Research Article

EVALUATION OF MAIZE HYBRIDS IN TERAI AND INNER TERAI ECOLOGICAL BELT OF NEPAL

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ABSTRACT

Hybrid is the most economical option to boost up the grain yield of maize, and slowly it is gaining popularity among the farmers of Nepal. In order to identify the potential hybrids suitable for Terai and Inner Terai regions, a set of experiment was conducted on hybrid maize developed by National Maize Research Program (NMRP), Rampur in Coordinated Variety Trials (CVTs) during the winter season of 2014/15 and 2015/16. The experiments were done by using Randomized Complete Block Design (RCBD). Each treatment was replicated thrice for each site at Rampur, Belachapi, Tarahara, and Parwanipur. Over the years, genotypes RML-83/RL-197 and RML-4/RL-111 yielded higher than other tested genotypes in Tarahara. Similarly, RL-180/RL-105, RML-87/RL-105, Dekalb double and Rampur Hybrid-6 produced higher grain yield at Belachapi during 2014/15. Genotype RML-4/RML-111 followed by RML-98/RL-105, and Rampur Hybrid-6 yielded higher at Parwanipur during 2015/16. In the case of Rampur, genotypes RML-98/RML-105 had produced higher yield in both the years whereas RML-5/RL-105 during 2014/15, and Rampur Hybrid-2 followed by RML-55/RL-105 were the superior genotypes in terms of grain yield during 2015/16. Those hybrids with higher grain yield in CVTs will be upgraded to Coordinated Farmers Field Trial on Hybrid (CFFTH) and these hybrids might be the potential future hybrids for Terai and Inner Terai of Nepal.

Key words*:* Coordinated varietal trial, genotypes, multi-location, single cross

INTRODUCTION

Maize (*Zea mays* L.) is the second important staple food crop in terms of area (954,158 ha) and production (2,555,847 t) with productivity of 2,679 kg ha^{-1} in Nepal (MoALD, 2018). Out of the total maize growing area in the country, 8.7, 72.3, and 18.9% area belongs to high hills, hills, and Terai with the productivity of 2,075, 2,461 and 2,725 kg ha^{-1}, respectively. The area under summer maize is about 73.9%, whereas spring and winter maize occupies 14.2% and 11.9%, respectively. The annual seed replacement rate (SRR) of maize is about 17.83% (Memoire, 2017). Nearly, 12-15% area is covered by hybrids, and 85-88% by open-pollinated varieties (improved, or farmers' varieties). It is believed that there is less scope for increasing maize production and productivity through area expansion, thus aggressive intervention of hybrid maize technology in Terai and potential pockets of mid- hills could be one of the potential options to tackle with the situation. Besides, it may be equally important to work in developing other cost effective production technologies that are best suited to the farmers' need. There is a huge gap between the actual (2.67 t ha^{-1}) and potential yield (6.5 t ha^{-1}) of maize at farmers' level (Koirala, 2014).

It is important to consider that the reasons behind low production and productivity of maize in Nepal are mainly due to limited hybrid choices and low access to improved seeds of released/registered hybrids developed by national system. Similarly, biotic stresses such as northern leaf blight, gray leaf spot (Subedi, 2015), stem borer, and fall army worm and abiotic stresses (high and low temperature, drought and water logging) are some of the other important constraints for increased maize production in Nepal. More than 4/5th maize area is still under open pollinated varieties (OPVs). National Seed Vision (NSV) 2013 expects to increase SRR up to 33% for maize by 2025. Yield level of open-pollinated varieties (OPVs) could not be increased from a certain level even if high inputs are given because of limited yield potentiality of OPVs as its potentiality already reached in plateau. Hybrids can give 25-30% higher grain yield as compared to better OPVs whereas there is huge demand of maize for food grain as well as feed ingredients. It is estimated that requirement of yellow kernel maize for poultry feed is 391,538 t and only 25% of this requirement is fulfilled by domestic production and rest is imported from abroad. ADS (2014) and National Seed Vision (NSV) 2013 anticipated towards development and promotion of high yielding hybrids to boost maize production and productivity both from public and private sectors. NSV (2013) envisaged the development and promotion of 12 and 5 maize hybrids by public and private sector, respectively by the end of 2025 to fulfil the increasing demand and visualizes as an import substitution measure. Under this context set of experiments were done across the NARC/ARS sites with the objective to identify the potential hybrids suitable for Terai and Inner Terai regions of Nepal.

