

Rainy Season Cultivars and Hybrid Parents

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Abstract This chapter entitled “Rainy season cultivars and hybrid parents” gives a focussed description of improved sweet sorghum varieties/restorers, hybrids and female hybrid parents (as per PPVFRA). The coloured picture of the line is provided for easy identification. The genetic variability for all the metric traits is conspicuous and for some of the qualitative traits like anthocyanin coloration, glume color differences between the lines are not quite revealing. Among the biochemical traits such as sucrose, glucose and fructose the differences are significant among the cultivars.

Keywords Cultivars · Hybrids · Pedigree · Rainy · Kharif · Quantitative Traits · Brix%, stalk yield, sugar yield, grain yield · Glucose · Fructose · Sucrose

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1 ICSV 700 Salient Features



1. Pedigree: (IS 1082 \times SC 108-3)-1-1-1-1-1.
2. Days to 50 % flowering: 84 days.
3. Plant height (m): 3.4
4. Plant girth (mm): 17.6
5. Biomass yield (t ha^{-1}): 45.6
6. Juice yield (t ha^{-1}): 17.4
7. Juice extraction (%): 38
8. Brix (%): 16
9. Sugar yield (t ha^{-1}): 2.1
10. Grain yield (t ha^{-1}): 3.1
11. Male fertility restoration (%): 85
12. Sucrose (%): 7.9
13. Glucose (%): 0.7
14. Fructose (%): 0.2
15. pH of juice: 5.0
16. Electrical conductivity of juice (mS m^{-1}).
* Milli siemens per meter: 8.4
17. Tolerance to: Stem borer, Shootfly, Rust.
18. Adaptation: Rainy season.

Traits recorded as per guidelines for sorghum as approved by PPVFRA^a

Characteristics	Characteristic value of candidate variety									Remarks measured value etc.
	1	2	3	4	5	6	7	8	9	
Seedling: anthocyanin colouration of coleoptile		✓								Purple
Leaf sheath: anthocyanin colouration	✓									Green
Leaf: midrib colour (5th fully developed leaf)	✓									Green
Plant: time of panicle emergence (50 % of the plants with complete panicle emergence)							✓			84
Plant: natural height of foliage up to base of flag leaf									✓	3.1
Flag leaf: yellow colouration of midrib	✓									Absent
Lemma: arista formation (awns)									✓	Strong
Stigma: anthocyanin coloration	✓									Absent
Stigma: yellow coloration					✓					Medium
Stigma length (mm)									✓	Long
Flower with pedicel: length of flower					✓					Medium
Anther: length					✓					Medium
Anther: colour of dry anther				✓						Orange
Glume: color				✓						Light red
Plant: total height									✓	3.4
Stem: diameter (at lower one-third height of plant) (mm)			✓							17.6
Leaf: length of blade of the third leaf from top including flag leaf (cm)							✓			71.6
Leaf: width of blade of the third leaf from top including flag leaf (cm)									✓	8.1
Panicle: length without peduncle			✓							18.6
Panicle: length of branches (middle third of panicle)					✓					6.1
Panicle: density at maturity (ear head compactness)							✓			Semi compact
Panicle: shape			✓							Symmetric
Neck of panicle: visible length above sheath (cm)	✓									3.8
Glume coverage (%)			✓							50
Threshability					✓					Partly threshable
Caryopsis: colour after threshing	✓									White
Grain: weight of 1000 grains (g)					✓					28.0
Grain: shape in dorsal view			✓							Circular
Grain: shape in profile view			✓							Circular
Grain: size of mark of germ							✓			Large
Grain: texture of endosperm (in longitudinal section)							✓			25 % corneous
Grain: colour of vitreous albumen			✓							Yellow
Grain: lustre							✓			Lustrous

^a PPVFRA Protection of Plant Varieties and Farmers Rights Act

2 ICSV 25272 Salient Features



1. Pedigree: (DSV 4 × SSV 84)-2-2-1-2
2. Days to 50 % flowering: 74 days.
3. Plant height (cm): 3.1
4. Plant girth (mm): 14.5
5. Biomass yield (t ha^{-1}): 55.6
6. Juice yield (t ha^{-1}): 26.3
7. Juice extraction (%): 47
8. Brix (%) 17
9. Sugar yield (t ha^{-1}): 3.2
10. Grain yield (t ha^{-1}): 3.4
11. Male fertility restoration (%): 80
12. Sucrose (%): 6.4
13. Glucose (%): 1.8
14. Fructose (%): 1.1
15. pH of Juice: 5.0
16. Electrical conductivity of Juice (mS m^{-1}) * Milli siemens per meter: 9.5
17. Tolerance to: Aphids.
18. Adaptation: Rainy season.

Traits recorded as per guidelines for sorghum as approved by PPVFRA^a

Characteristics	Characteristic value of candidate variety									Remarks measured value etc.
	1	2	3	4	5	6	7	8	9	
Seedling: anthocyanin colouration of coleoptile		✓								Purple
Leaf sheath: anthocyanin colouration	✓									Green
Leaf: midrib colour (5th fully developed leaf)			✓							Brown
Plant: time of panicle emergence (50 % of the plants with complete panicle emergence)					✓					74
Plant: natural height of foliage up to base of flag leaf							✓			3
Flag leaf: yellow colouration of midrib	✓									Absent
Lemma: arista formation (awns)	✓									Absent
Stigma: anthocyanin coloration	✓									Absent
Stigma: yellow coloration	✓									Absent
Stigma length (mm)									✓	Long
Flower with pedicel: length of flower					✓					Medium
Anther: length							✓			Long
Anther: colour of dry anther				✓						Orange
Glume: color				✓						Light red
Plant: total height									✓	3.3
Stem: diameter (at lower one-third height of plant) (mm)			✓							14.5
Leaf: length of blade of the third leaf from top including flag leaf (cm)							✓			75.1
Leaf: width of blade of the third leaf from top including flag leaf (cm)							✓			6.7
Panicle: length without peduncle					✓					22.9
Panicle: length of branches (middle third of panicle)					✓					7.8
Panicle: density at maturity (ear head compactness)					✓					Semi Loose
Panicle: shape			✓							Symmetric
Neck of panicle: visible length above sheath (cm)					✓					14.7
Glume coverage (%)			✓							50
Threshability					✓					Partly threshable
Caryopsis: colour after threshing	✓									White
Grain: weight of 1000 grains (g)					✓					33
Grain: shape in dorsal view			✓							Circular
Grain: shape in profile view			✓							Circular
Grain: size of mark of germ							✓			Large
Grain: texture of endosperm (in longitudinal section)							✓			25 % corneous
Grain: colour of vitreous albumen			✓							Yellow
Grain: lustre					✓					Medium

^a PPVFRA Protection of Plant Varieties and Farmers Rights Act

3 ICSV 25274 Salient Features



1. Pedigree: (DSV 4 × SSV 84)-2-5-1-3
2. Days to 50 % flowering: 87 days
3. Plant height (m): 3.5
4. Plant girth (mm): 20.45
5. Biomass yield (t ha^{-1}): 49.1
6. Juice yield (t ha^{-1}): 19.6
7. Juice extraction (%): 40
8. Brix (%): 20
9. Sugar yield (t ha^{-1}): 2.9
10. Grain yield (t ha^{-1}): 2.6
11. Male fertility restoration (%): 85
12. Sucrose (%): 9.6
13. Glucose (%): 2.0
14. Fructose (%): 0.4
15. pH of Juice: 5.0
16. Electrical conductivity of Juice (mS m^{-1}) * milli siemens per meter: 8.1
17. Tolerance to: Aphids, moderately resistant to Shoot fly and Grain mold.
18. Adaptation: Rainy season

Traits recorded as per guidelines for sorghum as approved by PPVFRA^a

Characteristics	Characteristic value of candidate variety									Remarks measured value etc.
	1	2	3	4	5	6	7	8	9	
Seedling: anthocyanin colouration of coleoptiles			✓							Purple
Leaf sheath: anthocyanin colouration		✓								Green
Leaf: midrib colour (5th fully developed leaf)				✓						Brown
Plant: time of panicle emergence (50 % of the plants with complete panicle emergence)			✓							87
Plant: natural height of foliage up to base of flag leaf							✓			3.0
Flag leaf: yellow colouration of midrib		✓								Absent
Lemma: arista formation (awns)		✓								Absent
Stigma: anthocyanin coloration		✓								Absent
Stigma: yellow coloration		✓								Absent
Stigma length (mm)					✓					Medium
Flower with pedicel: length of flower					✓					Medium
Anther: length					✓					Medium
Anther: colour of dry anther				✓						Orange
Glume: color							✓			Purple
Plant: total height								✓		3.5
Stem: diameter (at lower one-third height of plant) (mm)			✓							19.7
Leaf: length of blade of the third leaf from top including flag leaf (cm)								✓		88.7
Leaf: width of blade of the third leaf from top including flag leaf (cm)								✓		9.8
Panicle: length without peduncle					✓					21.3
Panicle: length of branches (middle third of panicle)					✓					8.1
Panicle: density at maturity (ear head compactness)							✓			Semi compact
Panicle: shape			✓							Symmetric
Neck of panicle: visible length above sheath (cm)			✓							8.3
Glume coverage (%)		✓								25
Threshability		✓								Freely threshable
Caryopsis: colour after threshing		✓								White
Grain: weight of 1000 grains (g)								✓		49.0
Grain: shape in dorsal view				✓						Circular
Grain: shape in profile view				✓						Circular
Grain: size of mark of germ							✓			Large
Grain: texture of endosperm (in longitudinal section)			✓							75 % corneous
Grain: colour of vitreous albumen			✓							Yellow
Grain: luster							✓			Lustrous

