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PGR NOTE

Empowering Ethnic Groups through Farmers' Variety Protection by NBPGR: Success Story from Telangana State

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The Protection of Plant Variety and Farmers' Rights (PPV&FR) Act. 2001 facilitates protection of rights of farmers and plant breeders in India. With the initiative of NBPGR Regional Station, Hyderabad, a total of three registrations in pigeon pea (*Erramachcha kandi*- 65/ 2015) and sorghum (*Pelala jonna*- 30/ 2016 and *Vayunowka jonna*- 32/ 2016) were accomplished from the state of Telangana for getting intellectual and ownership rights on the farmer's varieties. Distinct characters and speciality of these three farmer's varieties from Telangana are highlighted.

Key Words: DUS testing, Farmers' Varieties, PPVFRA, Telangana

Farmers' Variety Registration under PPV & FRA from the State of Telangana

In order to create intellectual protection, value enhancement and benefit sharing to the farming communities, diversity rich elite landraces/ farmers' varieties were identified in endemic native crops from Agri-biodiversity of Telangana (Pandravada *et al*., 2015 & 2017d) which include green gram (Pandravada *et al*., 2017e), dolichos bean, pigeon pea and sorghum (Pandravada *et al*., 2013; Sivaraj *et al*., 2012) for promoting for PPVFRA registration. In this regard, NBPGR Regional Station, Hyderabad identified potential farmers' varieties for evaluation for DUS characters for two seasons and filing of applications on behalf of the Biodiversity Management Committees (BMCs) from Adilabad with PPV & FR Authorty. Out of five farmer varietal registration proposals submitted, for three, one in pigeon pea (*Erramachcha kandi*) and two in sorghum (*Pelala jonna* and *Vayunowka jonna*), procedures completed and registration numbers were allotted/ certificates sent which are as follows:

Pigeon pea (*Erramachcha kandi*/ Reg. No. 65/ 2015)

This farmers' variety is under continuous cultivation by the local farming communities mainly in the mandals of Bejjur, Dahegaon, Kerameri and Sirpur (T) of Komaram Bheem and Bheemini of Mancherial districts. The ethnic community Gond is mainly associated with the cultivation, patronage and sustaining this variety *on-farm*. The pigeon pea farmer's variety (*Erramachcha kandi*) was evaluated for DUS characters during *kharif* season of 2011 and 2012 at NBPGR Regional Station, Rajendranagar, Hyderabad, Telangana. The major distinguishing traits including DUS characteristics of registered pigeon pea farmers' variety (*Erramachcha kandi*) are given in Table 1. This variety is promising with very tall (235.0 cm) plant habit, medium maturity, heavy bearing (269 pods/ plant), long green pods (9.4 cm/ 5-7 seeds/ pod) with brown streaks, seed large, cream with reddish-brown mottles/ speckles having high grain weight (18.0 g), protein (19.5%), dietary fibre (8.1%) and anti-oxidants (2.0%) (Fig. 1).

The application for this farmer variety was filed through BMC Jhari, Kerameri Mandal, Komaram Bheem District, Telangana (Fig. 1) on 1st April, 2013 which has become the 'Right Holder' of this farmers' variety from 5th of February, 2015 the date of grant. As per the legal provisions (PPVFRA, 2001 under section 47), the period of registration is initially for a period of six years and renewable up to 4th February, 2030 with an exclusive right to produce, sell, market, distribute, import or export the registered variety. The pigeon pea farmers' variety (*Erramachcha kandi*) which completed registration process and awarded a certificate (65/ 2015) became the first farmers' variety for Telangana state and third in the country for pigeon pea that have been registered (Pandravada *et al*., 2017a). The general recommended

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Fig. 1. Pigeon pea farmers' variety *Erramachcha kandi* (65/ 2015) registered with PPVFRA

Fig. 2. Sorghum farmers' variety *Pelala jonna* (30/ 2016) registered with PPVFRA

Fig. 3. Sorghum farmers' variety *Vayunowka jonna* (32/ 2016) registered with PPVFRA

package of practices for pigeon pea could be followed for cultivation of this particular farmers' variety as well.

Indigenous Traditional Knowledge

Seed size is large with high grain weight, protein, dietary fiber and anti-oxidants. The split *dal* cooks very fast with good taste and long keeping quality. It is consumed as *dal*/ *pappu* as such, mixed with bottle gourd/ ridged gourd/ *gutti beera* or *sambhar* is prepared.

