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Circular

All the Research Scientists of Navsari Agricultural University are hereby informed that, kindly register the varieties of various crops released from your centre under PPVFRA and NBPGR. You are again requested to prepare the notification proposals of the released varieties of your centre, as per the format enclosed, which are still pending due to queries raised by competent authority. Fulfilled all the concerned queries and send the complete notification proposals of concerned varieties to this office for further necessary action. Please refer the format of a **model notification proposal** enclosed herewith for your ready reference.

No.NAU/DR/T.1/ 9834-63 /2014
Navsari, Dated: 17/11/2014


**Director of Research &
Dean, P.G. Studies**

**PROFORMA FOR SUBMISSION OF THE PROPOSAL FOR NOTIFICATION OF
CROP VARIETY
SECTION 5 OF THE SEED ACT, 1966**

1. State : Tamil Nadu
2. Crop : Ragi (*Eleusine coracana* (L.) Gaertn.)
3. Name of the variety under which released of known : **CO 15**
4. Year of release : 2013
5. a) Parentage with details of its pedigree : A cross derivative involving CO 11 x PR 202
- b) source of material in case of introduction : Does not arise
- c) Breeding method : Hybridization followed by pure line selection
- d) Breeding objectives : To replace already existing variety CO (Ra) 14 with a high yielding, input responsive and long duration variety for Ragi growing regions of Tamil Nadu with the best grain qualities for value addition
6. State the varieties, which most closely resemble the proposed variety in general characteristics : Does not arise
7. a) Breeder/Institution or agency responsible for maintaining breeder seed stock : Department of Millets
Centre for Plant Breeding and Genetics
Tamil Nadu Agricultural University
Coimbatore
- b) Quantity of breeder seed on hand : 1,000 Kg
8. Description of variety/Hybrid
 - a) Plant height : 89 - 110 cm
 - b) Distinguishing morphological characters (as in crop production guide) : Compact ears with top curved fingers; Copper red coloured grains
 - Parentage : CO 11 x PR 202
 - Days to 50% flowering : 84 - 88 days
 - Season (Irrigated / rainfed) : **Rainfed:** June - July; September - October
Irrigated: December -January; April-May
 - Grain yield (Kg/ha) : 3205 Kg/ha (Table 1)
 - Rainfed : 2950 Kg/ha
 - Irrigated : 3461 Kg/ha
 - Ear size (at dough stage) : Compact, fingers top curved
 - Finger branching : Large and dense grained
 - Grain colour : Copper brown
 - 1000 grain weight (g) : 3.2
 - c) Maturity (range in number of days) : 120 – 125 days
 - Seed to seed
 - Days to 50 % flowering : 84 – 88 days

- d) Maturity group (early, medium and late-wherever such classification exists). : Late
- e) Agronomic features (e.g) resistance to lodging, shattering; fertilizer responsiveness; suitability for early or late sown conditions, seed rate etc. Positive response to application of nitrogenous fertilizers; non lodging; synchronous maturity; easily threshable; non- shattering.
Seed rate - Line sowing : 10 Kg/ha
Broadcasting : 12.5 Kg/ha
- f) Quality of produce of grain, forage/fiber including nutritive value, where relevant : Grains rich in seed protein, dietary fibre and calcium (Table 2a)
Palatable and nutritious fodder (Table 2b)
- g) Reaction to major disease under field and controlled conditions (reaction to physiological strain / races / bio-types to be indicated wherever possible) : Tolerant to brown spot
Resistant to leaf, neck and finger blasts
- h) Reactions to major pests (under field and controlled conditions including storage pests) : Tolerant to Grasshopper, Earhead caterpillar, *Mylocerous* weevil and Stem borer. There is no incidence of storage pest.
- i) Reactions to major stresses : Tolerant to drought at field level
- 9 Description of parents of the hybrid : Does not arise
- 10 Describe at least two identifiable and distinguishable morphological characteristics of the variety : Compact ears with top curved fingers;
Copper red coloured grains
- 11 Disease and pest resistance (Give details of any resistance to pest or disease including races) :
Tables 3a,3b and 3c
- 12 Recommended ecology : **Rainfed:** June - July; September - October
Irrigated: December -January; April-May
- 13 Yield in Kg/ha : 3205 Kg/ha
- 14 Current approximate percentage of area of the crop (Kind) under this variety in state : 0.06%
- 15 Recommendation of the All India Workshop about the variety : The proposal was considered by the state varietal Release committee. The performance of the entry was superior in yield. It was evaluated under AICSMIP on Fingermillet during 2007-10
- 16 Acknowledgement particulars about the submission of germplasm samples with NBPGR : The material has been assigned the national identity number IC 597592, which should be used in all future correspondence.