^a PPVFRA Protection of Plant Varieties and Farmers Rights Act

4 ICSV 25275 Salient Features



1. Pedigree: (IS 19587 \times B 24)-2-1-1-1
2. Days to 50 % flowering: 81 days
3. Plant height (m): 3.3
4. Plant girth (mm): 15.2
5. Biomass yield (t ha^{-1}): 46.6
6. Juice yield (t ha^{-1}): 11.8
7. Juice extraction (%): 23.5
8. Brix (%): 16
9. Sugar yield (t ha^{-1}): 2.8
10. Grain yield (t ha^{-1}): 2.7
11. Male fertility restoration (%): 85
12. Sucrose (%): 7.7
13. Glucose (%): 1.7
14. Fructose (%): 0.4
15. pH of Juice: 5.0
16. Electrical conductivity of juice (mS m^{-1}) * milli siemens per meter: 7.7
17. Tolerance to: Shootfly, Aphids, Rust.
18. Adaptation: Rainy season

Traits recorded as per guidelines for sorghum as approved by PPVFRA^a

Characteristics	Characteristic value of candidate variety									Remarks measured value etc.
	1	2	3	4	5	6	7	8	9	
Seedling: anthocyanin colouration of coleoptile		✓								Purple
Leaf sheath: anthocyanin colouration			✓							Purple
Leaf: midrib colour (5th fully developed leaf)				✓						Brown
Plant: time of panicle emergence (50 % of the plants with complete panicle emergence)							✓			81 days
Plant: natural height of foliage up to base of flag leaf							✓			2.8
Flag leaf: yellow colouration of midrib	✓									Absent
Lemma: arista formation (awns)									✓	Strong
Stigma: anthocyanin coloration	✓									Absent
Stigma: yellow coloration	✓									Absent
Stigma length (mm)					✓					Medium
Flower with pedicel: length of flower					✓					Medium
Anther: length					✓					Medium
Anther: colour of dry anther				✓						Dark orange
Glume: color					✓					Red
Plant: total height										
Stem: diameter (at lower one-third height of plant) (mm)			✓							15.2
Leaf: length of blade of the third leaf from top including flag leaf (cm)							✓			72.7
Leaf: width of blade of the third leaf from top including flag leaf (cm)							✓			7.9
Panicle: length without peduncle			✓							17.1
Panicle: length of branches (middle third of panicle)					✓					5.4
Panicle: density at maturity (ear head compactness)							✓			Semi compact
Panicle: shape			✓							Symmetric
Neck of panicle: visible length above sheath (cm)			✓							6.7
Glume coverage (%)			✓							50
Threshability	✓									Partly threshable
Caryopsis: colour after threshing	✓									White
Grain: weight of 1000 grains (g)					✓					30.0
Grain: shape in dorsal view			✓							Circular
Grain: shape in profile view			✓							Circular
Grain: size of mark of germ							✓			Large
Grain: texture of endosperm (in longitudinal section)							✓			25 % corneous
Grain: colour of vitreous albumen			✓							Yellow
Grain: lustre					✓					Medium

^a PPVFRA Protection of Plant Varieties and Farmers Rights Act

5 ICSV 25280 Salient Features



1. Pedigree: (ICSV 93046 \times SSV 84)-7-2-1-3
2. Days to 50 % flowering: 83 days
3. Plant height (m): 3.3
4. Plant girth (mm): 15.1
5. Biomass yield (t ha^{-1}): 45.4
6. Juice yield (t ha^{-1}): 24.4
7. Juice extraction (%): 54
8. Brix (%): 19
9. Sugar yield (t ha^{-1}): 3.1
10. Grain yield (t ha^{-1}): 2.4
11. Male fertility restoration (%): 90
12. Sucrose (%): 8.9
13. Glucose (%): 1.9
14. Fructose (%): 0.4
15. pH of juice: 5.0
16. Electrical conductivity of juice (mS m^{-1}) * milli siemens per meter: 7.6
17. Tolerance to: Aphids, Shootfly, Stem borer.
18. Adaptation: Rainy season.

Traits recorded as per guidelines for sorghum as approved by PPVFRA^a

Characteristics	Characteristic value of candidate variety									Remarks measured value etc.
	1	2	3	4	5	6	7	8	9	
Seedling: anthocyanin colouration of coleoptile		✓								Purple
Leaf sheath: anthocyanin colouration			✓							Purple
Leaf: midrib colour (5th fully developed leaf)	✓									Green
Plant: time of panicle emergence (50 % of the plants with complete panicle emergence)							✓			83 days
Plant: natural height of foliage up to base of flag leaf							✓			2.7
Flag leaf: yellow colouration of midrib	✓									Absent
Lemma: arista formation (awns)									✓	Strong
Stigma: anthocyanin coloration	✓									Absent
Stigma: yellow coloration					✓					Medium
Stigma length (mm)					✓					Medium
Flower with pedicel: length of flower					✓					Medium
Anther: length					✓					Medium
Anther: colour of dry anther				✓						Dark orange
Glume: color							✓			Purple
Plant: total height							✓			3.3
Stem: diameter (at lower one-third height of plant) (mm)		✓								15.1
Leaf: length of blade of the third leaf from top including flag leaf (cm)							✓			72.4
Leaf: width of blade of the third leaf from top including flag leaf (cm)								✓		8.5
Panicle: length without peduncle			✓							16.8
Panicle: length of branches (middle third of panicle)					✓					6.1
Panicle: density at maturity (ear head compactness)							✓			Semi compact
Panicle: shape			✓							Symmetric
Neck of panicle: visible length above sheath (cm)			✓							6.5
Glume coverage (%)			✓							50
Threshability					✓					Partly threshable
Caryopsis: colour after threshing	✓									White
Grain: weight of 1000 grains (g)					✓					34.0
Grain: shape in dorsal view			✓							Circular
Grain: shape in profile view			✓							Circular
Grain: size of mark of germ							✓			Large
Grain: texture of endosperm (in longitudinal section)			✓							75 % corneous
Grain: colour of vitreous albumen			✓							Yellow
Grain: lustre							✓			Lustrous

^a PPVFRA Protection of Plant Varieties and Farmers Rights Act

6 ICSV 93046 Salient Features



1. Pedigree: [(IS 1082 × SC 108 -3)-1-1-1-1-1) × (((IS 5622 × CS 3541)-20-1-1-1-1-1-1 × (UChV2 × Bulk Y-55)-1-5-1)]-9-3-1-1-1
2. Days to 50 % flowering: 86 days
3. Plant height (m): 3.6
4. Plant girth (mm): 17.9
5. Biomass yield (t ha^{-1}): 54.0
6. Juice yield (t ha^{-1}): 25.6
7. Juice extraction (%): 47
8. Brix (%): 19
9. Sugar yield (t ha^{-1}): 3.1
10. Grain yield (t ha^{-1}): 2.7
11. Male fertility restoration (%): 90
12. Sucrose (%): 9.0
13. Glucose (%): 1.6
14. Fructose (%): 0.2
15. pH of Juice: 5.0
16. Electrical conductivity of juice (mS m^{-1}) * Milli siemens per meter: 8.9
17. Tolerance to: Shootfly, Anthracnose, Grain mold and Downy mildew.
18. Adaptation: Rainy season/Post rainy season.

Traits recorded as per guidelines for sorghum as approved by PPVFRA^a

Characteristics	Characteristic value of candidate variety									Remarks Measured value etc.
	1	2	3	4	5	6	7	8	9	
Seedling: anthocyanin colouration of coleoptile		✓								Purple
Leaf sheath: anthocyanin colouration	✓									Green
Leaf: midrib colour (5th fully developed leaf)				✓						Brown
Plant: time of panicle emergence (50 % of the plants with complete panicle emergence)								✓		86
Plant: natural height of foliage up to base of flag leaf								✓		3.3
Flag leaf: yellow colouration of midrib	✓									Absent
Lemma: arista formation (awns)					✓					Medium
Stigma: anthocyanin coloration	✓									Absent
Stigma: yellow coloration	✓									Absent
Stigma length (mm)						✓				Medium
Flower with pedicel: length of flower						✓				Medium
Anther: length						✓				Medium
Anther: colour of dry anther				✓						Orange
Glume: color					✓					Red
Plant: total height								✓		3.6
Stem: diameter (at lower one-third height of plant) (mm)			✓							17.9
Leaf: length of blade of the third leaf from top including flag leaf (cm)							✓			72.8
Leaf: width of blade of the third leaf from top including flag leaf (cm)								✓		8.4
Panicle: length without peduncle			✓							18.1
Panicle: length of branches (middle third of panicle)					✓					7.3
Panicle: density at maturity (ear head compactness)							✓			Semi compact
Panicle: shape			✓							Symmetric
Neck of panicle: visible length above sheath (cm)			✓							5.3
Glume coverage (%)			✓							50
Threshability	✓									Freely threshable
Caryopsis: colour after threshing	✓									White
Grain: weight of 1000 grains (g)					✓					27.0
Grain: shape in dorsal view			✓							Circular
Grain: shape in profile view			✓							Circular
Grain: size of mark of germ							✓			Large
Grain: texture of endosperm (in longitudinal section)							✓			25 % corneous
Grain: colour of vitreous albumen			✓							Yellow
Grain: luster							✓			Lustrous

