Drought tolerant CIP clone introduced in All India Coordinated Research Project after testing at Mansagar (Jodhpur project site)

PROFORMA FOR INTRODUCING CULTURE INTO AICRP

1. Culture : CP4175 (CIP397006.18)
2. Year of cross : Received from CIP as in-vitro plants in 2008
3. Parentage : CP4175 (CIP397006.18) { ♀ 92.119 ♂ 88.052
4. Year of introduction into AICRP : 2015
5. Area of adaptation : Potato growing regions with lower water availability
6. Yield records (Table 1) : CP4175 produced higher yield than K. Bahar (Modiuram) and Surya & K. Pukhraj (Jodhpur) at 90 days

Table 1: Mean tuber yield under different irrigation regime at Modipuram (2011-12 & 2012-13) and Jodhpur (2012-13, 2013-14 & 2014-15)

Genotypes	Modipuram						**Jodhpur***			
	Tuber yield (t/ha)						Tuber yield (t/ha^{-1})			
	Marketable			Total			Marketable		Total	
	I_1	I_2	I_3	I_1	I_2	I_3	I_1	I_2	I_1	I_2
CP4175	49.5	40.3	36.4	51.4	40.3	36.4	37.9	30.2	38.7	31.3
K.Bahar/K. Surya*	32.0	32.2	28.3	34.5	32.2	28.3	23.2	17.3	24.7	18.5
Kufri Pukhraj	42.5	41.5	36.7	44.4	41.5	36.7	30.7	23.0	32.8	24.9
CD $_{0.05}$	3.88			4.91			3.79		4.38	

I_1= Normal irrigation, I_2= Moderate water deficit, I_3= Severe water deficit

Table 2: Mean tuber dry matter (%) and drought tolerance index (DTI) under different irrigation regimes at Modipuram (2011-12 & 2012-13) and Jodhpur (2012-13, 2013-14 & 2014-15)

Genotypes	Tuber dry matter content (%)					Drought tolerance index		
	Modipuram			**Jodhpur***		Modipuram		**Jodhpur***
	I_1	I_2	I_3	I_1	I_2	I_2	I_3	I_2
CP4175	19.0	20.1	21.6	21.9	23.5	1.18	1.04	1.16
K.Bahar/K.Surya**	18.5	18.6	19.7	21.0	21.8	0.64	0.55	0.50
K. Pukhraj	16.8	16.4	17.4	17.6	18.3	1.06	0.92	0.80
CD $_{0.05}$	1.68			1.62		-	-	-

7. Tuber characters : Light yellow, ovoid, shallow-medium, light yellow.
8. Maturity : 75-90 days (To be assessed in medium maturing group)
9. Keeping quality : Good (Table 3 & 4).
10. Consumer quality: Mealy texture with good flavours & taste and free from discolouration after cooking.

Table 3: Mean keeping quality (2012-15, three years) after 60 days of storage **(Jodhpur)**

Genotypes	Normal irrigation			Moderate water deficit		
	Rottage %	Physiological weight loss %	Total weight loss %	Rottage %	Physiological weight loss %	Total weight loss %
CP4175	1.0	3.9	4.9	3.1	5.5	8.6
Kufri Pukhraj	6.8	6.9	13.7	9.6	7.9	17.5
Kufri Surya	4.7	43.	9.0	6.2	6.5	12.7

12. Disease resistance

i)	Late blight	:	-
ii)	Early blight	:	Not tested
iii)	Wart	:	Not tested
iv)	Cyst nematode	:	Not tested
v)	Viruses	:	Not tested
vi)	Any other	:	Not tested

13. Advantage over existing commercial varieties

- CP4175 produced 49, 25 and 29% higher total tuber yield than K. Bahar under normal irrigation, mild water deficit and severe water deficit conditions respectively at Modipuram. It showed advantage of 16% over K. Pukhraj under normal irrigation at 90 days.
- CP4175 produced higher total tuber yield than K. Surya (57 & 68%) and K. Pukhraj (18 & 26%) and under normal irrigation and mild water deficit conditions respectively at Jodhpur at 90 days.
- CP4175 possessed higher dry matter (19.0, 20.1 and 21.6 under normal irrigation, mild water deficit and severe water deficit conditions respectively) than K. Bahar (18.5, 18.6 and 19.7) and K. Pukhraj (16.8, 16.4 and 17.4) at Modipuram.
- CP4175 possessed higher dry matter (21.9 and 23.5 under normal irrigation and mild water deficit conditions respectively) than K. Surya (21.0 and 21.8) and K. Pukhraj (17.6 and 18.3) at Jodhpur.
- CP4175 possessed high drought tolerance index (1.18 & 1.04 under mild water deficit and severe water deficit conditions respectively) than K. Bahar (0.64 & 0.55) K. Pukhraj (1.06 & 0.92) at Modipuram. It possessed high drought tolerance index (1.16 under mild drought conditions) than K Surya (0.50) and K. Pukhraj (0.80) at Jodhpur.
- CP4175 possesses long tuber dormancy, good keeping quality under ambient temperature. It has mealy texture, good flavour with good taste and free from discolouration after cooking. It showed good keeping quality under normal irrigation and mild water deficit conditions at Jodhpur.

14. Recommendation if any:

15. Photograph of CP4175

Fig.1 CP4175- Leaf, flowers, tubers and sprout