Seventh framework programme
Food, Agriculture and Fisheries, and Biotechnology

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

Sweet Fuel

Sweet Sorghum an alternative energy Crop

Grant Agreement n° 227422

WP1
Deliverable 1.6:

Thirty R-lines identified for production of hybrid cultivars with at least one trait of interest (cold tolerance, early vigour, WUE or biomass yield)

Composition of the consortium

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

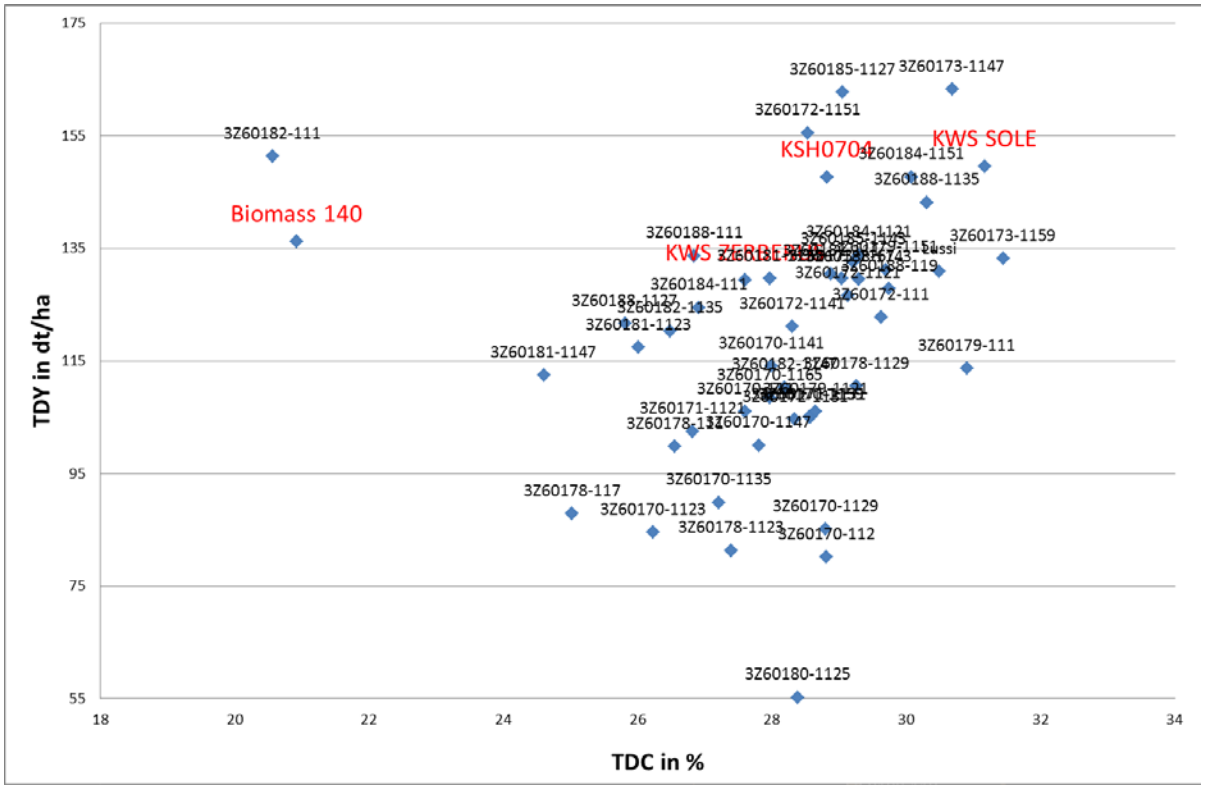
Selection of R-Lines on Hybrid-Level

Best selected restorer lines of each family were crossed on an early KWS female. The seed was available at the end of April in Germany and could be planted on six locations in Germany and on one location in Italy. Material is planted in a two-row system, so that both rows will be harvested by a chopper. Dry matter content will be evaluated by a NIRS-System. Dry matter yield will be evaluated by an on-board scale. Germination of the material was very good (see picture) and evaluation of early vigour could be started in the next week in Germany. The Material is also sent to CIRAD for evaluation in Southern France.

Fig. 1: Sorghum Yield plots: Germination on location in Klein Wanzleben (19.06.2012)

The Test-Cross seed (TC-seed) was produced on a mid-early cms-female. Due to the results from the vegetation period from 2011 the mid-late cms-female was not used again.In Graphic 1 the average yield compared to the dry matter content of the tested hybrids is shown

- TDY = Total Dry matter Yield in dt/ha
- TDC= Total Dry matter Content in %



Graph. 1: Yield potential of the tested restorer lines compared to the Checks (Biomass 140, KWS ZERBERUS, KSH0704 and KWS SOLE)

At the end of the vegetation period of 2012 the new restorer lines reached the first time a yield-potential above the used checks (Biomass 140, KWS SOLE, KWS ZERBERUS and the new Hybrid KSH0704). For the detailed results please look into Table 1.
To the material listed in table 1, can be added the material listed in table 2 and identified by Cirad.