^a PPVFRA Protection of Plant Varieties and Farmers Rights Act

7 SPV 422 Salient Features



1. Pedigree: Good grain 1485 (ICSV 574/ICSR 165)
2. Days to 50 % flowering: 86 days.
3. Plant height (m): 3.1
4. Plant girth (mm): 21.6
5. Biomass yield (t ha^{-1}): 47.6
6. Juice yield (t ha^{-1}): 18.7
7. Juice extraction (%): 39
8. Brix (%): 20
9. Sugar yield (t ha^{-1}): 2.8
10. Grain yield (t ha^{-1}): 3.1
11. Male fertility restoration (%): 85
12. Sucrose (%): 9.6
13. Glucose (%): 2.6
14. Fructose (%): 0.2
15. pH of juice: 5.0
16. Electrical conductivity of juice (mS m^{-1})* milli siemens per meter: 8.8
17. Tolerance to: Anthracnose, Leaf blight.
18. Adaptation: Rainy season

Traits recorded as per guidelines for sorghum as approved by PPVFRA^a

Characteristics	Characteristic value of candidate variety									Remarks Measured value etc.
	1	2	3	4	5	6	7	8	9	
Seedling: anthocyanin colouration of coleoptile		✓								Purple
Leaf sheath: anthocyanin colouration	✓									Green
Leaf: midrib colour (5th fully developed leaf)	✓									Green
Plant: time of panicle emergence (50 % of the plants with complete panicle emergence)							✓			86
Plant: natural height of foliage up to base of flag leaf							✓			2.6
Flag leaf: yellow colouration of midrib	✓									Absent
Lemma: arista formation (awns)	✓									Absent
Stigma: anthocyanin coloration	✓									Absent
Stigma: yellow coloration	✓									Absent
Stigma length (mm)			✓							Short
Flower with pedicel: length of flower					✓					Medium
Anther: length					✓					Medium
Anther: colour of dry anther				✓						Orange
Glume: color							✓			Purple
Plant: total height								✓		3.1
Stem: diameter (at lower one-third height of plant) (mm)					✓					21.6
Leaf: length of blade of the third leaf from top including flag leaf (cm)								✓		85.2
Leaf: width of blade of the third leaf from top including flag leaf (cm)							✓			7.4
Panicle: length without peduncle			✓							16.8
Panicle: length of branches (middle third of panicle)					✓					6.2
Panicle: density at maturity (ear head compactness)							✓			Semi compact
Panicle: shape			✓							Symmetric
Neck of panicle: visible length above sheath (cm)	✓									4.3
Glume coverage (%)	✓									25
Threshability					✓					Partly threshable
Caryopsis: colour after threshing	✓									White
Grain: weight of 1000 grains (g)							✓			35.0
Grain: shape in dorsal view			✓							Circular
Grain: shape in profile view			✓							Circular
Grain: size of mark of germ							✓			Large
Grain: texture of endosperm (in longitudinal section)			✓							75 % corneous
Grain: colour of vitreous albumen			✓							Yellow
Grain: lustre							✓			Lustrous

^a PPVFRA Protection of Plant Varieties and Farmers Rights Act

8 SSV 74 Salient Features



1. Pedigree: Selection from PAB 74 (Sudan; Bred by UAS, Dharwad)
2. Days to 50 % flowering: 84 days
3. Plant height (m): 3.3
4. Plant girth (mm): 20.66
5. Biomass yield (t ha^{-1}): 41.5
6. Juice yield (t ha^{-1}): 14.9
7. Juice extraction (%): 36
8. Brix (%): 16
9. Sugar yield (t ha^{-1}): 1.8
10. Grain yield (t ha^{-1}): 1.5
11. Male fertility restoration (%): 90
12. Sucrose (%): 7.0
13. Glucose (%): 1.5
14. Fructose (%): 0.3
15. pH of juice: 5.0
16. Electrical conductivity of juice (mS m^{-1}) * milli siemens per meter: 7.8
17. Tolerance to: Aphids, Rust.
18. Adaptation: Rainy season

Traits recorded as per guidelines for sorghum as approved by PPVFRA^a

Characteristics	Characteristic value of candidate variety									Remarks measured value etc.
	1	2	3	4	5	6	7	8	9	
Seedling: anthocyanin colouration of coleoptile	✓									Grayed purple
Leaf sheath: anthocyanin colouration	✓									Grayed purple
Leaf: midrib colour (5th fully developed leaf)			✓							Yellow green
Plant: time of panicle emergence (50 % of the plants with complete panicle emergence)							✓			84
Plant: natural height of foliage up to base of flag leaf									✓	3.0
Flag leaf: yellow colouration of midrib							✓			Absent
Lemma: arista formation (awns)	✓									Absent
Stigma: anthocyanin coloration	✓									Present
Stigma: yellow coloration	✓									Absent
Stigma length (mm)			✓							Short
Flower with pedicel: length of flower						✓				Long
Anther: length						✓				Short
Anther: colour of dry anther					✓					Orange
Glume: color						✓				Grayed purple
Plant: total height									✓	3.3
Stem: diameter (at lower one-third height of plant) (mm)			✓							18.2
Leaf: length of blade of the third leaf from top including flag leaf (cm)							✓			Medium
Leaf: width of blade of the third leaf from top including flag leaf (cm)									✓	Very broad
Panicle: length without peduncle						✓				Medium
Panicle: length of branches (middle third of panicle)						✓				Medium
Panicle: density at maturity (ear head compactness)						✓				Semi loose
Panicle: shape						✓				Panicle Broader at Upper part
Neck of panicle: visible length above sheath (cm)			✓							Very short
Glume coverage (%)			✓							Short
Threshability						✓				Partly threshable
Caryopsis: colour after threshing	✓									White
Grain: weight of 1000 grains (g)							✓			36.0
Grain: shape in dorsal view			✓							Elliptic
Grain: shape in profile view			✓							Elliptic
Grain: size of mark of germ							✓			Large
Grain: texture of endosperm (in longitudinal section)							✓			25 % corneous
Grain: colour of vitreous albumen			✓							Grayed yellow
Grain: lustre							✓			Non lustrous

^a PPVFRA Protection of Plant Varieties and Farmers Rights Act

9 SSV 84 Salient Features



1. Pedigree: Selection from IS 23568 (Bred by MPKV, Rahuri)
2. Days to 50 % flowering: 87 days
3. Plant height (m): 3.2
4. Plant girth (mm): 18.3
5. Biomass yield (t ha^{-1}): 38.7
6. Juice yield (t ha^{-1}): 13.5
7. Juice extraction (%): 35
8. Brix (%): 19
9. Sugar yield (t ha^{-1}): 1.9
10. Grain yield (t ha^{-1}): 3.3
11. Male fertility restoration (%): 90
12. Sucrose (%): 8.8
13. Glucose (%): 1.7
14. Fructose (%): 0.4
15. pH of juice: 5.0
16. Electrical conductivity of juice (mS m^{-1}) * milli siemens per meter:: 7.1
17. Tolerance to: Shootfly, Aphids, Rust.
18. Adaptation: Rainy season

Traits recorded as per guidelines for sorghum as approved by PPVFRA^a

Characteristics	Characteristic value of candidate variety									Remarks Measured value etc.
	1	2	3	4	5	6	7	8	9	
Seedling: anthocyanin colouration of coleoptile	✓									Yellow green
Leaf sheath: anthocyanin colouration	✓									Yellow green
Leaf: midrib colour (5th fully developed leaf)				✓						Yellow green
Plant: time of panicle emergence (50 % of the plants with complete panicle emergence)									✓	87
Plant: natural height of foliage up to base of flag leaf									✓	2.9
Flag leaf: yellow colouration of midrib	✓									Absent
Lemma: arista formation (awns)	✓									Absent
Stigma: anthocyanin coloration	✓									Present
Stigma: yellow coloration	✓									Present
Stigma length (mm)				✓						Medium
Flower with pedicel: length of flower							✓			Long
Anther: length							✓			Short
Anther: colour of dry anther					✓					Grayed orange
Glume: color								✓		Grayed purple
Plant: total height									✓	3.2
Stem: diameter (at lower one-third height of plant) (mm)				✓						18.3
Leaf: length of blade of the third leaf from top including flag leaf (cm)									✓	Long
Leaf: width of blade of the third leaf from top including flag leaf (cm)									✓	Very broad
Panicle: length without peduncle				✓						Short
Panicle: length of branches (middle third of panicle)						✓				Medium
Panicle: density at maturity (ear head compactness)								✓		Semi compact
Panicle: shape				✓						Panicle Braoder at Upper part
Neck of panicle: visible length above sheath (cm)	✓									Absent
Glume coverage (%)				✓						Short
Threshability						✓				Partly threshable
Caryopsis: colour after threshing	✓									Yellow White
Grain: weight of 1000 grains (g)						✓				25.0
Grain: shape in dorsal view				✓						Circular
Grain: shape in profile view				✓						Circular
Grain: size of mark of germ								✓		Large
Grain: texture of endosperm (in longitudinal section)								✓		25 % corneous
Grain: colour of vitreous albumen				✓						Grayed yellow
Grain: lustre								✓		Non lustrous