MATERIAL AND METHODS

The hybrid maize genotypes were evaluated in coordinated varietal trial (CVT) in Rampur, Tarahara and Belachapi in 2014/15 and Rampur, Tarahara and Parwanipur in 2015/16 during winter season. The total numbers of genotypes tested were 25 in FY 2014/15 and 15 in 2015/16. The unit plot size was 4 rows of 5m length with row spacing of 0.75m and plant spacing of 0.20m. The design of the experiment was randomized complete block design (RCBD) with three replicates. All agronomic practices were followed as per standard of National Maize Research Program (NMRP), Rampur (NMRP, 2014). Farm yard manure (FYM) @15 t ha^{-1} in combination with chemical fertilizer @180:60:40 N: P: K kg ha^{-1} was applied. Di-ammonium phosphate (DAP) and Murate of potash (MoP) were applied as basal whereas urea was top dressed in three splits. The 50% days to anthesis and silking, plant and ear height, yield and yield attributing traits and disease parameters were recorded according to the procedures described by CIMMYT (CIMMYT, 1985). Grain yield was adjusted to 80% shelling recovery and 15% moisture level. The recorded data were analyzed with Genstat software.

RESULTS

In coordinated hybrid trial tested at Rampur during 2014/15, genotypes differed significantly for days to anthesis ($p<0.05$), days to silking ($p<0.001$), plant height ($p<0.001$) and grain yield ($p<0.05$) whereas non-significant ($p>0.05$) results were observed for ear height and turcicum leaf blight (Table 1). Days to anthesis ranged from 63 to 70 days after sowing with the mean of 66 days. The higher grain yield was recorded in RML-5/RL-105 (8.1 t ha^{-1}) followed by RML-98/RL-105 (8 t ha^{-1}).

Table 1. Mean grain yield and other traits of hybrids in CVTH at NMRP Rampur, 2014/15 winter

Genotype	Days to 50%		Height, cm		*E. turcicum* (1-5)	Grain yield (t ha^{-1})
	Anthesis	Silking	Plant	Ear		
RML-87/RL-105	68	73	163	82	1.8	7.1
RML-95/RL-105	67	71	177	92	1.7	7.6
RML-83/RL-197	66	70	152	73	2.0	4.6
RML-19/NML-2	68	72	168	77	1.7	7.2
RML-68/RL101	65	70	142	68	2.2	5.4
RL-21/RL-101	63	67	172	77	2.3	6.2
RL-36/RL-197	67	72	198	72	1.5	6.1
RL-125/RML-18	66	66	150	60	1.8	7.0
RML-4/RL-111	65	70	153	75	1.7	7.5
RL-151/RL111	65	70	188	85	2.0	6.1
RL-150/RL-111	63	67	192	87	1.8	6.9
RML-98/RL-105	68	73	140	78	1.5	8.0
RML-5/RL-105	68	72	175	75	1.2	8.1
RL-180/RL-105	66	69	170	72	1.5	7.3
RML-55/RL-105	67	71	220	117	2.0	6.2
RML-85/RL-105	68	72	153	82	2.2	7.6
RML-57/RL-105	66	70	187	77	1.7	7.3
Rampur Hybrid-2/RML-17	66	70	172	75	1.8	6.7
Rampur Hybrid-6/RML-17	69	73	157	73	1.8	5.0
Rampur Hybrid-4/RML-17	66	71	158	67	2.2	5.9
RML-95/RML-97//RML-17	67	71	163	70	2.2	7.2
RML-86/RML-96//RML-17	67	71	173	77	2.0	5.9
Rampur Hybrid-4	64	68	173	70	1.8	5.7
Rampur Hybrid-6	70	74	145	70	1.8	5.3
Rajkumar	66	70	155	68	2.0	7.5
Mean	66	70	168	77	1.8	6.6
F-test	*	**	**	ns	ns	*
$LSD_{0.05}$	3.3	3.7	37	24	0.64	2.4
CV, %	3	3.2	13.3	18.8	21.1	22.3

Similarly, during the year 2015/16 as well most of the traits differed significantly ($p<0.001$), among the genotypes, except plant height and ear height at Rampur. Days to anthesis ranged from 63 to 70 days after seeding with the mean of 67 days. For grain yield, the differences among the genotypes varied from 0.9 to 5.7 t ha^{-1}. Significantly higher grain yield of 5.7 t ha^{-1} was produced by Rampur Hybrid-2 followed by RML-98/RL-105 (5.5 t ha^{-1}) and RML-55/RL-105 (4.9 t ha^{-1}), respectively (Table 2).

