database.

PROCUREMENT OF SEED COTTON: LABORATORIES



Bar code scaner

100 %

Domestic production of laboratory instruments

New generation of fully automated instruments

Instruments for measuring of trash content

Instruments for measuring of moisture content

Laboratory Gin stand

The laboratory scans a 2XL barcode submitted to the laboratory along with the seed cotton samples. The software of the automated instruments transmits the results to the database.

SEED COTTON PROCESSING: AUTOMATIZATION OF GINNERIES

Bar code console

Bar code

Cotton Warehouse

Bar code reader

Database

Ginning

Information for each bale cotton fiber:

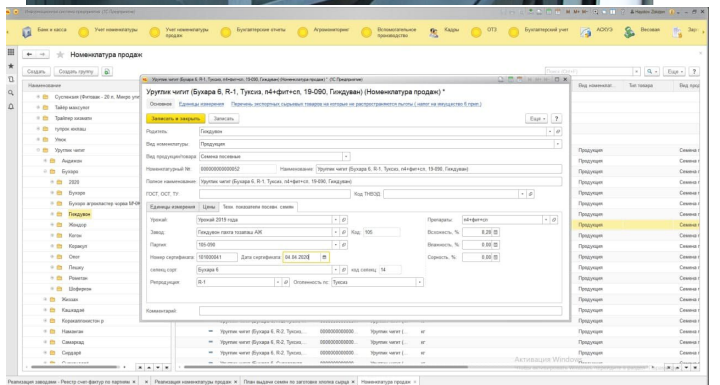
- Region
- Ginnery
- Lot of seed cotton (connection to…… farmer, contour, seeds)
- Variety
- Grade (colour)
- Class (trash content)
- Weight (netto, tara, brutto)
- HVI indicators
- Price

Scales for seed cotton

Scales for cotton seeds

Installation of bunker electronic scales for weighing of seed cotton, cotton seeds. Obtaining online information about the volume of seed cotton provided to the process, produced seeds. Automatic transfer to the Databases.

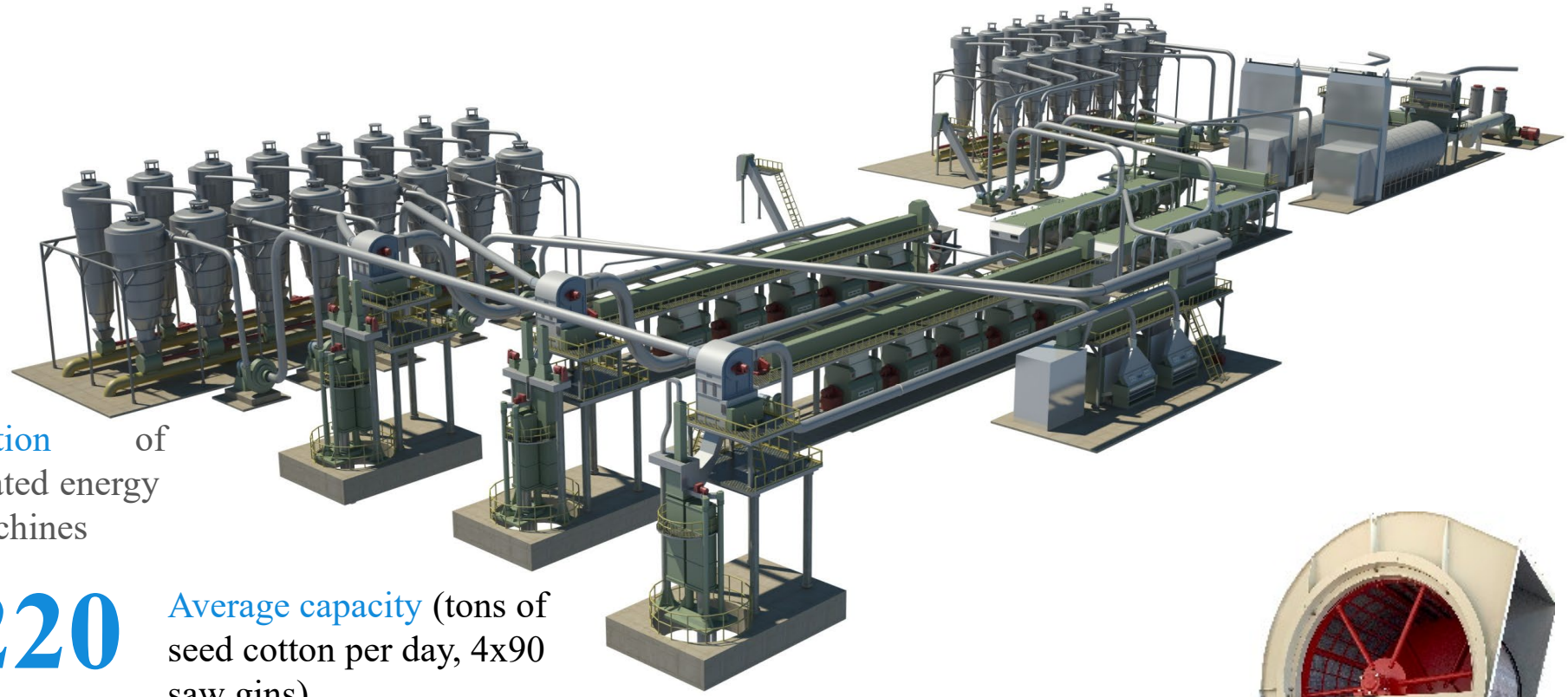
«UZPAXTA-1C» Software Database (UZCOTTON – 1 C)