^a PPVFRA Protection of Plant Varieties and Farmers Rights Act

10 RSSV 9 (CSV 19SS) Salient Features



1. Pedigree: (RSSV 2 X SPV 462)-2-1-1 (Bred by MPKV, Rahuri)
2. Days to 50 % flowering: 85 days
3. Plant height (m): 3.3
4. Plant girth (mm): 17.8
5. Biomass yield (t ha^{-1}): 58.9
6. Juice yield (t ha^{-1}): 21.4
7. Juice extraction (%): 36
8. Brix (%): 16
9. Sugar yield (t ha^{-1}): 2.6
10. Grain yield (t ha^{-1}): 1.5
11. Male fertility restoration (%): 90
12. Sucrose (%): 9.0
13. Glucose (%): 1.7
14. Fructose (%): 2.8
15. pH of Juice: 4.0
16. Electrical conductivity of juice (mS m^{-1}) * milli siemens per meter: 9.4
17. Tolerance to: Aphids, Shootfly.
18. Adaptation: Rainy season

Traits recorded as per guidelines for sorghum as approved by PPVFRA^a

Characteristics	Characteristic value of candidate variety									Remarks measured value etc.
	1	2	3	4	5	6	7	8	9	
Seedling: anthocyanin colouration of coleoptile		✓								Grayed purple
Leaf sheath: anthocyanin colouration	✓									Grayed purple
Leaf: midrib colour (5th fully developed leaf)	✓									Yellow green
Plant: time of panicle emergence (50 % of the plants with complete panicle emergence)							✓			85
Plant: natural height of foliage up to base of flag leaf									✓	2.9
Flag leaf: yellow colouration of midrib	✓									Absent
Lemma: arista formation (awns)									✓	Present
Stigma: anthocyanin coloration	✓									Present
Stigma: yellow coloration					✓					Present
Stigma length (mm)									✓	Long
Flower with pedicel: length of flower						✓				Long
Anther: length						✓				Medium
Anther: colour of dry anther				✓						Grayed orange
Glume: color							✓			Grayed purple
Plant: total height									✓	3.3
Stem: diameter (at lower one-third height of plant) (mm)			✓							17.8
Leaf: length of blade of the third leaf from top including flag leaf (cm)							✓			Medium
Leaf: width of blade of the third leaf from top including flag leaf (cm)									✓	Broad
Panicle: length without peduncle			✓							Short
Panicle: length of branches (middle third of panicle)					✓					Medium
Panicle: density at maturity (ear head compactness)							✓			Semi compact
Panicle: shape			✓							Panicle broader in lower part
Neck of panicle: visible length above sheath (cm)	✓									Absent or Very short
Glume coverage (%)			✓							Medium
Threshability					✓					Difficult threshable
Caryopsis: colour after threshing				✓						Yellow white
Grain: weight of 1000 grains (g)					✓					26.0
Grain: shape in dorsal view			✓							Circular
Grain: shape in profile view			✓							Circular
Grain: size of mark of germ					✓					Large
Grain: texture of endosperm (in longitudinal section)					✓					50 % corneous
Grain: colour of vitreous albumen			✓							Grayed yellow
Grain: lustre					✓					Non lustrous

^a PPVFRA Protection of Plant Varieties and Farmers Rights Act

11 ICSB 38 Salient Features



1. Pedigree: [(BTx 623 × MR 862)B lines bulk]-5-1-3-5
2. Days to 50 % flowering: 74 days
3. Plant height (m): 1.4
4. Plant girth (mm): 17.7
5. Biomass yield (t ha^{-1}): 16.0
6. Juice yield (t ha^{-1}): 4.4
7. Juice extraction (%): 27.5
8. Brix (%): 9
9. Sugar yield (t ha^{-1}): 0.3
10. Grain yield (t ha^{-1}): 2.3
11. Male fertility restoration (%): 80
12. Sucrose (%): 4.7
13. Glucose (%): 2.1
14. Fructose (%): 0.7
15. pH of juice: 5.5
16. Electrical conductivity of juice (mS m^{-1}) * Milli siemens per meter: 14.7
17. Tolerance to: Shoot fly, Stem borer, Rust.
18. Adaptation: Rainy season.

Traits recorded as per guidelines for sorghum as approved by PPVFRA^a

Characteristics	Characteristic value of candidate hybrid parent									Remarks measured value etc.
	1	2	3	4	5	6	7	8	9	
Seedling: anthocyanin colouration of coleoptile	✓									Green
Leaf sheath: anthocyanin colouration	✓									Green
Leaf: midrib colour (5th fully developed leaf)				✓						Brown
Plant: time of panicle emergence (50 % of the plants with complete panicle emergence)							✓			74
Plant: natural height of foliage up to base of flag leaf			✓							1.1
Flag leaf: yellow colouration of midrib	✓									Absent
Lemma: arista formation (awns)	✓									Absent
Stigma: anthocyanin coloration	✓									Absent
Stigma: yellow coloration	✓									Average
Stigma length (mm)			✓							Short
Flower with pedicel: length of flower			✓							Short
Anther: length			✓							Short
Anther: colour of dry anther				✓						Orange
Glume: color				✓						Light red
Plant: total height			✓							1.4
Stem: diameter (at lower one-third height of plant) (mm)							✓			17.7
Leaf: length of blade of the third leaf from top including flag leaf (cm)								✓		80.6
Leaf: width of blade of the third leaf from top including flag leaf (cm)							✓			7.6
Panicle: length without peduncle					✓					30.7
Panicle: length of branches (middle third of panicle)					✓					7.7
Panicle: density at maturity (ear head compactness)							✓			Semi compact
Panicle: shape			✓							Symmetric
Neck of panicle: visible length above sheath (cm)								✓		24
Glume coverage (%)	✓									25
Threshability					✓					Partly threshable
Caryopsis: colour after threshing	✓									White
Grain: weight of 1000 grains (g)					✓					26.0
Grain: shape in dorsal view			✓							Circular
Grain: shape in profile view			✓							Circular
Grain: size of mark of germ							✓			Large
Grain: texture of endosperm (in longitudinal section)			✓							75 % corneous
Grain: colour of vitreous albumen			✓							Yellow
Grain: lustre	✓									Non-lustrous

^a PPVFRA Protection of Plant Varieties and Farmers Rights Act

12 ICSB 474 Salient Features



1. Pedigree: (IS 18432 \times ICSB 6)-11-1-1-2-2
2. Days to 50 % flowering: 70 days
3. Plant height (m): 2.1
4. Plant girth (mm): 14.1
5. Biomass yield (t ha^{-1}): 23.1
6. Juice yield (t ha^{-1}): 8.0
7. Juice extraction (%): 34.4
8. Brix (%): 11
9. Sugar yield (t ha^{-1}): 0.6
10. Grain yield (t ha^{-1}): 1.4
11. Male fertility restoration (%): 75
12. Sucrose (%): 5.7
13. Glucose (%): 1.2
14. Fructose (%): 0.7
15. pH of juice: 5.1
16. Electrical conductivity of juice (mS m^{-1}) * milli siemens per meter: 10.2
17. Tolerance to: Stem borer
18. Adaptation: Rainy season

Traits recorded as per guidelines for sorghum as approved by PPVFRA^a

Characteristics	Characteristic value of candidate hybrid parent									Remarks Measured value etc.
	1	2	3	4	5	6	7	8	9	
Seedling: anthocyanin colouration of coleoptile		✓								Purple
Leaf sheath: anthocyanin colouration	✓									Green
Leaf: midrib colour (5th fully developed leaf)		✓								Green
Plant: time of panicle emergence (50 % of the plants with complete panicle emergence)							✓			70
Plant: natural height of foliage up to base of flag leaf					✓					1.8
Flag leaf: yellow colouration of midrib	✓									Absent
Lemma: arista formation (awns)								✓		Strong
Stigma: anthocyanin coloration	✓									Absent
Stigma: yellow coloration					✓					Medium
Stigma length (mm)					✓					Medium
Flower with pedicel: length of flower					✓					Medium
Anther: length					✓					Medium
Anther: colour of dry anther				✓						Orange
Glume: color					✓					Red
Plant: total height							✓			2.1
Stem: diameter (at lower one-third height of plant) (mm)							✓			14.1
Leaf: length of blade of the third leaf from top including flag leaf (cm)							✓			73.1
Leaf: width of blade of the third leaf from top including flag leaf (cm)							✓			7.3
Panicle: length without peduncle					✓					21
Panicle: length of branches (middle third of panicle)					✓					6
Panicle: density at maturity (ear head compactness)							✓			Semi compact
Panicle: shape			✓							Symmetric
Neck of panicle: visible length above sheath (cm)					✓					11.4
Glume coverage (%)			✓							50
Threshability	✓									Partly threshable
Caryopsis: colour after threshing	✓									White
Grain: weight of 1000 grains (g)							✓			43.0
Grain: shape in dorsal view			✓							Circular
Grain: shape in profile view			✓							Circular
Grain: size of mark of germ							✓			Large
Grain: texture of endosperm (in longitudinal section)			✓							75 % corneous
Grain: colour of vitreous albumen			✓							Yellow
Grain: lustre					✓					Medium