Table 2. Results of CVTH tested at NMRP Rampur, 2015/16 winter

Genotype	Days to 50%		Height, cm		Scale (1-5)				Grain yield (t ha^{-1})
	Anthesis	Silking	Plant	Ear	PA	EA	*E. turcicum*	HC	
RML-87/RL-105	68	69	183	95	2.7	3.2	2.8	2.5	3.5
RML-95/RL-105	67	71	178	85	2.0	2.8	2.5	2.0	4.2
RML-83/RL-197	67	71	200	98	3.2	2.8	2.2	3.5	3.4
RML-19/NML-2	68	73	197	93	2.7	2.5	2.2	3.0	4.5
RML-68/RL-101	61	65	178	95	3.0	2.8	2.5	2.0	3.1
RL-21/RL-101	67	70	192	95	2.3	2.5	2.0	2.5	4.1
RL-36/RL-197	70	74	202	103	2.7	3.0	2.0	2.3	2.2
RL-125/RML-18	64	69	193	92	3.0	3.2	2.7	3.3	2.6
RML-4/RL-111	69	72	173	92	1.8	2.5	2.2	1.7	2.8
RL-151/RL-111	63	68	217	103	2.8	3.0	2.5	2.0	3.8
RL-150/RL-111	63	69	208	103	3.2	3.3	2.3	1.7	4.5
RML-98/RL-105	67	72	203	88	1.8	1.8	2.2	1.3	5.5
RML-5/RL-105	68	71	168	77	1.7	1.7	1.7	1.5	4.5
RL-180/RL-105	65	69	200	100	1.7	2.2	2.2	1.3	4.2
RML-55/RL-105	65	70	222	127	3.0	2.7	2.2	1.2	4.9
RML-85/RL-105	69	73	197	98	2.2	2.3	2.5	2.3	4.2
RML-57/RL-105	68	72	192	80	1.7	1.7	1.8	1.5	4.1
RML-115/RML-96	67	71	170	87	2.3	2.2	2.0	1.3	3.8
RML-6/RML-19	68	70	182	92	3.0	4.7	2.0	2.2	3.9
RML-4/RL-105	68	73	158	77	2.3	2.8	2.0	2.0	3.7
RL-84/RML-62	65	70	192	83	2.5	2.8	2.8	2.7	3.0
RL-153/RL-105	68	70	188	88	2.5	2.3	1.8	3.0	3.5
RML-95/RML-18	65	70	205	90	4.2	3.8	3.5	2.3	1.8
Rampur Hybrid-2	68	71	161	85	1.7	1.7	1.8	1.5	5.7
Rajkumar	66	70	203	85	2.4	3.5	2.3	2.4	0.9
Grand mean	67	70	191	93	2.5	2.7	2.3	2.1	3.7
F-test	**	*	ns	ns	**	**	**	**	**
$LSD_{0.05}$	2	4.2	36	26	0.9	0.9	0.8	1	2.1
CV, %	1.8	3.6	11.5	17	21.7	19.4	18.1	27.3	34.6

Note: PA-Plant aspect, EA-Ear aspect, HC-Husk cover

From the result of CVTH at Belachapi during the FY 2014/15, except plant height and grain yield, all other recorded traits were non significant ($p>0.05$) among the tested genotypes (Table 3). The higher grain yield was recorded for RL-180/RL-105 (11 t ha^{-1}) followed by RML-87/RL-105 (10.7 t ha^{-1}), Dekalb double (10.5 t ha^{-1}), and Rampur hybrid-6 (10 t ha^{-1}).