Table 1: Overall performance of Ragi CO 15

Name of the trial	No. of trials	Grain Yield (Kg/ha)					Fodder Yield (Kg/ha)				
		CO 15	CO (Ra) 14	GPU 28	Paiyur (Ra) 2	PR 202	CO 15	CO (Ra) 14	GP U 28	Paiyur (Ra) 2	PR 202
Station trials (2005-2007)	5	3464	2882	2813	-	-	6489	5173	5285	-	-
MLT (2007 – 2009)	17	3142	2625	2535	2672	-	5260	4526	4490	4495	-
ART (2009-2011)	102	2780	2614	2669	2667	-	6505	7251	7390	6538	-
ART (KVK, 2010 - 2011)	12	3436	2836	2557	2967	-	4593	5248	4852	4562	-
AICSMIP trials (2007-2010)*	57	2785	-	-	-	2678	6264	-	-	-	7078
Total No. of trials	136										
Mean of 136 trials		3205	2739	2643	2769		5712	5549	5504	5198	
% increase over			17.01	21.26	15.74			2.93	3.77	9.88	

*Data not included for overall mean

Table 2a: Grain quality characteristics of Ragi CO 15

Sl. No.	Characteristics	CO 15	CO(Ra)14	GPU 28	Paiyur (Ra) 2
a)	Nutritional Quality characters				
1.	Crude Protein (%)	11.8	11.5	10.2	11.3
2.	Crude fat (%)	1.4	1.5	1.8	1.0
3.	Crude fibre (%)	27	31	32	32
4.	Calcium (mg/100g)	301	290	288	295
b)	Sensory evaluation score*				
1.	Colour & appearance	4	4	4	3
2.	Flavour	5	4	4	4
3.	Texture	4	4	4	4
4.	Taste	5	4	3	4
5	Overall acceptability	4.5	4.0	3.8	3.8
c)	Flouring capacity				
1	Initial weight (g)	500	500	500	500
2	Final weight (g)	475	445	440	430
3	Residues weight (g)	25	55	60	70
4	Flouring capacity (%)	95	89	88	86

* Score 1 – Low and 5 - High

Source: Post Harvest Technology Centre, Coimbatore.

Table 2b: Fodder quality characteristics of Ragi CO 15

Sl. No.	Characteristics	CO 15	CO (Ra) 14	GPU 28	Paiyur(Ra) 2
1.	Dry matter (%)	19.80	18.70	19.00	18.90
2.	Crude protein (%)	8.32	7.20	7.00	6.69
3.	Crude fibre (%)	19.57	23.38	25.12	26.03
4.	Potassium (%)	3.07	3.96	4.01	4.31
5.	Phosphorus (%)	0.28	0.22	0.20	0.21
6.	Miner matter (%)	2.21	1.98	1.86	1.94

Source: Department of Forage Crops, TNAU, Coimbatore

Table 3a: Disease reaction of Ragi CO 15 under field condition

S. No	Entry	Years	Leaf blast (G)	Neck blast (%)	Finger blast (%)	Brown spot (G)
1.	CO 15	2007-08	0.0	0.0	0.5	0.0
		2008-09	0.0	0.0	0.4	0.0
		2009-10	0.3	0.3	0.1	0.0
		2010-11	0.7	0.0	0.6	0.0
		Mean	0.3	0.1	0.4	0.0
2.	CO (Ra) 14 *	2007-08	0.7	3.2	3.4	2.0
		2008-09	0.9	2.8	2.9	2.3
		2009-10	0.7	2.5	3.2	2.1
		2010-11	1.0	2.0	3.0	2.7
		Mean	0.8	2.6	3.1	2.3
3	GPU 28 *	2007-08	1.5	0.0	0.8	2.3
		2008-09	1.8	0.0	0.7	2.0
		2009-10	1.7	0.0	1.0	2.4
		2010-11	2.0	0.7	0.9	2.7
		Mean	1.8	0.2	0.9	2.4
4	Paiyur (Ra) 2 *	2007-08	1.5	12.4	6.0	3.0
		2008-09	2.0	15.0	7.3	3.5
		2009-10	2.1	14.5	7.5	2.8
		2010-11	2.3	15.6	9.0	3.7
		Mean	2.0	14.4	7.5	3.3
5	KM 252 **	2007-08	3.4	20.4	14.6	3.4
		2008-09	3.0	22.6	17.4	3.1
		2009-10	3.5	21.0	13.8	4.0
		2010-11	4.0	23.5	16.3	4.2
		Mean	3.5	21.9	15.5	3.7

* check

** susceptible check

G –Grade (0- 5)

Table 3b: Disease reaction of Ragi CO 15 under controlled condition (2010-2011)

S. No	Entry	Leaf blast (0-5 G)	Neck blast (%)	Finger blast (%)
1.	CO 15	1.0	1.8	3.8
2.	CO (Ra) 14 *	4.0	2.2	4.6
3	GPU 28 *	1.0	2.8	4.2
4	Paiyur (Ra) 2 *	2.5	2.5	5.3
5	KM 252 **	5.0	19.0	28.0

* check

** susceptible check

G – Grade (0-5)

Source: AICSMIP

Table 3c: Pest reaction of Ragi CO 15 under field condition (2010-11)

Pests	CO 15	CO(Ra) 14	Paiyur (Ra) 2	GPU 28
Grass hopper (G)	0.7	1.3	3.3	2.0
Earhead caterpillars (G)	0.3	2.7	1.3	1.3
<i>Mylocerus</i> weevil (G)	2.0	2.7	3.0	2.7
Stem borer (G)	1.0	3.3	2.7	2.7

Source: AICSMIP

G – Grade (1 to 5)

Signature of Head of the Station / Institution

/Counter Signed/

Director
Centre for Plant Breeding and Genetics
Tamil Nadu Agricultural University
Coimbatore – 641 003.

