



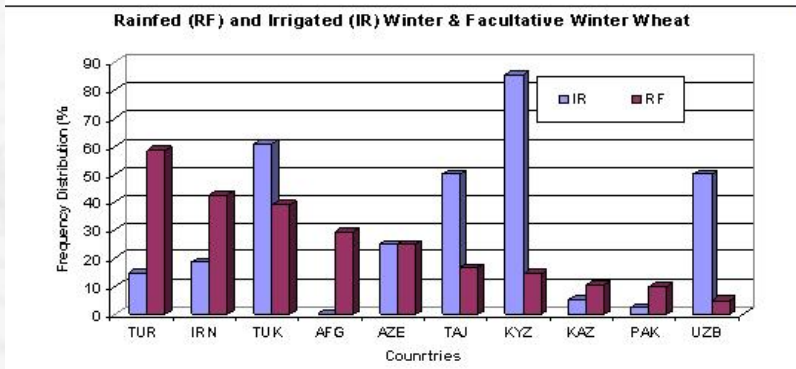
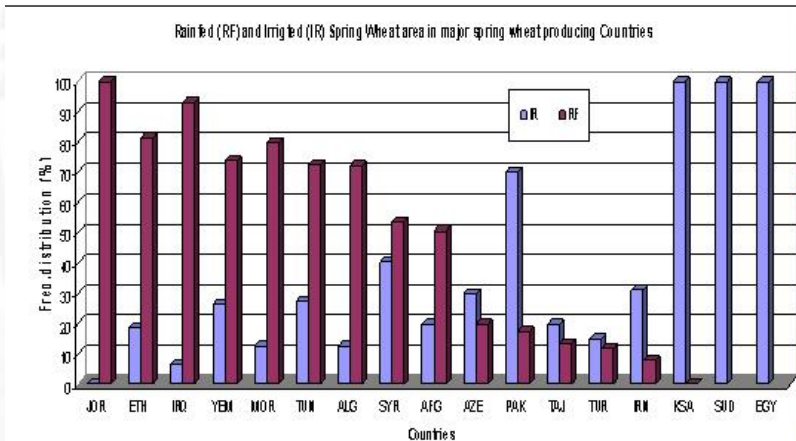
# ICARDA - Wheat Update

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**CAGE Meeting  
Adelaide March 5, 2009**



# Wheat Production in CWANA



**☐ Rainfed Area > 50%**  
**(Wheat cultivated area)**

## Wheat Improvement targets 5 Major Mega-Environments

1. Dry Land SW (11 Mha)
2. Dry Land W-FWW (11 Mha)
3. Irrigated SW (12 Mha)
4. Irrigated W-FWW (6 Mha)
5. Spring planted SW (8 Mha)



# Wheat Production in CWANA

## The major focus is on:

### 1: Adapted wheat germplasm to variable environments

- ✓ Stress tolerant wheat varieties (drought, heat, and cold)
- ✓ Enhanced wheat varieties for WUE & High Yield Potential

### 2: Other target priority traits in CWANA

Yellow, Stem and leaf rusts-durable resistance

Hessian Fly resistance

Septoria leaf blight

Russian Wheat aphid resistance

Quality traits for BW



# Shipment to Australia-November 2008

## 1: Two hundred lines including

(i) Selections from advanced wheat yield trials for low rainfall (AWYT-LR) environments – the region experienced 1 in 30 years drought in 2008 – data from four sites

NAME	Yield (t/ha)
HAMAM-4 (CHECK)	2.41
SHAMIEKH-5	2.36
SHAMIEKH-3	2.20
ACSAD 899/BOCRO-1	2.01
MILAN/SHA7/3/NS732/HER//SUDAN #11	1.97
JAWAHIR-20	1.94
CHIL-1//VEE'S'/SAKER'S'	1.92
MILAN/SHA7/3/NS732/HER//SUDAN #11	1.91
TOWPE/3/KAUZ//STAR/LUCO-M	1.82
Mean	1.59*
STDEV	0.50
M+STDV/2	1.84



# Drought – opportunities

(ii) Selections from Synthetic derivatives: Tel Hadya- total of 215 mls of rainfall in 2008



Name	Yield (t/ha)	% of recurrent P.
Cham 6*2/SW2-1	1.83	165
Cham 6*2/SW2-2	1.74	157
Cham 6*2/SW2-3	1.69	153
Cham 6*2/SW2-4	1.65	152
Cham 6*2/SW2-5	1.63	149
Cham 6*2/SW2-6	1.62	147
<b>Cham-6</b>	<b>1.11</b>	<b>100</b>
Attila-7	1.1	99
Site Mean	<b>0.97</b>	87
M+STDV	<b>1.31</b>	



