ACHIEVEMENTS

A. Crop Improvement:

Rice varieties/hybrids released for farmers of Gujarat

Name of Variety	Year of release	Parents	Maturity days	Yield (kg/ha)
Transplanted Rice:				
NAUR-1	2008	GR-4 x Pusa 2-48-24	120-125	6000-6500
GNR-2	2009	GR-103 x Pokkali	125-130	4500-5500
GNR-3	2012	GR-4 x IR-28	115-120	5500-6500
GNR-4	2013	NAUR-1 x Lal kada	130-135	4000-5000
GNR-5	2015	Jaya x GR-6	125-130	5500-6000
GNR-6 (RFTP)	2015	IR 28 x NAUR 1	100-105	4000-4500
GNRH-1 (Hybrid)	2015	NVSR-MS1 x 12SP105	110-115	5000-5500
GNR-7	2016	GR-103 x GR-11	125-130	5500-6500
GR-15	2017	Bhura rata x NAUR-1	125-130	5500-6500
GRH-2 (Hybrid)	2017	NVSR-MS1A x 12KP10	120-125	6000-6500
GR-17 (Sardar)	2018	Gurjari x Jaya	110-115	5500-6000
GNR-8 (Aarti)	2019	IET-19347 x RP-4075-129-07-3	100-105	4000-5000
GR-18 (Devli Kolam)	2019	GAR-13 x JGL-3828	120-125	5000-5500
GR-19 (Auranga)	2019	Dandi x IET-15429	125-120	5500-6000
GNR-9 (Lalkada Gold)	2020	IR-28 x Lal Kada	110-115	4000-4500
GR-20 (Navsari Kamod)	2020	IET 19347 x GAR-1	120-125	4500-5500
GR-23 (Navsari Paushtik)	2021	IET-19384 x NAUR-1	125-130	5500-6500
GR-24 (Navsari Parimal)	2021	Gurjari x IR-28	115-120	4800-5300
GR-25 (Mahatma)	2023	GR-7 x Jaya	130-135	6100-6500
GR-26 (Navsari Lalmoti)	2023	Jaya x IR 71829-3R-82-1-1	125-130	4500-5500
GR-27 (Navsari Bhim)	2025	JGL-3855 x Z-31	125-130	6000-6500

GR-28 (Navsari Valmiki)	2025	GR-7 x NVSR-2094	120-125	5500-6000
Upland drilled:				
Name of Variety	**Year of release**	**Parents**	**Maturity days**	**Yield (kg/ha)**
PURNA	2014	Annada x RR 151-3	93-97	2500-3000
GR-16 (Tapi)	2018	GR-5 x Danteswari	100-105	3500-4000

RICE VARIETIES / HYBRIDS RELEASED BY NAVSARI AGRICULTURAL UNIVERSITY

NAME OF VARIETY	SALIENT FEATURES	
NAUR-1 (2008)	➢ Medium long slender grains with a yield around 6000 kg/ha. Recommended for irrigated TP and aerobic cultivation in South Gujarat. The variety is moderately resistant to major diseases like BLB, Blast, Grain discolouration, sheath rot & insect pests like stem borer.	
GNR-2 (2009)	➢ Fine grain variety with a yield of around 5000 kg/ha. Recommended especially for salt-affected areas as well as for normal irrigated transplanted areas of South Gujarat. The variety is resistant to BLB, False smut, stem borer and BPH and while a moderately resistant reaction against grain discolouration and leaf folder.	
GNR-3 (2012)	➢ Coarse grain, medium duration variety with an average yield of 6500 kg/ha, which gave 19.4% yield advantage over Gurjari under irrigated TP conditions and 29.3% yield advantage over GR-7 under rainfed TP conditions. The culture is highly suitable for pohuva making (Beaten rice).	
GNR-4 (2013)	➢ Fine grain, red kernel bio-fortified variety having high iron content (50 ppm) and dietary fiber (2.87 %) with yield potential of 4000 kg/ha. Recommended for irrigated transplanted areas of South Gujarat. ➢ It is resistant against BLB, False smut and moderately resistant against sheath rot. Grain discolouration, stem borer, leaf folder and gundhi bug.	
PURNA (2014)	➢ Short bold grain variety especially suitable for rainfed drilled conditions with an average yield of 3000 kg/ha. It performs well with a 22% grain yield advantage over GR 5 and 8.8 % over GR 9.	

