



**Seventh framework programme
Food, Agriculture and Fisheries, and Biotechnology**

Specific International Co-operation Actions
Small or medium scale focused research project



Sweet Sorghum an alternative energy Crop

Grant Agreement n° 227422



Deliverable 1.8:

About 10 new elite R-lines

Composition of the consortium

CIRAD
ICRISAT
EMBRAPA
KWS
IFEU
UniBO
UCSC
ARC-GCI
UANL
WIP

Selection Results from Germany and Italy:

18 Lines could be selected based on the information from Germany and Italy. In 2013 the major problem of the material was lodging before harvest in Italy and to reach the right maturity for harvesting, caused by the low temperatures during spring. The ranking of the best performing material for the trait lodging and early vigor is shown in Table 1.

Table. 1: Best performing Male-Lines in comparison to the check rows (ID 1-16)

ID	PROG	IDT	NB_COD	GENOTYPE	DER	ASM	GENER	EV in D	EV in IT	LOD IT	GIMP
1	ZM13-S4M-I	ZM2-39518	3Z2501			N	S7	4,5	3	1	2
2	ZM13-S4M-I	ZM2-39526	7Z1697			N	S10	4	3	1	2
3	ZM13-S4M-I	ZM2-39536	7Z1699			N	S10	4	4	1	1
4	ZM13-S4M-I	ZM2-39546	7Z1764			N	S10	4,5	3	1	2
5	ZM13-S4M-I	ZM2-39556	7Z1785			N	S10	3,5	3	2	3
6	ZM13-S4M-I	ZM2-39566	7Z1858			N	S10	4	4	2	1,5
7	ZM13-S4M-I	Z2N-7015	LP119			N	S10	4	4,5	1	2
8	ZM13-S4M-I	ZM2-39577	7Z2502			N	S4	4	3	1	2
9	ZM13-S4M-I	ZM2-39584	7Z2503			N	S4	4	3	1	1
10	ZM13-S4M-I	Z3P-7501	7Z2504			N	S7	3,5	3	1	1
11	ZM13-S4M-I	Z3P-7503	7Z2506			N	S6	3,5	2,5	2	1,5
12	ZM13-S4M-I	Z3P-7504	7Z2507			N	S6	3,5	2,5	2	1,5
13	ZM13-S4M-I	Z3P-7505	7Z2508			N	S6	3,5	2,5	2	2
14	ZM13-S4M-I	Z3P-7502	9Z2505			N	S6	4	2,5	4	3
15	ZM13-S4M-I	ZS1-458401	9Z1226			N	S10	4,5	3,5	5	3
16	ZM13-S4M-I	ZS0-459001	9Z2002			N	S10	4,5	4	2	3
21	ZM13-S4M-I	ZM2-41043/001		3Z60171-11211.1	IS 30441B x KELLER	N	S4	4	3	1	3
23	ZM13-S4M-I	ZM2-41044/001		3Z60171-11611.1	IS 30441B x KELLER	N	S4	4,5	4	1	3
27	ZM13-S4M-I	ZM2-41052/001		3Z60171-114211.1	IS 30441B x KELLER	N	S4	4,5	3	1	1
28	ZM13-S4M-I	ZM2-41052/002		3Z60171-114211.2	IS 30441B x KELLER	N	S4	4,5	4	3	2
29	ZM13-S4M-I	ZM2-41055/001		3Z60172-11111.1	IS 30441B x IS 30435	N	S4	4	3	3	1
30	ZM13-S4M-I	ZM2-41056/001		3Z60172-11211.1	IS 30441B x IS 30435	N	S4	4	3	4	1
48	ZM13-S4M-I	ZM2-41093/001		3Z60178-112411.1	IS 30435 x IS 29407B	N	S4	4,5	3	1	2
63	ZM13-S4M-I	ZM2-41124/001		3Z60180-112711.1	IS 30435 x KELLER	N	S4	4,5	2,5	1	2
65	ZM13-S4M-I	ZM2-41125/001		3Z60180-112911.1	IS 30435 x KELLER	N	S4	4,5	3	1	2
72	ZM13-S4M-I	ZM2-41136/002		3Z60181-114811.2	IS 30435 x IS 30308	N	S4	4	3	8	1
74	ZM13-S4M-I	ZM2-41139/002		3Z60181-116011.2	IS 30435 x IS 30308	N	S4	4	3,5	6	1
79	ZM13-S4M-I	ZM2-41150/001		3Z60182-114711.1	IS 30435 x IS 30441B	N	S4	4	2,5	5	1
80	ZM13-S4M-I	ZM2-41153/001		3Z60182-115911.1	IS 30435 x IS 30441B	N	S4	4	3	4	1
81	ZM13-S4M-I	ZM2-41155/001		3Z60182-116111.1	IS 30435 x IS 30441B	N	S4	4,5	2,5	4	1
84	ZM13-S4M-I	ZM2-41162/001		3Z60184-113211.1	IS 30351 x IS 30308	N	S4	4,5	3	8	1,5
92	ZM13-S4M-I	ZM2-41180/001		3Z60185-113911.1	IS 30308 x IS 30351	N	S4	4,5	3	7	2
97	ZM13-S4M-I	ZM2-41191/001		3Z60188-112811.1	IS 30308 x IS 30435	N	S4	4,5	3	7	1,5
99	ZM13-S4M-I	ZM2-41193/002		3Z60188-113511.2	IS 30308 x IS 30435	N	S4	4,5	3,5	7	1