Table 3. Mean grain yield and other characters of hybrids in CVTH at Belachapi, 2014/15 winter

Genotype	Days to 50%		Height, cm		Scale (1-5)			Grain yield (t ha-1)
	Anthesis	Silking	Plant	Ear	PA	EA	HC	
RML-87/RL-105	78	81	205	81	1.7	2.0	1.7	10.7
RML-95/RL-105	78	81	189	75	2.7	2.3	2.0	9.4
RML-83/RL-197	79	82	222	89	2.2	2.5	2.2	8.2
RML-19/NML-2	80	83	189	78	2.2	2.3	1.8	7.6
RML-68/RL101	78	82	193	56	1.8	2.0	1.7	7.4
RL-21/RL-101	79	82	188	69	2.0	2.0	1.5	7.7
RL-36/RL-197	79	83	204	73	1.8	1.8	2.0	7.8
RL-153/RL-105	79	82	207	74	1.8	2.0	1.2	8.9
RML-4/RL-111	81	81	198	78	2.0	2.2	1.2	5.9
RL-151/RL111	79	82	222	88	2.2	2.2	2.0	5.9
RL-150/RL-111	78	81	215	74	2.2	2.0	1.3	6.0
RML-98/RL-105	79	82	208	72	1.7	2.0	2.2	9.6
RML-5/RL-105	76	80	210	69	2.5	2.2	1.3	8.8
RL-180/RL-105	79	83	178	66	2.7	2.5	1.2	11.0
RML-55/RL-105	79	82	209	92	1.5	1.8	1.3	7.6
RML-85/RL-105	79	83	220	83	1.8	1.8	1.8	9.8
RML-57/RL-105	79	82	231	85	1.8	2.2	1.2	7.3
Rampur Hybrid-2/RML-17	78	81	222	81	2.7	2.3	1.5	8.2
Rampur Hybrid-6/RML-17	79	83	185	69	2.0	2.2	2.0	8.2
Rampur Hybrid-4/RML-17	79	83	204	77	2.3	2.3	2.0	8.2
RML-95/RML-97//RML-17	78	81	194	73	2.7	2.3	2.0	8.8
RML-86/RML-96//RML-17	77	80	210	74	2.2	2.2	2.3	8.4
Rampur Hybrid-4	78	81	202	61	2.2	2.3	1.5	8.9
Rampur Hybrid-6	79	82	195	77	1.7	1.8	1.2	10.0
Dekalb Double	78	81	188	77	2.3	2.5	1.8	10.5
Mean	79	82	204	76	2.1	2.2	1.7	8.4
F-test	ns	ns	**	ns	ns	ns	ns	*
$LSD_{0.05}$	2.8	2.6	16.6	18.3	0.85	0.7	0.95	3.7
CV, %	2.2	1.9	5	14.7	24.9	20.5	34.9	26.8

Note: PA-Plant aspect, EA-Ear aspect, HC-Husk cover

At Tarahara during 2014/15, out of 25 hybrids evaluated in multilocation trials, RML-95/RML-97//RML-17 produced significantly ($p<0.001$) the highest grain yield of 7.3 t ha^{-1} followed by 7.2 t ha^{-1} by RML-83/RL-197 and 7.0 t ha^{-1} by RML-4/Rl-111, respectively (Table 4). These hybrids are statistically at par with popular multi-national company hybrid Rajkumar for grain yield and other traits.

Table 4. Mean grain yield and other characters of hybrids in CVTH at Tarahara, 2014/15 winter