# Drought – opportunities

## (iii) Selections from comparison with Australian cultivars - Tel Hadya:

NAME/PEDIGREE	Yield (t/ha)	% of Gladius
KABOWSH-1	1.277	122
JAWAHIR-21	1.232	118
WATAN-1	1.230	118
NAYZAK-6	1.228	118
SHIHAB-8 = VOROBAY	1.167	112
NEJMAH-11	1.162	111
QAMAR-8	1.130	108
ATTILA-7 (HIGH Yield Potential CHECK)	1.123	108
<b>GLADIUS (AUSATRALIAN CHECK)</b>	<b>1.043</b>	<b>100</b>
CROC-1/AE.SQUARROSA (224)//OPATA	1.008	97
<b>EXCALIBUR</b>	<b>0.927</b>	<b>89</b>
<b>YOUNG</b>	<b>0.777</b>	<b>74</b>



# Shipment to Australia-November 2008

## 2: Sixty lines for Russian Wheat Aphid Project

(iv) Twelve lines selected from FIGS with potentially novel sources of resistance





## Additional proposal for 2009: Stem Rust Resistance to Ug99 nursery based on combined Ethiopia and Kenya screening results

3,825 SBW lines screened in Ethiopia and Kenya  
1,243 lines (32%) resistance to Ug99.

- ✓ Combined (Eth + Ken) Resistance (major genes !) 149 (12%)
- ✓ **Combined (Eth + Ken) Resistance (APR !)** **211 (17%)**
- ✓ Resistant in Eth only (major genes !) 863 (69%)
- ✓ Resistant in Kenya only (major genes !) 20 (2%)



**211 Adult plant resistant lines (APR) – interested?**

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## **Additional proposal for 2009 : Drought and Heat mapping Populations**

**1: Mapping populations for drought and heat respectively**

**First year limited preliminary trials in Syria (2 sowing dates), and subsequently for Egypt and Sudan for heat and water use efficiency–**

**(i) Cham6 x Cham8 (similar maturity & phenology but drought and high yield potential including heat tolerance)**

**(ii) ICARDA Synthetic (SW2) x Cham6 (drought)**

**(iii) Gladius x Haman-4\*\* (Australian drought cultivar x ICARDA drought check) \*\*Performed well last year under harsh drought conditions**

**(iv) Qamar 8 x Gladius**

**2: Mapping populations for drought and heat combined:2010 and beyond including Australian cultivars**



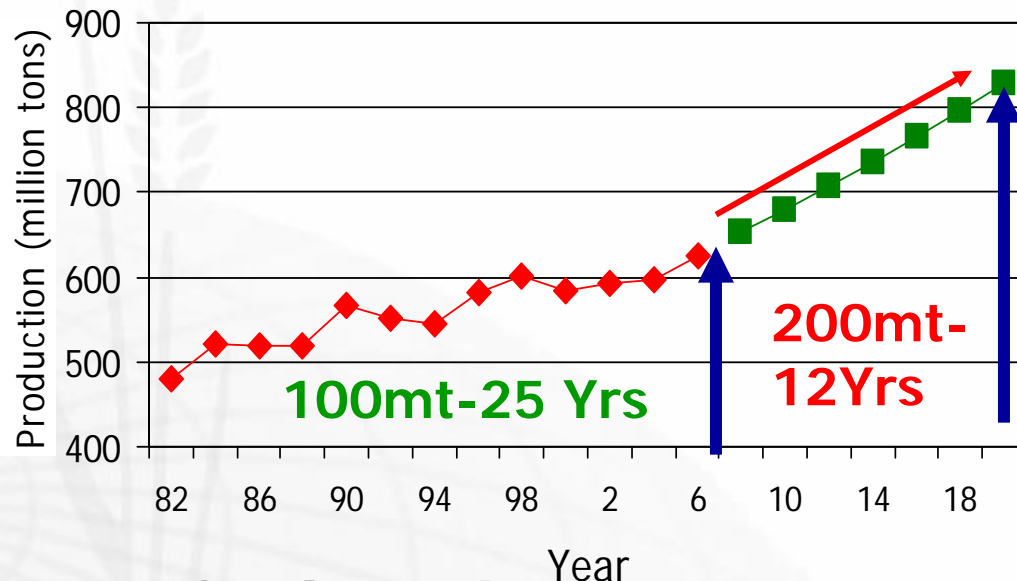
## Requests for help with parents for crossing

Australian parents currently available and used variously at ICARDA: More lines – breeders help with nomination

- ✓ Gladius, Westonia, Young, Yitpi, Axe, Excalibur, RAC 655, Tammarin Rock, WAWHT2836, EGA Bonnie Rock, Yitpi, Young, Calingiri, Annuello, EGA Eagle Rock, Sunco.
- ✓ I would appreciate more input and nomination of additional parents by breeders please: Perhaps **five lines** from each of the breeding companies that will be representative of the diverse agro-ecological zones

# Futures Challenges

## Global Wheat Production



## Global changes:

- ✓ Climate Changes & Crop Production vulnerability
- ✓ World economic turmoil & resource poor farmers
- ✓ Funding Research: Global vs. Regional Themes



Thanks and we look forward  
to seeing you in May