Sorghum (*Pelala jonna/* Reg. No. 30/ 2016)

This farmers' variety is under continuous cultivation by the local farming communities mainly in the mandals of Boath, Indravelli, Narnoor, Talamadugu and Utnoor of Adilabad, Jainur, Kerameri, Sirpur (U) and Tiryani of Komaram Bheem and Khanapur, Sarangapur and Tanoor of Nirmal districts. The ethnic communities Gond and Kolam are mainly associated with the cultivation, patronage and sustaining this variety *on-farm*. The sorghum farmer's variety (*Pelala jonna*) was evaluated for DUS characters during *rabi* season of 2011-12 and 2012-13 at NBPGR Regional Station, Rajendranagar, Hyderabad, Telangana. The major distinguishing traits including DUS characteristics of registered sorghum farmers' variety (*Pelala jonna*) are given in Table 2. This variety is characterized by good initial establishment, tall plant habit (182.5 cm), early flowering, medium maturity (112.5 days), very loose panicles and small and chalky-white seed amenable for popping (Fig. 2). A dual purpose type useful as food and fodder and dependable in subsistence farming.

The application for this farmer variety was filed through BMC Gourapur, Indravelly Mandal, Adilabad District, Telangana on 28th March, 2014 which has become the 'Right Holder' of this Farmers' Variety from 15th of January, 2016 the date of grant. As per the legal provisions (PPVFRA, 2001 under section 47), the period of registration is initially for a period of six

years and renewable up to 14th January, 2031 with an exclusive right to produce, sell, market, distribute, import or export the registered variety. The sorghum farmers' variety (*Pelala jonna*) which completed registration process and awarded a certificate (30/ 2016) became the second farmers' variety for Telangana state and second in the country for sorghum that have been registered (Pandravada *et al*., 2017b). The general recommended package of practices for sorghum could be followed for cultivation of this particular farmers' variety as well.

Indigenous Traditional Knowledge

Seed unique as amenable for popping and preparation of popped flakes (*Jonna pelalu*) which are mixed with jaggery to prepare round ball like sweets (*Pelala vundalu*). Popped flakes (*Jonna pelalu*) and sweets made of them (*Pelala vundalu*) are offered to Gods during poojas/ festivals especially on *Vugadi* day and during *Vata Savithri Vratam* compulsorily to Goddess Devi/ Banyan tree as naivaidyam. During *Nagula Panchami* festival, used invariably along with milk for offering to Snake God and on *Polala Amavasya* day while doing pooja in the fields, compulsorily offered as naivaidyam to Goddess Parvati Devi. Popped flakes (*Jonna pelalu*) also used in pooja during *Nagula chavithi* (Fourth day after *Deepavali*) to worship the Snake God and sprinkle on the Snake mounds and to offer as naivaidyam. Popped sweets (*Pelala vundalu*) are consumed while on fasting during poojas/ festivals. Seed flour added to butter milk and kept for fermentation and consumed after two - three days in the mornings for cooling/ invigorating before going for field work. Seed flour mixed with curd, onion and chillies and made in to small thin round disks and dried in the sun for consumption directly or after frying in oil as a snack. Also used to prepare dosa, vada and paapad etc.

Sorghum (*Vayunowka jonna/* Reg. No. 32/ 2016)

This farmers' variety is under continuous cultivation by the local farming communities mainly in the mandals of Bela and Narnoor of Adilabad, Jainur, Sirpur (U) and Tiryani of Komaram Bheem, Kasipet of Mancheriyal and Sarangapur of Nirmal districts. The ethnic communities Gond, Kolam and Raj Gond are mainly associated with the cultivation, patronage and sustaining this variety *on-farm*. The sorghum farmer's variety (*Vayunowka jonna*) was evaluated for DUS characters during *rabi* season of 2011-12 and 2012-13 at NBPGR Regional Station, Rajendranagar, Hyderabad, Telangana. The major distinguishing traits including DUS characteristics of registered sorghum farmers' variety (*Vayunowka jonna*) are given in Table 3. This variety is characterized by good early plant vigour, tall plant habit (156.2 cm), medium maturity (108 days), semi-compact panicles, medium non-lustrous yellow seed, high antioxidants (3.8%) and protein (13.7%) and low carbohydrates (58.4%) (Fig. 3). A dual purpose and subsistence landrace useful as food and fodder.

Table 1. Major distinguishing traits including DUS characters of registered pigeon pea farmers' variety (*Erramachcha kandi*)

Trait	Distinctness	Trait	Distinctness
Plant growth habit	Determinate	Pod surface stickiness	Present
Branching pattern	Semi-spreading	Pods/ plant (no)	More/ Up to 269
Plant height (cm)	Tall - Very tall/ 150.0 - 235.0	Seeds/ pod (no)	5- 7
Stem colour	Green	Pod borer incidence	Present
Leaflet shape	Oblong	Pod size (Length/ Width (cm))	Long/ 9.4/ 1.1
Leaf pubescence	Pubescent	Seed colour (immature stage)	Light green with brown mottles/ speckles
Flower colour of base of petal (standard)	Light yellow	Seed colour (mature stage)	Cream with reddish-brown mottles/ speckles
Wing petal colour	Greenish-yellow	Seed colour pattern	Mottled and speckled
Keel petal colour	Greenish-yellow	Seed shape	Elongate
Pattern of streaks on petal (standard)	Dense	Seed size	Large
Flowering pattern/ Days to flowering	Determinate/ 107	100 seed weight (g)	18.0
Pod colour (Immature stage)	Green with brown streaks	Protein (%)	19.5
Pod colour (Mature stage)	Creamish-brown	Dietary fiber (%)	8.1
Pod form	Cylindrical	Anti-oxidants (%)	2.0
Pod constriction	Prominent	Cooking quality	Dal cooks very fast
Pod pubescence	Pubescent	Taste	Very good with longer keeping quality
Pod waxiness	Present		