^a PPVFRA Protection of Plant Varieties and Farmers Rights Act

13 ICSB 675 Salient Features



1. Pedigree: (E 36-1 \times ICSB 17) -12-2
2. Days to 50 % flowering: 76 days.
3. Plant height (m): 1.2
4. Plant girth (mm): 15.0
5. Biomass yield (t ha^{-1}): 21.4
6. Juice yield (t ha^{-1}): 6.7
7. Juice extraction (%): 31.3
8. Brix (%): 12
9. Sugar yield (t ha^{-1}): 0.6
10. Grain yield (t ha^{-1}): 0.6
11. Male fertility restoration (%): 60
12. Sucrose (%): 1.7
13. Glucose (%): 2.4
14. Fructose (%): 0.7
15. pH of juice: 5.3
16. Electrical conductivity of juice (mS m^{-1}) * Milli siemens per meter: 12.2
17. Tolerance to: Aphids, terminal drought.
18. Adaptation: Rainy season

Traits recorded as per guidelines for sorghum as approved by PPVFRA^a

Characteristics	Characteristic value of candidate hybrid parent									Remarks Measured value etc.
	1	2	3	4	5	6	7	8	9	
Seedling: anthocyanin colouration of coleoptile		✓								Purple
Leaf sheath: anthocyanin colouration			✓							Purple
Leaf: midrib colour (5th fully developed leaf)				✓						Brown
Plant: time of panicle emergence (50 % of the plants with complete panicle emergence)							✓			76
Plant: natural height of foliage up to base of flag leaf			✓							1.0
Flag leaf: yellow colouration of midrib	✓									Absent
Lemma: arista formation (awns)	✓									Absent
Stigma: anthocyanin coloration	✓									Absent
Stigma: yellow coloration	✓									Average
Stigma length (mm)			✓							Short
Flower with pedicel: length of flower					✓					Medium
Anther: length					✓					Medium
Anther: colour of dry anther				✓						Orange
Glume: color								✓		Purple
Plant: total height			✓							1.2
Stem: diameter (at lower one-third height of plant) (mm)							✓			15.0
Leaf: length of blade of the third leaf from top including flag leaf (cm)								✓		85.3
Leaf: width of blade of the third leaf from top including flag leaf (cm)								✓		8.5
Panicle: length without peduncle					✓					21
Panicle: length of branches (middle third of panicle)					✓					7.4
Panicle: density at maturity (ear head compactness)								✓		Semi compact
Panicle: shape			✓							Symmetric
Neck of panicle: visible length above sheath (cm)					✓					12.7
Glume coverage (%)	✓									25
Threshability	✓									Freely threshable
Caryopsis: colour after threshing	✓									White
Grain: weight of 1000 grains (g)			✓							16.0
Grain: shape in dorsal view			✓							Circular
Grain: shape in profile view			✓							Circular
Grain: size of mark of germ							✓			Large
Grain: texture of endosperm (in longitudinal section)			✓							75 % corneous
Grain: colour of vitreous albumen			✓							Yellow
Grain: lustre					✓					Medium

^a PPVFRA Protection of Plant Varieties and Farmers Rights Act

14 ICSB 702 Salient Features



1. Pedigree: (ICSB 101 \times SP 36257)-3-3-1-2
2. Days to 50 % flowering: 67 days.
3. Plant height (m): 1.6
4. Plant girth (mm): 15.0
5. Biomass yield (t ha^{-1}): 17.4
6. Juice yield (t ha^{-1}): 7.6
7. Juice extraction (%): 43.6
8. Brix (%): 13
9. Sugar yield (t ha^{-1}): 0.74
10. Grain yield (t ha^{-1}): 4.1
11. Male fertility restoration (%): 70
12. Sucrose (%): 4.8
13. Glucose (%): 1.0
14. Fructose (%): 0.6
15. pH of juice: 5.3
16. Electrical conductivity of juice (mS m^{-1}) * Milli siemens per meter: 11.5
17. Tolerance to: Aphids.
18. Adaptation: Rainy season.

Traits recorded as per guidelines for sorghum as approved by PPVFRA^a

Characteristics	Characteristic value of candidate hybrid parent									Remarks Measured value etc.
	1	2	3	4	5	6	7	8	9	
Seedling: anthocyanin colouration of coleoptile	✓									Green
Leaf sheath: anthocyanin colouration	✓									Green
Leaf: midrib colour (5th fully developed leaf)			✓							Brown
Plant: time of panicle emergence (50 % of the plants with complete panicle emergence)								✓		67
Plant: natural height of foliage up to base of flag leaf						✓				1.4
Flag leaf: yellow colouration of midrib	✓									Absent
Lemma: arista formation (awns)	✓									Absent
Stigma: anthocyanin coloration	✓									Absent
Stigma: yellow coloration	✓									Average
Stigma length (mm)				✓						Short
Flower with pedicel: length of flower				✓						Short
Anther: length							✓			Short
Anther: colour of dry anther					✓					Orange
Glume: color					✓					Light red
Plant: total height						✓				1.6
Stem: diameter (at lower one-third height of plant) (mm)								✓		15.0
Leaf: length of blade of the third leaf from top including flag leaf (cm)								✓		80.9
Leaf: width of blade of the third leaf from top including flag leaf (cm)									✓	7.8
Panicle: length without peduncle				✓						24.1
Panicle: length of branches (middle third of panicle)						✓				7.4
Panicle: density at maturity (ear head compactness)								✓		Semi compact
Panicle: shape										Symmetric
Neck of panicle: visible length above sheath (cm)										15.7
Glume coverage (%)										25
Threshability										Partly threshable
Caryopsis: colour after threshing					✓					Light yellow
Grain: weight of 1000 grains (g)					✓					37.0
Grain: shape in dorsal view				✓						Circular
Grain: shape in profile view				✓						Circular
Grain: size of mark of germ								✓		Large
Grain: texture of endosperm (in longitudinal section)				✓						75 % corneous
Grain: colour of vitreous albumen				✓						Yellow
Grain: lustre						✓				Medium

^a PPVFRA Protection of Plant Varieties and Farmers Rights Act

15 ICSB 724 Salient Features



1. Pedigree: ICSP 1B/R MFR-S 7-303-2-1
2. Days to 50 % flowering: 76 days
3. Plant height (m): 1.9
4. Plant girth (mm): 15.0
5. Biomass yield (t ha^{-1}): 24.8
6. Juice yield (t ha^{-1}): 9.7
7. Juice extraction (%): 39.1
8. Brix (%): 13
9. Sugar yield (t ha^{-1}): 0.9
10. Grain yield (t ha^{-1}): 4.3
11. Male fertility restoration (%): 75
12. Sucrose (%): 4.6
13. Glucose (%): 1.4
14. Fructose (%): 0.4
15. pH of juice: 5.3
16. Electrical conductivity of juice (mS m^{-1}) * Milli siemens per meter: 9.7
17. Tolerance to: Aphids
18. Adaptation: Rainy season.

Traits recorded as per guidelines for sorghum as approved by PPVFRA^a

Characteristics	Characteristic value of candidate hybrid parent									Remarks Measured value etc.
	1	2	3	4	5	6	7	8	9	
Seedling: anthocyanin colouration of coleoptile		✓								Purple
Leaf sheath: anthocyanin colouration	✓									Green
Leaf: midrib colour (5th fully developed leaf)				✓						Green
Plant: time of panicle emergence (50 % of the plants with complete panicle emergence)							✓			76
Plant: natural height of foliage up to base of flag leaf					✓					1.7
Flag leaf: yellow colouration of midrib	✓									Absent
Lemma: arista formation (awns)	✓									Absent
Stigma: anthocyanin coloration	✓									Absent
Stigma: yellow coloration	✓									Average
Stigma length (mm)			✓							Short
Flower with pedicel: length of flower			✓							Short
Anther: length					✓					Medium
Anther: colour of dry anther				✓						Orange
Glume: color				✓						Light red
Plant: total height							✓			1.9
Stem: diameter (at lower one-third height of plant) (mm)							✓			15.0
Leaf: length of blade of the third leaf from top including flag leaf (cm)								✓		78.4
Leaf: width of blade of the third leaf from top including flag leaf (cm)								✓		9.1
Panicle: length without peduncle					✓					20.7
Panicle: length of branches (middle third of panicle)					✓					6.5
Panicle: density at maturity (ear head compactness)							✓			Semi compact
Panicle: shape			✓							Symmetric
Neck of panicle: visible length above sheath (cm)					✓					8.2
Glume coverage (%)	✓									25
Threshability					✓					Partly threshable
Caryopsis: colour after threshing				✓						Light yellow
Grain: weight of 1000 grains (g)					✓					27.0
Grain: shape in dorsal view			✓							Circular
Grain: shape in profile view			✓							Circular
Grain: size of mark of germ					✓					Medium
Grain: texture of endosperm (in longitudinal section)							✓			25 % corneous
Grain: colour of vitreous albumen			✓							Yellow
Grain: lustre							✓			Lustrous