Signature of chairman/Co-convenor of
State seed sub committee.



जननद्रव्य संरक्षण विभाग
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राष्ट्रीय पादप आनुवंशिक संसाधन ब्यूरो
National Bureau of Plant Genetic Resources
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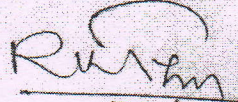
डा० आर० के० त्यागी
Dr R.K. Tyagi
प्रधान वैज्ञानिक एवं विभागाध्यक्ष
Principal Scientist and Head

GCD/RV/July/2013

Date: 05.07.2013

ACKNOWLEDGEMENT CERTIFICATE

This is to acknowledge the receipt of seed material of finger millet variety CO 15 (TNAU 1018) from Dr R Ravikesavan, Professor and Head, Department of Millets, Centre for Plant Breeding and Genetics, TNAU, Coimbatore 641003, Tamil Nadu, in part of requirement for notification and release of varieties by "Central Sub-Committee on Crop Standards, Notification and Release of Varieties of Agri-Horticultural Crops". The material has been assigned with the national identity number IC 597592, which should be used in all future correspondence.


05/7/13
RK TYAGI

Dr R Ravikesavan
Professor and Head
Department of Millets
Centre for Plant Breeding and Genetics
TNAU, Coimbatore 641003, Tamil Nadu

Copy to: Deputy Commissioner (QC) & Member Secretary, Central Sub-Committee on Crop Standards, Notification and Release of Varieties in Agricultural Crops, F-212, Shastri Bhawan, Ministry of Agriculture, Govt. of India, New Delhi 110001, for information and early notification please.

Ragi CO 15 – Package of Practices

Parentage	:	CO 11 x PR 202
Duration	:	125 days
Season	:	Rainfed : <i>Adi pattam</i> (June – July) <i>Puratasi pattam</i> (Sept.- Oct.) Irrigated : <i>Margali pattam</i> (Dec.-Jan.) <i>Chitirai pattam</i> (April-May)
Preparatory cultivation	:	Prepare the field well in advance taking advantage of summer showers. Plough sufficiently well to obtain good tilth.
Manuring	:	i) Apply farmyard manure at the rate of 12.5 t/ha and incorporate well at the time of last ploughing. Apply basally 30 Kg N/ha, 30 Kg P ₂ O ₅ /ha and 30 Kg K ₂ O/ ha. ii) Top dress 30 Kg N/ha at the time of first weeding when there is enough moisture in the soil.
Seed rate	:	10 kg/ha for line sowing; 15 kg/ha for broadcasting
Seed treatment	:	Treat the seeds with Carbendazim at 2.0g/kg of seeds for control of blast and also pellet the seeds with Chloripyriphos 25 EC or Phosalone 35 EC@4ml/kg of seed for control of shootfly. Treat the seeds with Azospirillum and Phosphobacteria each @ 3 packets/ha for additional supply of nitrogen through biological nitrogen fixation.
Application of Biofertilizers to main		
Field	:	Apply Azospirillum and Phosphobacteria each @10 packets/ha with farmyard manure before sowing.
Spacing	:	Line sowing 25 x 10 cm ²
Thinning	:	Thinning on 15-20 days after sowing and maintain uniform population by gap filling with seedlings obtained from thickly populated patches.

Hoeing and weeding : First weeding on 20-25 days and second on 40-45 days after sowing if necessary.

Plant protection : Spray Mancozeb @ 1kg/ha at the time of boot leaf stage for control of smut disease. Spray Methyldemeton 25 EC @ 250 ml/ha at 15 days after sowing for control of shootfly.

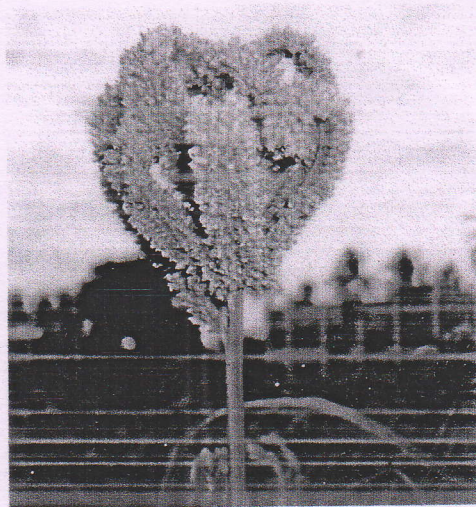
Harvesting : Harvest when the plants turn yellow and the earheads attain brown colour.

Grain yield : 3205 Kg/ha

Fodder yield : 5712 Kg/ha

Characteristics :

- ❖ High grain yield
- ❖ Long duration
- ❖ Blast resistant
- ❖ Non-lodging
- ❖ Preferable grain qualities
- ❖ Palatable straw



Field view of Ragi CO 15