EV= early vigor (1= fast development ; 9= slow development); GIMP=general impression of line (1=very good, 9=very bad); LOD= lodging before harvest (1= no plants lodging, 9=all plants are lodging)

Selection Results from France:

In summer 2013, 32 S5 lines could be selected based on the observations made in a selection nursery and the yield performance of topcross hybrids made with an elite A line, both conducted in France (Montpellier). They are derived from four crosses IS 30441 x IS 29409, IS 30441 x Keller, IS 30441 x IS 30308 and IS 30435 x IS 29407 through pedigree selection alternatively implemented first in Germany and then in South of France. All parents of these crosses belong to sorghum Cirad gene bank.

These lines have high early growth vigour, cold tolerance at seedling stage, good earliness, intermediate stem thickness with lodging tolerance and small open panicles. They are B or partial B lines regarding A1 cytoplasm sterility system.

The best performing 25 lines based on early growth vigor and earliness are described in table 2.

Table 2: Best performing S5 Male-Lines identified in the 2013 breeding nurseries

PROG	GENOTYPE	CROSS	GENER	EARLY GROWTH VIGOR	FLOWERING DATE	PLANT HEIGHT (cm)	LODGING	COMBINING ABILITY
ZU12-S3MFr-EU	3Z60170-11531111	IS 30441B x IS 29409B	S5	1	2-Aug	195	1	
ZU12-S3MFr-EU	3Z60170-11111111	IS 30441B x IS 29409B	S5	1	3-Aug	195	1	EXCELLENT
ZU12-S3MFr-EU	3Z60170-11111112	IS 30441B x IS 29409B	S5	1	3-Aug	195	1	EXCELLENT
ZU12-S3MFr-EU	3Z60170-11311111	IS 30441B x IS 29409B	S5	1	5-Aug	185	1	
ZU12-S3MFr-EU	3Z60170-11381111	IS 30441B x IS 29409B	S5	1	9-Aug	215	1	
ZU12-S3MFr-EU	3Z60173-11231111	IS 30441B x IS 30308	S5	1	10-Aug	240	1	EXCELLENT
ZU12-S3MFr-EU	3Z60170-11601111	IS 30441B x IS 29409B	S5	3	27-Jul	175	1	
ZU12-S3MFr-EU	3Z60170-11211111	IS 30441B x IS 29409B	S5	3	31-Jul	180	1	
ZU12-S3MFr-EU	3Z60170-11311111	IS 30441B x IS 29409B	S5	3	1-Aug	165	1	
ZU12-S3MFr-EU	3Z60170-11351111	IS 30441B x IS 29409B	S5	3	6-Aug	195	1	
ZU12-S3MFr-EU	3Z60173-11431111	IS 30441B x IS 30308	S5	3	8-Aug	235	1	EXCELLENT
ZU12-S3MFr-EU	3Z60171-11112111	IS 30441B x KELLER	S5	3	9-Aug	220	1	EXCELLENT
ZU12-S3MFr-EU	3Z60171-11361111	IS 30441B x KELLER	S5	3	9-Aug	220	1	
ZU12-S3MFr-EU	3Z60173-11711111	IS 30441B x IS 30308	S5	3	10-Aug	230	1	
ZU12-S3MFr-EU	3Z60173-11311111	IS 30441B x IS 30308	S5	3	11-Aug	230	1	GOOD
ZU12-S3MFr-EU	3Z60170-11291111	IS 30441B x IS 29409B	S5	3	14-Aug	215	1	EXCELLENT
ZU12-S3MFr-EU	3Z60170-11711111	IS 30441B x IS 29409B	S5	3	no	210	1	
ZU12-S3MFr-EU	3Z60178-11411211	IS 30435 x IS 29407B	S5	5	3-Aug	190	1	
ZU12-S3MFr-EU	3Z60178-11411111	IS 30435 x IS 29407B	S5	5	6-Aug	210	1	
ZU12-S3MFr-EU	3Z60173-11611111	IS 30441B x IS 30308	S5	5	7-Aug	235	1	EXCELLENT
ZU12-S3MFr-EU	3Z60173-11351111	IS 30441B x IS 30308	S5	5	8-Aug	225	1	
ZU12-S3MFr-EU	3Z60173-11231121	IS 30441B x IS 30308	S5	5	10-Aug	250	1	
ZU12-S3MFr-EU	3Z60173-11661111	IS 30441B x IS 30308	S5	5	10-Aug	215	1	GOOD
ZU12-S3MFr-EU	3Z60170-11551111	IS 30441B x IS 29409B	S5	5	11-Aug	230	1	
ZU12-S3MFr-EU	3Z60173-11371111	IS 30441B x IS 30308	S5	5	11-Aug	225	1	

EARLY GROWTH VIGOR (1= fast development ; 9= slow development); LODGING before harvest (1= no plants lodging, 9=all plants are lodging).