



DAV0076

Evaluation of Primary Synthetics: Current Status and Future Prospects

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+ many collaborators**

Importation of PS from CIMMYT

- 2001 – 50
- 2002 – 53
- 2003 – 49
- 2004 – 49
- 2005 – 51
- 2006 – 57
- 2007 – 78

Total = 387

Representing

- 189 *Ae. tauschii* parents
- 38 Durum parents



Durum Wheat
(*T. durum*)
AABB



Goatgrass
(*Ae. tauschii*)
DD



Bread Wheat
(*T. aestivum*)
AABBDD

Genetic variation in synthetics for various diseases

Disease Rating	Root lesion nematode		CCN	Yellow Leaf Spot	Crown Rot	Stripe Rust	Leaf Rust	Stem Rust
	<i>P. neglectus</i>	<i>P. thornei</i>						
Resistant	7 (Abacus)	120 (GS50A)	60	9	0	68	106	156
Moderately Resistant	11	-	29	131 (H45)	58 (2-49)	52	57	59
Moderate	71	-	69	99	9	37	43	41
Moderately susceptible	74	-	70	49	168 (Sunco)	46	30	15
Susceptible	126 (Machete)	228	141	51 (Yitpi)	68	4	35	4
Total	289	348	369	338	303	207	271	275

Genetic variation in synthetics for various diseases

Disease Rating	Septoria nodorum		Septoria nodorum	
	leaf	glume	seedling	adult
Resistant	62 (6HRWSN125)	2 (6HRWSN125)	11	31
Moderately Resistant	63	60	34	39
Moderate	9	5	0	0
Moderately susceptible	64	59	37	16
Susceptible	62	174	20	16
Total	260	260	102	102

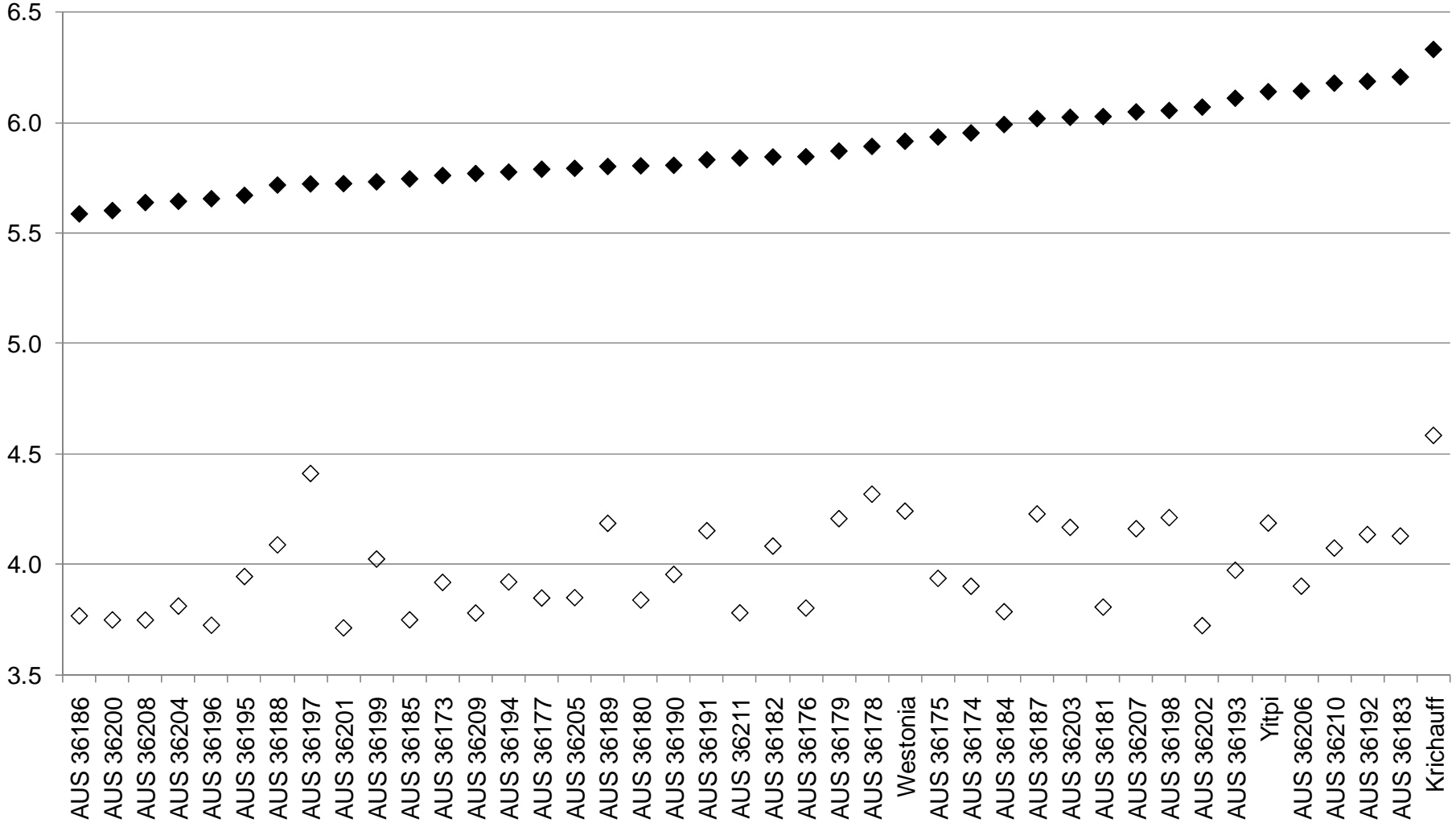
Genetic variation in synthetics for abiotic stress tolerance