Genotype	Days to 50%		Height, cm		Scale (1-5)			Grain yield ($t\ ha^{-1}$)
	Anthesis	Silking	Plant	Ear	PA	EA	HC	
RML-87/RL-105	103	106	191	105	3.3	3.0	3.3	5.5
RML-95/RL-105	98	102	161	101	3.0	3.0	4.0	6.1
RML-83/RL-197	98	101	205	109	4.0	2.5	4.0	7.2
RML-19/NML-2	102	106	209	88	2.3	3.0	2.7	6.6
RML-68/RL101	100	103	162	90	2.7	2.3	2.3	4.0
RL-21/RL-101	98	100	176	97	3.3	2.3	3.7	5.5
RL-36/RL-197	102	105	212	102	2.7	2.0	3.0	6.1
RL-153/RL-105	101	104	180	104	2.0	2.3	3.0	3.5
RML-4/RL-111	102	105	173	89	1.0	1.3	1.3	7.0
RL-151/RL111	102	105	190	94	2.7	2.0	2.7	3.1
RL-150/RL-111	96	99	194	97	3.0	1.8	3.0	6.7
RML-98/RL-105	102	106	188	101	3.3	3.0	3.3	5.3
RML-5/RL-105	104	106	180	93	2.7	2.0	3.0	3.5
RL-180/RL-105	101	104	169	91	3.7	3.7	3.7	2.2
RML-55/RL-105	98	102	191	111	3.7	2.3	3.7	5.1
RML-85/RL-105	104	107	198	103	2.7	2.7	2.7	5.0
RML-57/RL-105	102	106	190	88	4.3	2.3	3.7	5.3
Rampur Hybrid-2/RML-17	103	105	189	106	2.7	3.0	2.7	6.4
Rampur Hybrid-6/RML-17	100	102	190	101	3.0	3.5	3.3	5.9
Rampur Hybrid-4/RML-17	100	104	166	95	3.0	3.7	3.3	5.5
RML-95/RML-97//RML-17	99	102	189	106	3.0	3.0	3.0	7.3
RML-86/RML-96//RML-17	100	104	173	99	4.0	2.7	4.0	5.0
Rampur Hybrid-4	99	103	176	88	2.7	2.7	2.7	6.0
Rampur Hybrid-6	105	106	179	105	3.0	2.3	3.0	4.7
Rajkumar	95	97	194	99	2.7	2.0	3.0	6.7
Grand mean	101	104	185	99	3	2.6	3.1	5.4
F-test	**	**	ns	ns	**	**	*	**
$LSD_{0.05}$	2.9	2.9	33	18.2	1.6	1	1.2	2.2
CV, %	1.8	1.7	10.9	11.2	21.5	24.7	24.4	24.5

Note: PA-Plant aspect, EA-Ear aspect and HC-Husk cover

Among the tested genotypes at Tarahara during 2015/16, only plant height ($p<0.001$) and grain yield ($p<0.05$) differed significantly whereas the rest of the traits were statistically similar (Table 5). The high yielding genotypes were RML-83/RML-197 (10.2 $t\ ha^{-1}$) followed by RML-4/RL-111 (10.1 $t\ ha^{-1}$), RL-150/RL-111 (9.6 $t\ ha^{-1}$) and RML-86/RML-96 (9.0 $t\ ha^{-1}$).

Table 5. Results of CVTH tested at Tarahara during winter of 2015/16

Genotype	Days to 50%		Height, cm		Scale (1-5)			Rotten ears (%)	Grain yield (t ha^{-1})
	Anthesis	Silking	Plant	Ear	PA	EA	HC		
RML-95/RL-105	107	110	186	92	3.3	1.7	2.7	6.7	8.2
RML-83/RL-105	107	110	199	101	3.0	2.0	2.7	6.8	6.9
RL-125/RML-18	107	110	191	97	3.3	2.7	3.7	10.9	6.8
RML-83/RML-197	106	108	193	108	2.7	2.3	2.3	6.8	10.2
RML-4/RL-111	107	111	178	89	2.0	2.3	1.7	7.1	10.1
RL-151/RL-111	106	110	185	93	2.7	1.7	2.7	4.8	8.7
RL-150/RL-111	104	107	191	94	2.7	2.0	3.0	3.3	9.6
RML-98/RL-105	108	107	187	86	3.3	2.7	2.0	7.3	6.9
RML-5/RL-105	106	109	186	86	3.0	1.7	2.3	4.8	7.5
RML-115/RML-96	106	109	147	70	3.7	2.0	2.3	6.1	7.6
RML-4/RL-105	107	108	178	89	2.0	1.0	1.7	3.8	8.6
RML-86/RML-96	109	111	181	84	3.0	2.7	2.0	7.8	9.0
Rampur Hybrid-4	107	110	158	67	2.7	3.0	2.7	7.2	7.7
Rampur Hybrid-6	109	110	162	79	2.7	2.7	2.0	11.2	8.5
Rampur Hybrid-2	107	110	161	80	3.0	2.0	3.0	9.3	6.3
Grand mean	107	109	179	88	2.1	2.2	2.4	6.9	8.2
F-test	ns	ns	**	ns	ns	ns	ns	ns	*
$LSD_{0.05}$	2.4	30	27.7	23.1	1.2	1.4	1.3	5.7	2.9
CV, %	4.2	10.9	7.2	15.8	24.9	38.6	30.8	49	21.5

Note: PA-Plant aspect, EA-Ear aspect and HC-Husk cover

All traits differed significantly ($p<0.001$), except plant aspect and ear aspect at Parwanipur during FY 2015/16 (Table 6). The highest grain yield (10.6 t ha^{-1}) was recorded for RML-4/RL-111 followed by 10.4 t ha^{-1} by RML-98/RL-105 and 9.9 t ha^{-1} by Rampur Hybrid-6, respectively.