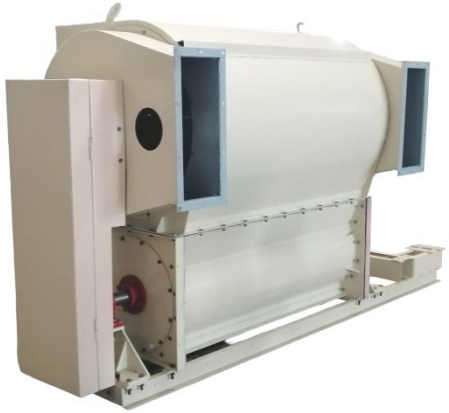


SEED COTTON PROCESSING: AUTOMATIZATION OF GINNERIES

100 %

Domestic production of technological equipment (excl. balers)





Separator

New generation of fully automated energy efficient machines

220

Average capacity (tons of seed cotton per day, 4x90 saw gins)

Gin stand

Delinter

Lint cleaner

Condenser

NEW COTTON FIBER STANDARD

Grade	Norms of weight fraction of defects & trash content (%) and price differentiation by cotton fibre classes									
	Oliy (Highest)		Yakshi (Good)		Urta (Middle)		Oddiy (Ordinary)		Iflos (Trashy)	
I	2.0	+5,0%	2.5	+4.0%	3.0	basis	4.0	-3,5%	5.5	-7,5%
II	2.5	+2,0%	3.5	-1,0%	4.5	-4,5%	5.5	-8,0%	7.0	-12,0%
III	3.0	-1,0%	4.0	-3,5%	5.5	-7,0%	7.5	-11,5%	10.0	-16,0%
IV	4.5	-5,0%	6.0	-15,0%	8.5	-20,0%	10.5	-25,0%	14.0	-30,0%
V	6.5	-25,0%	8.5	-35,0%	10.5	-45,0%	12.5	-50,0%	16.0	-55,0%

+ New cotton classes

Improvements in cotton primary processing technology have led to a reduction in cotton fibre contamination and improved cotton fibre preparation.
In this regard, changes were introduced in the state standard UZ DST 604 "Cotton fibre. Technical conditions", 4 new classes in III, IV and V grades appeared.