Disease Rating	Boron	Salinity tolerance	Pre-harvest sprouting tolerance	Aluminium toxicity tolerance	
Resistant	9			11	
Moderately Resistant	54			37	
Moderate	114 (Halberd)			1	
Moderately susceptible	102			0	
Susceptible	54			322	
Total	333			371	

Salinity tolerance

Trial 11. Predicted means Ln(sodium)

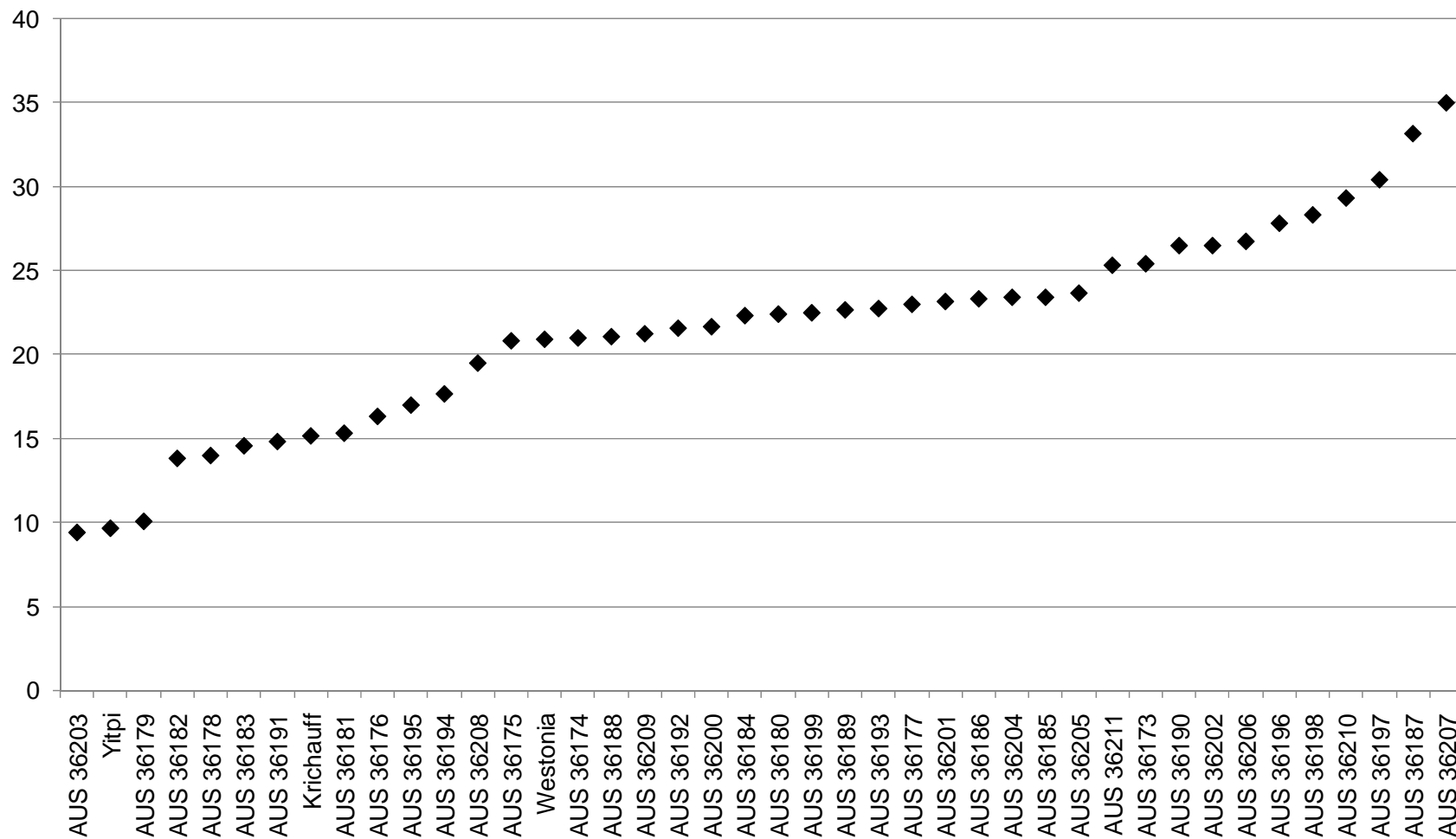
◆ Salt (sed 0.114) ◇ Control (sed 0.090)



Salinity tolerance

Trial 11. Mean ranks of difference in biomass, Salt - Control

◆ Higher values mean higher tolerance of salt



- Completion of phenotypic assessment
- Genetic analysis (Guoyou Ye)
 - Integration of DArT marker data for determining genetic distances between PS's.
 - Association genetic analysis
- Population development
 - Field selection for stripe rust in backcross derived PS lines
 - Evaluation of ca 1,000 selections taken in 2008
- Technology development
 - Development of *A. tauschii* D-genome specific markers (Matt Hayden, DPI-Bundoora)

- Determination of genetic novelty (BSA)
- Identification of elite donors for Introgression Line development
- IL development
- Genetic Mapping

AUS29663	AUS30282	AUS33410	AUS34431	AUS36181
AUS30262	AUS30292	AUS34232	AUS34434	AUS36198
AUS30264	AUS30296	AUS34239	AUS34435	
AUS30265	AUS30300	AUS34245	AUS34436	
AUS30266	AUS30301	AUS34251	AUS34438	
AUS30268	AUS30635	AUS34253	AUS34442	
AUS30269	AUS30648	AUS34270	AUS34450	
AUS30272	AUS30652	AUS34274	AUS34456	
AUS30274	AUS33405	AUS34278	AUS34459	