^a PPVFRA Protection of Plant Varieties and Farmers Rights Act

16 ICSB 731 Salient Features



1. Pedigree: ICSV 117 1BF
2. Days to 50 % flowering: 74 days
3. Plant height (m): 2.0
4. Plant girth (mm): 16.4
5. Biomass yield (t ha^{-1}): 20.3
6. Juice yield (t ha^{-1}): 9.2
7. Juice extraction (%): 45
8. Brix (%): 14
9. Sugar yield (t ha^{-1}): 1.0
10. Grain yield (t ha^{-1}): 3.9
11. Male fertility restoration (%): 70
12. Sucrose (%): 6.9
13. Glucose (%): 2.9
14. Fructose (%): 1.3
15. pH of juice: 5.1
16. Electrical conductivity of Juice (mS m^{-1}) * Milli siemens per meter: 9.1
17. Tolerance to: Anthracnose.
18. Adaptation: Rainy season

Traits recorded as per guidelines for sorghum as approved by PPVFRA^a

Characteristics	Characteristic value of candidate hybrid parent									Remarks Measured value etc.
	1	2	3	4	5	6	7	8	9	
Seedling: anthocyanin colouration of coleoptile		✓								Purple
Leaf sheath: anthocyanin colouration	✓									Green
Leaf: midrib colour (5th fully developed leaf)				✓						Brown
Plant: time of panicle emergence (50 % of the plants with complete panicle emergence)							✓			74
Plant: natural height of foliage up to base of flag leaf					✓					1.8
Flag leaf: yellow colouration of midrib	✓									Absent
Lemma: arista formation (awns)	✓									Absent
Stigma: anthocyanin coloration	✓									Absent
Stigma: yellow coloration	✓									Average
Stigma length (mm)			✓							Short
Flower with pedicel: length of flower			✓							Short
Anther: length					✓					Medium
Anther: colour of dry anther				✓						Orange
Glume: color				✓						Light red
Plant: total height							✓			2.0
Stem: diameter (at lower one-third height of plant) (mm)		✓								16.4
Leaf: length of blade of the third leaf from top including flag leaf (cm)								✓		88.6
Leaf: width of blade of the third leaf from top including flag leaf (cm)								✓		8.1
Panicle: length without peduncle					✓					22.1
Panicle: length of branches (middle third of panicle)			✓							6.1
Panicle: density at maturity (ear head compactness)							✓			Semi compact
Panicle: shape			✓							Symmetric
Neck of panicle: visible length above sheath (cm)					✓					10.8
Glume coverage (%)			✓							25
Threshability					✓					Partly threshable
Caryopsis: colour after threshing	✓									White
Grain: weight of 1000 grains (g)					✓					29.0
Grain: shape in dorsal view			✓							Circular
Grain: shape in profile view			✓							Circular
Grain: size of mark of germ					✓					Medium
Grain: texture of endosperm (in longitudinal section)			✓							75 % corneous
Grain: colour of vitreous albumen			✓							Yellow
Grain: lustre					✓					Medium

^a PPVFRA Protection of Plant Varieties and Farmers Rights Act

17 ICSSH 28 Salient Features



1. Pedigree: ICSA 474 \times SSV 74
2. Days to 50 % flowering: 76 days
3. Plant height (m): 3.8
4. Plant girth (mm): 17.5
5. Biomass yield (t ha^{-1}): 63.6
6. Juice yield (t ha^{-1}): 28.3
7. Juice extraction (%): 45
8. Brix (%): 16
9. Sugar yield (t ha^{-1}): 3.4
10. Grain yield (t ha^{-1}): 2.4
11. Male fertility restoration (%): 82
12. Sucrose (%): 6.3
13. Glucose (%): 1.5
14. Fructose (%): 0.5
15. pH of juice: 5.0
16. Electrical conductivity of juice (mS m^{-1}) * milli siemens per meter: 9.6
17. Tolerance to: Aphids, Shootfly.
18. Adaptation: Rainy season/post rainy season.

Traits recorded as per guidelines for sorghum as approved by PPVFRA^a

Characteristics	Characteristic value of candidate hybrid									Remarks Measured value etc.
	1	2	3	4	5	6	7	8	9	
Seedling: anthocyanin colouration of coleoptile		✓								Purple
Leaf sheath: anthocyanin colouration	✓									Green
Leaf: midrib colour (5th fully developed leaf)	✓									White
Plant: time of panicle emergence (50 % of the plants with complete panicle emergence)							✓			76
Plant: natural height of foliage up to base of flag leaf							✓			3.5
Flag leaf: yellow colouration of midrib	✓									Absent
Lemma: arista formation (awns)	✓									Absent
Stigma: anthocyanin coloration	✓									Absent
Stigma: yellow coloration					✓					Medium
Stigma length (mm)			✓							Short
Flower with pedicel: length of flower							✓			Long
Anther: length					✓					Medium
Anther: colour of dry anther				✓						Orange
Glume: color					✓					Red
Plant: total height							✓			3.8
Stem: diameter (at lower one-third height of plant) (mm)							✓			17.5
Leaf: length of blade of the third leaf from top including flag leaf (cm)								✓		81.1
Leaf: width of blade of the third leaf from top including flag leaf (cm)								✓		9.8
Panicle: length without peduncle					✓					24.2
Panicle: length of branches (middle third of panicle)					✓					7.9
Panicle: density at maturity (ear head compactness)					✓					Semi loose
Panicle: shape			✓							Symmetric
Neck of panicle: visible length above sheath (cm)					✓					11.7
Glume coverage (%)	✓									25
Threshability	✓									Freely threshable
Caryopsis: colour after threshing	✓									White
Grain: weight of 1000 grains (g)								✓		47.0
Grain: shape in dorsal view			✓							Circular
Grain: shape in profile view			✓							Circular
Grain: size of mark of germ							✓			Large
Grain: texture of endosperm (in longitudinal section)			✓							75 % corneous
Grain: colour of vitreous albumen			✓							Yellow
Grain: lustre	✓									Non-Lustrous

^a PPVFRA Protection of Plant Varieties and Farmers Rights Act

18 ICSSH 29 Salient Features



1. Pedigree: ICSA 675 × SSV 74
2. Days to 50 % flowering: 82 days
3. Plant height (m): 3.8
4. Plant girth (mm): 17.8
5. Biomass yield (t ha^{-1}): 58.5
6. Juice yield (t ha^{-1}): 25.4
7. Juice extraction (%): 43
8. Brix (%): 16
9. Sugar yield (t ha^{-1}): 3.6
10. Grain yield (t ha^{-1}): 2.8
11. Male fertility restoration (%): 82
12. Sucrose (%): 7.6
13. Glucose (%): 0.4
14. Fructose (%): 1.5
15. pH of juice: 5.0
16. Electrical conductivity of juice (mS m^{-1}) * milli siemens per meter: 7.5
17. Tolerance to: Anthracnose.
18. Adaptation: Rainy season

Traits recorded as per guidelines for sorghum as approved by PPVFRA^a

Characteristics	Characteristic value of candidate hybrid									Remarks measured value etc.
	1	2	3	4	5	6	7	8	9	
Seedling: anthocyanin colouration of coleoptile		✓								Purple
Leaf sheath: anthocyanin colouration			✓							Purple
Leaf: midrib colour (5th fully developed leaf)		✓								Green
Plant: time of panicle emergence (50 % of the plants with complete panicle emergence)							✓			82
Plant: natural height of foliage up to base of flag leaf									✓	3.5
Flag leaf: yellow colouration of midrib		✓								Absent
Lemma: arista formation (awns)		✓								Absent
Stigma: anthocyanin coloration		✓								Absent
Stigma: yellow coloration		✓								Absent
Stigma length (mm)				✓						Short
Flower with pedicel: length of flower						✓				Medium
Anther: length						✓				Medium
Anther: colour of dry anther					✓					Orange
Glume: color								✓		Purple
Plant: total height								✓		3.8
Stem: diameter (at lower one-third height of plant) (mm)								✓		17.8
Leaf: length of blade of the third leaf from top including flag leaf (cm)									✓	91.4
Leaf: width of blade of the third leaf from top including flag leaf (cm)									✓	9.9
Panicle: length without peduncle						✓				25.8
Panicle: length of branches (middle third of panicle)						✓				7.4
Panicle: density at maturity (ear head compactness)								✓		Semi compact
Panicle: shape				✓						Symmetric
Neck of panicle: visible length above sheath (cm)				✓						9.3
Glume coverage (%)		✓								25
Threshability						✓				Partly threshable
Caryopsis: colour after threshing					✓					Light yellow
Grain: weight of 1000 grains (g)						✓				27.0
Grain: shape in dorsal view				✓						Circular
Grain: shape in profile view				✓						Circular
Grain: size of mark of germ								✓		Large
Grain: texture of endosperm (in longitudinal section)				✓						75 % corneous
Grain: colour of vitreous albumen				✓						Yellow
Grain: lustre		✓								Non-lustrous