Table 6. Results of CVTH at Parwanipur during winter of 2015/16

Genotype	Days to 50%		Height, cm		Scale (1-5)			Grain yield (t ha^{-1})
	Anthesis	Silking	Plant	Ear	PA	EA	HC	
RML-95/RL-105	109	112	158	69	1.3	2.0	2.0	7.4
RML-83/RL-105	109	111	162	80	2.7	3.0	3.3	8.4
RL-125/RML-18	107	110	151	71	2.7	3.3	2.0	7.5
RML-83/RML-197	109	112	162	74	2.0	2.7	4.3	8.7
RML-4/RL-111	109	111	143	65	1.0	1.7	1.0	10.6
RL-151/RL-111	105	109	155	71	2.0	2.0	1.7	8.1
RL-150/RL-111	105	109	164	74	1.0	1.3	1.0	7.7
RML-98/RL-105	108	111	159	64	2.0	1.3	1.0	10.4
RML-5/RL-105	109	113	151	59	1.7	2.3	2.7	6.9
RML-115/RML-96	107	110	138	58	1.7	1.7	1.0	7.6
RML-4/RL-105	109	111	153	69	1.3	1.7	1.0	8.0
RML-86/RML-96	108	110	174	69	2.0	1.7	2.0	9.5
Rampur Hybrid-4	108	110	142	52	1.7	3.0	1.0	6.9
Rampur Hybrid-6	109	112	143	59	2.0	3.0	1.3	9.9
Rampur Hybrid-2	109	112	153	66	2.3	3.0	1.7	7.9
Grand mean	1.8	11	153	67	1.8	2.2	1.8	8.4
F-test	**	**	**	**	ns	ns	**	*
$LSD_{0.05}$	1.9	2.2	15.2	11	1.6	1.5	1.5	2.3
CV, %	1.1	1.2	6	9.9	52	38.8	48	16.1

Note: PA-Plant aspect, EA-Ear aspect, HC-Husk cover

DISCUSSION

The hybrid maize is well accepted by the farmers in Nepal and they swiftly substituted open-pollinated varieties in Terai and commercial maize growing areas of the country. In this study, performance of various types of hybrids was studied in multi-location experiments. In Tarahara, genotypes RML-83/RL-197 and RML-4/RL-111 have yielded higher than other genotypes throughout the years. RL-180/RL-105 and RML-87/RL-105 were the promising high yielding hybrids at Belachapi whereas RML-4/RML-111 and RML-98/RL-105 were superior hybrids at Parwanipur. RML-98/RML-105, RML-5/RL-105 and RML-55/RL-105 were the superior genotypes in terms of grain yield at Rampur. Winter season maize generally takes longer duration for flowering while the same cultivar can flower in shorter duration when cultivated during summer. Morphological and physiological development of maize is highly influenced by growing season's temperature. Similar finding was also reported by Gowda and his colleagues in 2013. Likewise, the major findings of this experiment is in line with the report of NMRP (2014) as it was revealed in the report that cross combinations of RL-197, RL-111and RL-105 as a tester produced higher grain yield.

Hybrids with medium flowering duration and less than four days anthesis silking interval produced the highest grain yield while hybrids with more than four days longer anthesis silking interval produced the lower grain yield. The negative relationship between yield and anthesis silking interval was observed in maize. Similar finding was also reported by Alvi et al. (2003) and Yang et al. (2019). Plant height has positive relationship with grain yield while ear height has negative association with it. Similar finding was also recorded by Alvi et al. (2003). Highest yield reduction of maize occurred when infection of foliar diseases occurred before flowering. From the results of this study, it is concluded that effective selection of competitive hybrids is possible considering medium plant height, shorter ear height, lower antheis silking interval, and lesser incidence of foliar diseases and pests.

CONCLUSION

The hybrids with better yield performance like RML-83/RL-197, RML-4/RL-111, RL-180/RL-105, RML-87/RL-105, RML-98/RL-105, RML-5/RL-105, RML-55/RL-105 in CVTH will be upgraded to CFFTH and these might be the potential future maize hybrids for Terai and inner Terai of Nepal.

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