Table 2. Major distinguishing traits including DUS characters of registered sorghum farmers' variety (*Pelala jonna*)

Trait	Distinctness	Trait	Distinctness
Early plant vigour	Good	Panicle shape	Very lax/ Pyramidal
Stem colour	Green	Glume colour	Straw-brown
Stem diameter (cm)	Small/ 1.3	Glume covering	One fourth grain covered
Internode length (cm)	25.7	Glume length	Very short (25% grain covered)
Leaf midrib colour	White	Plant height (cm)	Medium/ 182.5
Flag leaf yellow colouration of midrib	Absent	Grain colour	Greyed-white
Leaf colour	Dark green	Grain luster	Non-lustrous
Leaf orientation	Drooping	Grain size	Very small
Leaf length(cm)	Medium/ 46.1	Grain shape	Narrow-elliptic
Leaf width (cm)	Medium/ 4.9	Grain threshability	Freely threshable
Total leaves (no)	7.4	Days to 50% flowering/ Time to panicle emergence	Medium/ 75.0
Panicle compactness/ density	Very loose drooping	Days to maturity	112.5
Panicle length (cm)	Medium/ 27.2	100 Seed weight (g)	3.0
Panicle width (cm)	7.1	Yield/ plant (g)	25.6
Neck of panicle (cm)	Long (15.1-20.0)	Brix %	14.6

The application for this farmer variety was filed through BMC Goyagoan, Kerameri Mandal, Komaram Bheem District, Telangana on 28th March, 2014 which has become the 'Right Holder' of this farmers' variety from 15th of January, 2016 the date of grant. As per the legal provisions (PPVFRA, 2001 under section 47), the period of registration is initially for a period of six years and renewable up to 14th January, 2031 with an exclusive right to produce, sell, market, distribute, import or export the registered variety. The sorghum farmer's variety (*Vayunowka jonna*) which completed registration process and awarded a certificate (32/2016) became the third farmers' variety for Telangana state and third in the country for sorghum that have been registered (Pandravada *et al*., 2017c). The general recommended package of practices for sorghum could be followed for cultivation of this particular farmers' variety as well.

Indigenous Traditional Knowledge

Seed flour of this farmers' variety is used to prepare offerings (*Kudumulu*) during festivals/poojas and hence it is well known and hence under the continuous patronage of the farming community and cultivated at least in the backyards. This variety has high antioxidants (3.8%), protein (13.7%) and low carbohydrates (58.4%) and hence most suitable for diabetics for consumption.

NBPGR Regional Station, Hyderabad strived hard for registration of these farmers' varieties creating

Table 3. Major distinguishing traits including DUS characters of registered sorghum farmers' variety (*Vayunowka jonna*)

Trait	Distinctness	Trait	Distinctness
Early plant vigour	Very good	Glume covering	Three fourths grain covered
Stem colour	Green	Glume length	Medium/ 75% grain covered
Stem diameter (cm)	Small/ 1.2	Plant height (cm)	Medium/ 156.2
Internode length (cm)	20.4	Grain colour	Grayed-yellow
Leaf midrib colour	White	Grain luster	Non-lustrous
Flag leaf yellow colouration of midrib	Absent	Grain size	Medium
Leaf colour	Green	Grain shape	Circular
Leaf orientation	Drooping	Grain threshability	Freely threshable
Leaf length(cm)	59.9	Days to 50% flowering/ Time to panicle emergence	Medium/ 72.0
Leaf width (cm)	5.9	Days to maturity	108.0
Total leaves (no)	9.6	100 Seed weight (g)	Low/ 3.1
Panicle compactness/ density	Semi-compact	Yield/ plant (g)	89.5
Panicle length (cm)	Short/ 18.8	Starch (%)	58.4
Panicle width (cm)	7.1	Protein (%)	13.7
Neck of panicle (cm)	Medium (10.1-15.0)	Sugar (%)	7.6
Panicle shape	Elliptical	Brix (%)	13.5
Glume colour	Grey-red	Antioxidants (%)	3.8

awareness among the ethnic groups. All the concerned government organizations need to come together to educate/help/protect the farming community regarding their ownership rights on the variety, modalities for marketing and access and benefit sharing mechanism etc. Efforts are also being made to form cooperatives by the respective BMCs for production, marketing and creation of a value chain of these farmers' varieties which are having huge demand.

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