^a PPVFRA Protection of Plant Varieties and Farmers Rights Act

19 ICSSH 30 Salient Features



1. Pedigree: ICSA 724 \times SSV 74
2. Days to 50 % flowering: 77 days
3. Plant height (m): 3.5
4. Plant girth (mm): 18.8
5. Biomass yield (t ha^{-1}): 52.0
6. Juice yield (t ha^{-1}): 24.5
7. Juice extraction (%): 47
8. Brix (%): 18
9. Sugar yield (t ha^{-1}): 3.3
10. Grain yield (t ha^{-1}): 2.2
11. Male fertility restoration (%): 92
12. Sucrose (%): 7.8
13. Glucose (%): 0.6
14. Fructose (%): 2.0
15. pH of juice: 5.0
16. Electrical conductivity of juice (mS m^{-1}) * Milli siemens per meter: 7.5
17. Tolerance to: Anthracnose, Rust.
18. Adaptation: Rainy season

Traits recorded as per guidelines for sorghum as approved by PPVFRA^a

Characteristics	Characteristic value of candidate hybrid									Remarks measured value etc.
	1	2	3	4	5	6	7	8	9	
Seedling: anthocyanin colouration of coleoptile		✓								Purple
Leaf sheath: anthocyanin colouration	✓									Green
Leaf: midrib colour (5th fully developed leaf)		✓								Green
Plant: time of panicle emergence (50 % of the plants with complete panicle emergence)							✓			77
Plant: natural height of foliage up to base of flag leaf							✓			3.2
Flag leaf: yellow colouration of midrib	✓									Absent
Lemma: arista formation (awns)	✓									Absent
Stigma: anthocyanin coloration	✓									Absent
Stigma: yellow coloration		✓								Absent
Stigma length (mm)			✓							Short
Flower with pedicel: length of flower			✓							Short
Anther: length					✓					Medium
Anther: colour of dry anther				✓						Orange
Glume: color					✓					Red
Plant: total height							✓			3.2
Stem: diameter (at lower one-third height of plant) (mm)							✓			18.8
Leaf: length of blade of the third leaf from top including flag leaf (cm)								✓		83.3
Leaf: width of blade of the third leaf from top including flag leaf (cm)								✓		9.9
Panicle: length without peduncle					✓					23.8
Panicle: length of branches (middle third of panicle)					✓					8
Panicle: density at maturity (ear head compactness)					✓					Semi loose
Panicle: shape			✓							Symmetric
Neck of panicle: visible length above sheath (cm)			✓							12.9
Glume coverage (%)	✓									25
Threshability					✓					Partly threshable
Caryopsis: colour after threshing				✓						Light yellow
Grain: weight of 1000 grains (g)							✓			44.0
Grain: shape in dorsal view			✓							Circular
Grain: shape in profile view			✓							Circular
Grain: size of mark of germ							✓			Large
Grain: texture of endosperm (in longitudinal section)			✓							75 % corneous
Grain: colour of vitreous albumen			✓							Yellow
Grain: lustre					✓					Medium

^a PPVFRA Protection of Plant Varieties and Farmers Rights Act

20 ICSSH 31 Salient Features



1. Pedigree: ICSA 38 \times ICSV 700
2. Days to 50 % flowering: 75 days.
3. Plant height (m): 3.1
4. Plant girth (mm): 14.2
5. Biomass yield (t ha^{-1}): 51.2
6. Juice yield (t ha^{-1}): 22.4
7. Juice extraction (%): 44
8. Brix (%): 16
9. Sugar yield (t ha^{-1}): 2.7
10. Grain yield (t ha^{-1}): 3.3
11. Male fertility restoration (%): 91
12. Sucrose (%): 8.4
13. Glucose (%): 0.2
14. Fructose (%): 1.4
15. pH of juice: 5.0
16. Electrical conductivity of juice (mS m^{-1}) * milli siemens per meter: 9.3
17. Tolerance to: Aphids, Anthracnose, Shootfly, Rust
18. Adaptation: Rainy season

Traits recorded as per guidelines for sorghum as approved by PPVFRA^a

Characteristics	Characteristic value of candidate hybrid									Remarks measured value etc.
	1	2	3	4	5	6	7	8	9	
Seedling: anthocyanin colouration of coleoptile		✓								Purple
Leaf sheath: anthocyanin colouration	✓									Green
Leaf: midrib colour (5th fully developed leaf)				✓						Brown
Plant: time of panicle emergence (50 % of the plants with complete panicle emergence)					✓					75
Plant: natural height of foliage up to base of flag leaf							✓			2.9
Flag leaf: yellow colouration of midrib	✓									Absent
Lemma: arista formation (awns)	✓									Absent
Stigma: anthocyanin coloration	✓									Absent
Stigma: yellow coloration	✓									Absent
Stigma length (mm)			✓							Short
Flower with pedicel: length of flower					✓					Medium
Anther: length					✓					Medium
Anther: colour of dry anther				✓						Orange
Glume: color					✓					Red
Plant: total height							✓			3.1
Stem: diameter (at lower one-third height of plant) (mm)							✓			14.2
Leaf: length of blade of the third leaf from top including flag leaf (cm)								✓		85.3
Leaf: width of blade of the third leaf from top including flag leaf (cm)								✓		8.6
Panicle: length without peduncle					✓					27.5
Panicle: length of branches (middle third of panicle)					✓					7.6
Panicle: density at maturity (ear head compactness)					✓					Semi loose
Panicle: shape			✓							Symmetric
Neck of panicle: visible length above sheath (cm)					✓					14.9
Glume coverage (%)					✓					75
Threshability					✓					Partly threshable
Caryopsis: colour after threshing	✓									White
Grain: weight of 1000 grains (g)					✓					32.0
Grain: shape in dorsal view			✓							Circular
Grain: shape in profile view			✓							Circular
Grain: size of mark of germ							✓			Large
Grain: texture of endosperm (in longitudinal section)			✓							75 % corneous
Grain: colour of vitreous albumen			✓							Yellow
Grain: lustre					✓					Medium

^a PPVFRA Protection of Plant Varieties and Farmers Rights Act

21 ICSSH 39 Salient Features



1. Pedigree: ICSA 702 \times SSV 74
2. Days to 50 % flowering: 74 days.
3. Plant height (m): 3.3
4. Plant girth (mm): 16.4
5. Biomass yield (t ha^{-1}): 46.9
6. Juice yield (t ha^{-1}): 22.5
7. Juice extraction (%): 48
8. Brix (%): 18
9. Sugar yield (t ha^{-1}): 3.0
10. Grain yield (t ha^{-1}): 2.2
11. Male fertility restoration (%): 83
12. Sucrose (%): 8.1
13. Glucose (%): 1.1
14. Fructose (%): 0.4
15. pH of juice: 5.0
16. Electrical conductivity of juice (mS m^{-1}) * milli siemens per meter: 9.5
17. Tolerance to: Aphids, Anthracnose, Rust
18. Adaptation: Rainy season

Traits recorded as per guidelines for sorghum as approved by PPVFRA*

Characteristics	Characteristic value of candidate hybrid									Remarks measured value etc.
	1	2	3	4	5	6	7	8	9	
Seedling: anthocyanin colouration of coleoptile	✓									Green
Leaf sheath: anthocyanin colouration	✓									Green
Leaf: midrib colour (5th fully developed leaf)		✓								Green
Plant: time of panicle emergence (50 % of the plants with complete panicle emergence)					✓					74
Plant: natural height of foliage up to base of flag leaf							✓			3.0
Flag leaf: yellow colouration of midrib	✓									Absent
Lemma: arista formation (awns)	✓									Absent
Stigma: anthocyanin coloration	✓									Absent
Stigma: yellow coloration	✓									Absent
Stigma length (mm)					✓					Medium
Flower with pedicel: length of flower					✓					Medium
Anther: length					✓					Medium
Anther: colour of dry anther				✓						Orange
Glume: color					✓					Red
Plant: total height							✓			3.3
Stem: diameter (at lower one-third height of plant) (mm)							✓			16.4
Leaf: length of blade of the third leaf from top including flag leaf (cm)								✓		86.4
Leaf: width of blade of the third leaf from top including flag leaf (cm)								✓		9.5
Panicle: length without peduncle					✓					25.8
Panicle: length of branches (middle third of panicle)					✓					9.1
Panicle: density at maturity (ear head compactness)					✓					Semi loose
Panicle: shape				✓						Symmetric
Neck of panicle: visible length above sheath (cm)				✓						9.3
Glume coverage (%)	✓									25
Threshability	✓									Freely threshable
Caryopsis: colour after threshing					✓					Light yellow
Grain: weight of 1000 grains (g)					✓					36.0
Grain: shape in dorsal view			✓							Circular
Grain: shape in profile view			✓							Circular
Grain: size of mark of germ							✓			Large
Grain: texture of endosperm (in longitudinal section)			✓							75 % corneous
Grain: colour of vitreous albumen			✓							Yellow
Grain: lustre					✓					Medium