UZBEK COTTON QUALITY: BY VARIETIES (2023 SEASON)

VARIETY	MIC	UHML	STR	UI	RD	b	SFI
	unit	inch*100	gf/tex	%	%	%	%
Porlok-1	4,43	116,9	33,03	84,72	80,66	8,44	4,33
Bukhara-10	4,54	114,8	30,40	82,43	79,74	9,16	8,67
Bukhara-6	4,55	114,6	30,24	82,38	79,20	9,31	8,71
Bukhara-8	4,56	114,3	30,60	82,52	79,10	8,95	8,05
S-8286	4,55	114,1	30,00	82,53	78,68	9,15	7,47
Porlok-4	3,71	114,0	30,93	82,43	78,85	8,64	4,88
Porlok-2	4,51	113,9	30,46	82,76	79,91	9,90	6,98
S-8294	4,75	113,4	29,71	83,24	78,59	8,63	4,90
Ravnak	4,37	113,4	30,79	82,76	77,79	8,60	8,80
Sulton	4,61	113,1	29,21	83,02	78,22	8,77	6,94
Bukhara-102	4,53	112,9	29,84	82,52	78,87	9,30	6,53
Mehnat	4,41	112,4	30,82	83,20	80,70	8,05	5,10
Andijan-36	4,51	112,4	32,23	83,89	76,96	8,64	7,35
Andijan-37	4,69	112,4	32,94	84,54	76,93	7,81	5,23
Khorezm-150	4,51	112,3	31,36	83,20	80,29	8,20	4,81
C-4727	4,75	112,2	29,00	83,32	77,16	8,61	5,41
Khorezm-127	4,59	112,2	31,42	83,23	80,80	8,35	4,76
Chimboy-5018	4,77	112,2	28,59	82,97	79,10	8,07	5,63
UZFA-705	4,49	112,0	32,06	82,36	80,62	8,37	4,23
Namangan-34	4,65	112,0	31,02	83,21	79,96	8,34	4,90
S-6524	4,58	111,9	30,12	82,95	78,90	8,59	8,84
Namangan-77	4,56	111,9	31,93	83,56	76,57	7,71	7,37
An-Bayaut-2	4,67	111,8	31,94	82,75	80,28	7,79	4,10
Beshkakhramon	4,59	111,8	31,53	82,85	78,84	9,47	5,34
S-6775	4,44	111,7	34,89	84,49	78,46	7,90	6,67
Andijan-35	4,64	111,7	31,94	83,37	76,35	7,88	7,17
S-8290	4,55	111,6	32,14	83,31	76,91	8,16	7,89
UZPITI	4,69	111,5	30,20	81,60	81,71	8,17	6,25

- Controls the quality and weight of each bale
- 100% bale-by-bale certification since 2001
- Database of all lots and varieties of cotton fiber