Table 1: Detailed results of the best performing males in the yield –plots (TDY = Total Dry matter Yield in dt/ha; TDC= Total Dry matter Content in %)

Num	Class	Name/Female	Male	TDC	TDY
1	Check	**Biomass 140**		20,92	136,24
2		341.602	3Z60170-111	27,6	105,97
3		341.602	3Z60170-112	28,81	80,15
4		341.602	3Z60170-1123	26,23	84,53
5		341.602	3Z60170-1129	28,8	85,15
6		341.602	3Z60170-1135	27,21	89,86
7		341.602	3Z60170-1141	27,99	114,07
8		341.602	3Z60170-1147	27,8	100
9		341.602	3Z60170-1159	28,58	105
10		341.602	3Z60170-1165	27,97	108,45
11	Check	**KWS SOLE**		31,17	149,59
12		341.602	3Z60171-1121	26,82	102,5
13		341.602	33Z60171-1131	28,55	105
14		341.602	3Z60172-111	29,62	122,72
15		341.602	3Z60172-1121	29,13	126,58
16		341.602	3Z60172-1131	28,33	104,57
17		341.602	3Z60172-1141	28,3	121,09
18		341.602	3Z60172-1151	28,53	155,51
19		341.602	3Z60173-1147	30,68	163,25
20		341.602	3Z60173-1159	31,44	133,15
21	Check	**KWS ZERBERUS**		27,6	129,34
22		341.602	3Z60173-1167	29,04	129,63
23		341.602	3Z60178-111	26,55	99,82
24		341.602	3Z60178-1123	27,39	81,33
25		341.602	3Z60178-1129	29,26	110,5
26		341.602	3Z60178-117	25,02	87,82
27		341.602	3Z60179-111	30,9	113,7
28		341.602	3Z60179-1121	28,65	105,95
29		341.602	3Z60179-1151	29,69	131,19
30		341.602	3Z60180-1125	28,38	55,22
31	Check	**KSH0704**		28,82	147,69
32		341.602	3Z60181-111	28,88	130,52
33		341.602	3Z60181-1123	26,01	117,4
34		341.602	3Z60181-1135	27,97	129,59
35		341.602	3Z60181-1147	24,6	112,41
36		341.602	3Z60182-111	20,56	151,29
37		341.602	3Z60182-1135	26,48	120,36
38		341.602	3Z60182-1147	28,19	110,33
39		341.602	3Z60184-111	26,91	124,44
40		341.602	3Z60184-1121	29,29	133,79
41	Check	**Lussi**		30,49	130,86
42		341.602	3Z60184-1151	30,08	147,65
43		341.602	3Z60185-1127	29,05	162,68
44		341.602	3Z60185-1143	29,21	132,53
45		341.602	3Z60188-111	26,84	133,68
46		341.602	3Z60188-1127	25,81	121,67
47		341.602	3Z60188-1135	30,31	143,14
48		341.602	3Z60188-1143	29,29	129,47
49		341.602	3Z60188-119	29,74	127,79

Table 2 : New lines of male pool with traits of interest for biomass production in temperate areas