^a PPVFRA Protection of Plant Varieties and Farmers Rights Act

22 ICSSH 58 Salient Features



1. Pedigree: ICSA 731 \times ICSA 93046 (First A2 *cms* system based hybrid)
2. Days to 50 % flowering: 79 days.
3. Plant height (m): 3.4
4. Plant girth (mm): 15.0
5. Biomass yield (t ha^{-1}): 57.5
6. Juice yield (t ha^{-1}): 29.4
7. Juice extraction (%): 51
8. Brix (%): 17
9. Sugar yield (t ha^{-1}): 3.8
10. Grain yield (t ha^{-1}): 2.9
11. Male fertility restoration (%): 93
12. Sucrose (%): 9.9
13. Glucose (%): 0.3
14. Fructose (%): 1.2
15. pH of juice: 5.0
16. Electrical conductivity of juice (mS m^{-1}) * milli siemens per meter: 9.6
17. Tolerance to: Aphids, Shootfly, Anthracnose.
18. Adaptation: Rainy season

Traits recorded as per guidelines for sorghum as approved by PPVFRA^a

Characteristics	Characteristic value of candidate hybrid									Remarks measured value etc.
	1	2	3	4	5	6	7	8	9	
Seedling: anthocyanin colouration of coleoptile		✓								Purple
Leaf sheath: anthocyanin colouration			✓							Purple
Leaf: midrib colour (5th fully developed leaf)				✓						Brown
Plant: time of panicle emergence (50 % of the plants with complete panicle emergence)							✓			79
Plant: natural height of foliage up to base of flag leaf							✓			3.4
Flag leaf: yellow colouration of midrib	✓									Absent
Lemma: arista formation (awns)	✓									Absent
Stigma: anthocyanin coloration	✓									Absent
Stigma: yellow coloration	✓									Absent
Stigma length (mm)			✓							Short
Flower with pedicel: length of flower					✓					Medium
Anther: length					✓					Medium
Anther: colour of dry anther				✓						Orange
Glume: color				✓						Red
Plant: total height						✓				3.7
Stem: diameter (at lower one-third height of plant) (mm)						✓				15.0
Leaf: length of blade of the third leaf from top including flag leaf (cm)								✓		85.9
Leaf: width of blade of the third leaf from top including flag leaf (cm)								✓		9.3
Panicle: length without peduncle					✓					20.7
Panicle: length of branches (middle third of panicle)					✓					6.7
Panicle: density at maturity (ear head compactness)							✓			Semi compact
Panicle: shape			✓							Symmetric
Neck of panicle: visible length above sheath (cm)			✓							8.3
Glume coverage (%)			✓							50
Threshability					✓					Partly threshable
Caryopsis: colour after threshing	✓									White
Grain: weight of 1000 grains (g)					✓					25.0
Grain: shape in dorsal view			✓							Circular
Grain: shape in profile view			✓							Circular
Grain: size of mark of germ					✓					Medium
Grain: texture of endosperm (in longitudinal section)							✓			25 % corneous
Grain: colour of vitreous albumen			✓							Yellow
Grain: lustre					✓					Medium

^a PPVFRA Protection of Plant Varieties and Farmers Rights Act

23 ICSSH 25 Salient Features



1. Pedigree: ICSCA 675 \times ICSV 700
2. Days to 50 % flowering: 77 days.
3. Plant height (m): 3.5
4. Plant girth (mm): 18.1
5. Biomass yield (t ha^{-1}): 54.8
6. Juice yield (t ha^{-1}): 28.5
7. Juice extraction (%): 52
8. Brix (%): 17
9. Sugar yield (t ha^{-1}): 3.6
10. Grain yield (t ha^{-1}): 3.1
11. Male fertility restoration (%): 86
12. Sucrose (%): 6.3
13. Glucose (%): 1.3
14. Fructose (%): 0.3
15. pH of juice: 5.0
16. Electrical conductivity of juice (mS m^{-1}) * milli siemens per meter: 10.3
17. Tolerance to: Aphids, Rust.
18. Adaptation: Rainy season.

Traits recorded as per guidelines for sorghum as approved by PPVFRA^a

Characteristics	Characteristic value of candidate hybrid									Remarks measured value etc.
	1	2	3	4	5	6	7	8	9	
Seedling: anthocyanin colouration of coleoptile		✓								Purple
Leaf sheath: anthocyanin colouration			✓							Purple
Leaf: midrib colour (5th fully developed leaf)				✓						Brown
Plant: time of panicle emergence (50 % of the plants with complete panicle emergence)							✓			77
Plant: natural height of foliage up to base of flag leaf							✓			3.2
Flag leaf: yellow colouration of midrib	✓									Absent
Lemma: arista formation (awns)	✓									Absent
Stigma: anthocyanin coloration	✓									Absent
Stigma: yellow coloration	✓									Absent
Stigma length (mm)					✓					Medium
Flower with pedicel: length of flower					✓					Medium
Anther: length					✓					Medium
Anther: colour of dry anther				✓						Orange
Glume: color					✓					Red
Plant: total height							✓			3.5
Stem: diameter (at lower one-third height of plant) (mm)							✓			18.1
Leaf: length of blade of the third leaf from top including flag leaf (cm)								✓		76.7
Leaf: width of blade of the third leaf from top including flag leaf (cm)								✓		9.1
Panicle: length without peduncle					✓					22.9
Panicle: length of branches (middle third of panicle)					✓					7.8
Panicle: density at maturity (ear head compactness)					✓					Semi loose
Panicle: shape			✓							Symmetric
Neck of panicle: visible length above sheath (cm)					✓					7.6
Glume coverage (%)					✓					25
Threshability					✓					Partly threshable
Caryopsis: colour after threshing	✓									White
Grain: weight of 1000 grains (g)					✓					28.0
Grain: shape in dorsal view			✓							Circular
Grain: shape in profile view			✓							Circular
Grain: size of mark of germ							✓			Large
Grain: texture of endosperm (in longitudinal section)							✓			25 % corneous
Grain: colour of vitreous albumen			✓							Yellow
Grain: lustre							✓			Lustrous

^a PPVFRA Protection of Plant Varieties and Farmers Rights Act

24 CSH 22 SS Salient Features



1. Pedigree: ICSA 38 \times SSV 84 (Developed by Directorate of Sorghum Research)
2. Days to 50 % flowering: 84 days.
3. Plant height (m): 3.3
4. Plant girth (mm): 18.5
5. Biomass yield (t ha^{-1}): 51.0
6. Juice yield (t ha^{-1}): 22.8
7. Juice extraction (%): 44.3
8. Brix (%): 17
9. Sugar yield (t ha^{-1}): 2.9
10. Grain yield (t ha^{-1}): 2.7
11. Male fertility restoration (%): 86
12. Sucrose (%): 8.5
13. Glucose (%): 0.3
14. Fructose (%): 1.6
15. pH of juice: 5.0
16. Electrical conductivity of juice (mS m^{-1}) * milli siemens per meter: 8.9
17. Tolerance to: Aphids, Shoot fly.
18. Adaptation: Rainy season/Post rainy season.

Traits recorded as per guidelines for sorghum as approved by PPVFRA^a

Characteristics	Characteristic value of candidate hybrid									Remarks measured value etc.
	1	2	3	4	5	6	7	8	9	
Seedling: anthocyanin colouration of coleoptile		✓								Yellow green
Leaf sheath: anthocyanin colouration	✓									Yellow green
Leaf: midrib colour (5th fully developed leaf)	✓									Yellow green
Plant: time of panicle emergence (50 % of the plants with complete panicle emergence)							✓			84
Plant: natural height of foliage up to base of flag leaf							✓			3.0
Flag leaf: yellow colouration of midrib	✓									Absent
Lemma: arista formation (awns)	✓									Absent
Stigma: anthocyanin coloration	✓									Present
Stigma: yellow coloration					✓					Absent
Stigma length (mm)			✓							Medium
Flower with pedicel: length of flower					✓					Short
Anther: length					✓					Short
Anther: colour of dry anther				✓						Grayed orange
Glume: color					✓					Grayed purple
Plant: total height							✓			3.3
Stem: diameter (at lower one-third height of plant) (mm)							✓			Medium
Leaf: length of blade of the third leaf from top including flag leaf (cm)								✓		Very long
Leaf: width of blade of the third leaf from top including flag leaf (cm)								✓		Vey broad
Panicle: length without peduncle					✓					Medium
Panicle: length of branches (middle third of panicle)					✓					Medium
Panicle: density at maturity (ear head compactness)					✓					Semi compact
Panicle: shape			✓							Symmetric
Neck of panicle: visible length above sheath (cm)							✓			Absent or very short
Glume coverage (%)	✓									Short
Threshability	✓									Partly thresh able
Caryopsis: colour after threshing	✓									Grayed orange
Grain: weight of 1000 grains (g)					✓					30.0
Grain: shape in dorsal view			✓							Circular
Grain: shape in profile view			✓							Elliptic
Grain: size of mark of germ							✓			Medium
Grain: texture of endosperm (in longitudinal section)							✓			25 % corneous
Grain: colour of vitreous albumen			✓							Grayed yellow
Grain: lustre							✓			Lustrous

^a PPVFRA Protection of Plant Varieties and Farmers Rights Act