UZBEKISTAN TEXTILE EXPORTS WITH COMPETITIVE DELIVERY TERMS

Striong state support

Economic zones

0% income tax

0% property tax

6% personal income tax for foreigners

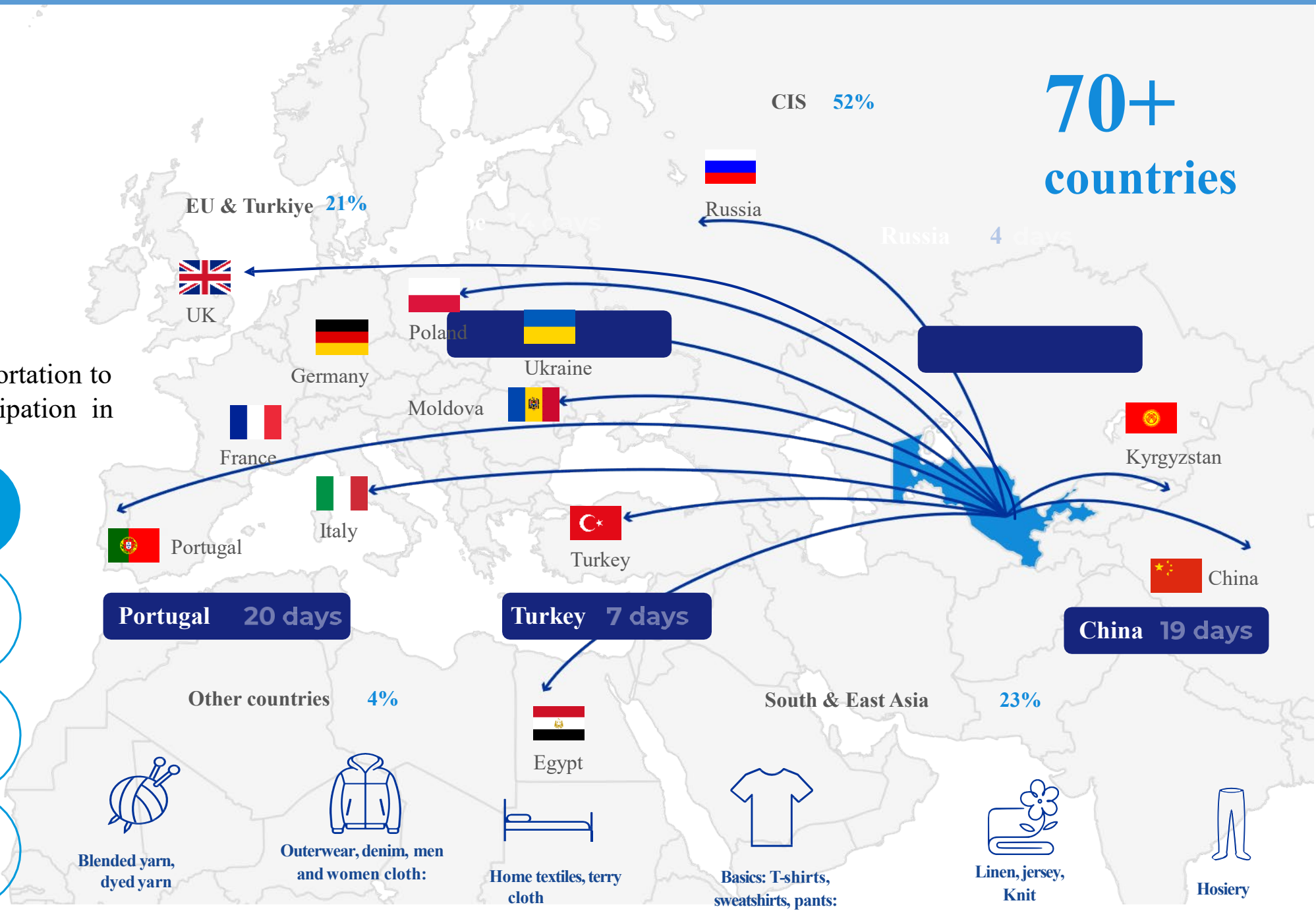
Subsidies

Subsidized financing for **CAPEX, working capital**

70% reimbursement of transportation to Europe, certification and participation in international exhibition

TRADE AGREEMENTS

- **GSP+ status with EU**
- **GSP status with UK**
- **CIS Free Trade Zone membership**



SUSTAINABILITY AND QUALITY

	OEKO-TEX	BSCI	SEDEX	GOTS	ISO
2023	101	25	35	8	1 350
2026	300	100	150	50	2 500

TARGET FOR 2026/28

NON-COTTON MATERIALS PRODUCTION
INTRODUCTION OF HEMP, **SYNTHETIC FIBERS** AND MAN MADE

DIGITALIZATION
ARTIFICIAL INTELLIGENCE IN SUPPLY CHAIN, INTEGRATION OF PRODUCTION WITH MARKETPLACES

GREEN AND ECO PRODUCTION
REDUCTION CO2 EMISSIONS, RENEWABLE ENERGY, 20% OF ORGANIC PRODUCTION, ECO-FRIENDLY TRANSPORTATION, REGENERATED AGRICULTURE, RECYCLING, EFFICIENT WASTEWATER RECYCLING PLANTS

SOCIALLY RESPONSIBLE TEXTILE
COMPLIANCES, FAIR TRADE PRACTICES, ERGONOMICS, WAGES, WOMEN'S ENTREPRENEURSHIP

Thank you for attention

Cotton Science-Innovation Center

Bukhara Agrocluster

Ministry of agriculture

Ministry of higher education, science and innovation

Uzbekistan Textile and Garment Industry Association

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