			Montpellier, France 2012 S					Montpellier, France 2013 S				
2012 trial entry	GENOTYPE	CROSS	Genera-tion	vigor of emerg.*	seedling growth *	Date of 50% flowering	Plant height (cm)	Genera-tion	vigor of emerg *	seedling growth *	Average seedling growth (2012+2013 S)	Seedling growth of testcross hybrids (2013S)
check1	Biomass 140		F1	3	4	29-Aug	341	F1	4	2	3	
check2	Sucro506		F1	3	5	20-Aug	291	F1	2,5	3	4	
check3	HSB160		F1	5	5	15-Aug	316	F1	3	5	5	
check4	HSB193		F1	5	7	no flowering	390	F1	2	5	6	
E601	3Z60170-111111	IS 30441B x IS 29409B	S3	1	3	28-Jul	190	S4	1	1	2	3
E602	3Z60170-113111	IS 30441B x IS 29409B	S3	3	5	1-Aug	180	S4	3	1	3	3
E603	3Z60170-114111	IS 30441B x IS 29409B	S3	1	1	~ 25/07	150	S4	1	1	1	5
E604	3Z60170-112111	IS 30441B x IS 29409B	S3	5	5	30-Jul	170	S4	3	3	4	5
E605	3Z60170-117111	IS 30441B x IS 29409B	S3	3	1	3-Aug	180	S4	5	3	2	7
E606	3Z60170-118111	IS 30441B x IS 29409B	S3	3	5	3-Aug	160	S4	5	3	4	5
E610	3Z60170-1129111	IS 30441B x IS 29409B	S3	1	1	4-Aug	180	S4	7	3	2	3
E612	3Z60170-1131111	IS 30441B x IS 29409B	S3	3	3	~ 26/07	140	S4	5	3	3	3
E613	3Z60170-1135111	IS 30441B x IS 29409B	S3	5	5	30-Jul	170	S4	3	3	4	5
E615	3Z60170-1138111	IS 30441B x IS 29409B	S3	5	3	4-Aug	170	S4	3	1	2	3
E619	3Z60170-1147111	IS 30441B x IS 29409B	S3	5	3	28-Jul	155	S4	5	5	4	5
E622	3Z60170-1153111	IS 30441B x IS 29409B	S3	5	3	29-Jul	160	S4	3	1	2	5
E624	3Z60170-1155111	IS 30441B x IS 29409B	S3	3	3	28-Jul	170	S4	5	5	4	7
E626	3Z60170-1160111	IS 30441B x IS 29409B	S3	5	3	< 25/07	175	S4	3	3	3	5
E628	3Z60170-1165111	IS 30441B x IS 29409B	S3	3	1	1-Aug	160	S4	5	3	2	5
E631	3Z60171-111121	IS 30441B x KELLER	S3	3	1	31-Jul	190	S4	6	3	2	3,5
E632	3Z60171-112111	IS 30441B x KELLER	S3	5	5	3-Aug	175	S4	7	5	5	
E634	3Z60171-1121121	IS 30441B x KELLER	S3	5	3	30-Jul	170	S4	3	3	3	3
E636	3Z60171-1126111	IS 30441B x KELLER	S3	5	3	2-Aug	155	S4	7	5	4	1

E638	3Z60171-1132111	IS 30441B x KELLER	S3	5	5	29-Jul	160	S4	5	5	5	3
E639	3Z60171-1136111	IS 30441B x KELLER	S3	5	5	28-Jul	150	S4	6	3	4	3
E644	3Z60171-1151111	IS 30441B x KELLER	S3	7	3	28-Jul	150	S4	7	5	4	5
E646	3Z60171-1156111	IS 30441B x KELLER	S3	5	3	3-Aug	170	S4	3	3	3	1
E651	3Z60173-117111	IS 30441B x IS 30308	S3	3	3	2-Aug	180	S4	5	3	3	3
E652	3Z60173-118111	IS 30441B x IS 30308	S3	1	1	4-Aug	185	S4	6	3	2	3
E654	3Z60173-1123111	IS 30441B x IS 30308	S3	1	1	2-Aug	190	S4	3	1	1	3
E654	3Z60173-1123112	IS 30441B x IS 30308	S3	1	1	2-Aug	190	S4	5	5	3	5
E659	3Z60173-1131111	IS 30441B x IS 30308	S3	5	1	8-Aug	180-200	S4	3	3	2	3
E660	3Z60173-1135111	IS 30441B x IS 30308	S3	1	1	2-Aug	180-200	S4	5	5	3	1
E662	3Z60173-1137111	IS 30441B x IS 30308	S3	1	1	2-Aug	180-200	S4	5	5	3	3
E665	3Z60173-1143111	IS 30441B x IS 30308	S3	3	3	5-Aug	180-200	S4	1	5	4	3
E669	3Z60173-1153111	IS 30441B x IS 30308	S3	1	1	7-Aug	180-200	S4	7	7	4	3
E671	3Z60173-1155111	IS 30441B x IS 30308	S3	1	3	5-Aug	180-200	S4	5	3	3	1
E674	3Z60173-1161111	IS 30441B x IS 30308	S3	1	1	1-Aug	180-200	S4	6	5	3	5
E675	3Z60173-1165111	IS 30441B x IS 30308	S3	3	3	31-Jul	170	S4	3	3	3	3
E676	3Z60173-1166111	IS 30441B x IS 30308	S3	3	1	2-Aug	180-200	S4	5	5	3	3,5
E680	3Z60178-114111	IS 30435 x IS 29407B	S3	3	3	30-Jul	190	S4	5	5	4	5
E680	3Z60178-114112	IS 30435 x IS 29407B	S3	3	3	30-Jul	190	S4	5	5	4	5
E682	3Z60178-117111	IS 30435 x IS 29407B	S3	3	5	4-Aug	170	S4	3	5	5	5
E683	3Z60178-118111	IS 30435 x IS 29407B	S3	5	5	1-Aug	160	S4	5	7	6	3
E686	3Z60178-1124111	IS 30435 x IS 29407B	S3	3	3	7-Aug	180	S4	5	5	4	3
E693	3Z60178-1135111	IS 30435 x IS 29407B	S3	3	3	10-Aug	200	S4	7	5	4	3
E696	3Z60178-1139111	IS 30435 x IS 29407B	S3	1	3	8-Aug	200	S4	3	3	3	no