GNR-5 (2015)	➢ Long slender grain variety with a yield around 5500 kg/ha. It performed very well in the whole Gujarat, where it exhibited an overall 13.1 % and 21.2 % grain yield superiority with easy threshability over the checks Dandi and NAUR-1, respectively. It is recommended for salt-affected areas of Gujarat. ➢ The variety is moderately resistant to bacterial leaf blight, grain discolouration and sheath rot. Whereas, it showed tolerance to pests like BPH and moderate resistance against stem borer, leaf folder and sheath mite	
GNR-6 (2015)	GNR-6 performed well in the whole Gujarat, where it exhibited an overall 8.5 % grain yield superiority over the check IR-28. Recommended for rainfed transplanted conditions with an average yield of 5000 kg/ha. With respect to pests and diseases, it was found superior to checks.	
GNRH-1 (Hybrid) (2015)	➢ First public hybrid in Gujarat. Hybrid GNRH-1 performed very well in the whole Gujarat under transplanted conditions, where it exhibited an overall 10.1%, 11.9% and 17.1 % grain yield superiority over the checks *viz.,* GR 7, NAUR 1 and Suruchi 5629, respectively. ➢ With respect to disease, it is moderately resistant against bacterial leaf blight and sheath rot. For pests, it was found to be tolerant to the stem borer and sheath mite.	
GNR-7 (2016)	➢ The rice Variety GNR-7 (5740 kg/ha) performed very well in South Gujarat, where it exhibited overall 13.0 %, 22.8% and 12.4 % grain yield superiority with easy threshability over the checks GNR-2, GR-11 and GAR-13, respectively. ➢ It has short, slender grain, high productive tillers and a number of grains per panicle with good quality characters. GNR-7 is moderately resistant against bacterial leaf blight, grain discolouration and sheath rot. It showed tolerant to pest like BPH and moderate resistance against stem borer, leaf folder and sheath mite. ➢ Rice variety GNR-7 is recommended for normal rice growing areas of South Gujarat.	

GR-15 (2017)	➢ The biofortified rice variety GR-15 (5540 kg/ha) performed very well in Gujarat state and it exhibited overall 10.6 %, 19.9 % and 16.1 % grain yield superiority with easy threshability over the checks Dandi, NAUR-1 and GNR-3, respectively. ➢ It has long bold grain, long panicle, more productive tillers and more number of grains per panicle. It contains high zinc in grains (21.58 ppm) than check varieties along with other good quality characters. ➢ GR-15 is moderately resistant against bacterial leaf blight, grain discolouration and sheath rot. It is tolerant to brown plant hoppers and moderately resistant to stem borer, leaf folder and sheath mite. ➢ This variety is recommended for transplanted rice growing areas of Gujarat.	
GRH-2 (Hybrid) (2017)	➢ Mid-late rice hybrid GRH-2 (6129 kg/ha) performed well in Gujarat state where it exhibited an overall 7.1%, and 17.9% grain yield superiority over the best hybrid check US 312, and best variety GNR-3, respectively. ➢ Medium slender grain rice hybrid GRH-2 contains intermediate amylose and high head rice recovery. The GRH-2 is moderately resistant against bacterial leaf blight, leaf blast, grain discolouration and sheath rot. The proposed hybrid is tolerant to insect pest like BPH, WBPH, leaf folder and stem borer. ➢ Rice hybrid GRH-2 is recommended for rice growing areas of Gujarat state as GRH-2.	
GR-16 (2018)	➢ Early maturing upland rice variety GR-16 recorded 2983 kg/ha mean grain yield in Gujarat. It exhibited overall 10.6 and 29.0 per cent grain yield superiority over the checks Purna and GR- 5, respectively. ➢ Long bold variety GR-16 possesses good grain quality, intermediate amylose and high head rice recovery. ➢ The proposed variety showed moderately resistant reaction against leaf blast. The proposed variety showed moderately resistant against insect pest like stem borer and sheath mite. ➢ The rice variety NVSR-2233 is recommended for upland rice growing areas of Gujarat as GR-16.	

GR-17 (2018)	➢ The average yield of early maturing rice variety GR-17 is 5566 kg/ha in Gujarat. It exhibited overall 15.4, 9.8 and 2.2 per cent grain yield superiority over the checks Jaya, Gurjari and GNR-3, respectively in addition to earliness by 8 days over GNR-3. ➢ Long bold grain rice culture GR-17 possesses good grain quality, intermediate amylose and high head rice recovery. ➢ The proposed variety is moderately resistant against bacterial leaf blight, leaf blast, grain discoloration and sheath rot. The proposed variety showed moderately resistant reaction against WBPH and leaf folder. ➢ Rice variety NVSR-2117 is recommended for transplanted rice growing areas of Gujarat as GR- 17.	
GNR-8 (2019)	➢ The early maturing rice culture, GNR-8 (4700 kg/ha) performed very well in South Gujarat under aerobic condition and it exhibited overall 18.6 % and 13.9 % grain yield superiority with easy threshability over the checks NAUR-1 and GNR-3, respectively. ➢ It has long bold grain, more productive tillers and more number of grains per panicle. ➢ It contains good amount of amylose content (24.42%), protein content (6.52%) and high head rice recovery (64.2%). ➢ GNR-8 is moderately resistant against bacterial leaf blight, grain discoloration and sheath rot. It is tolerant to brown plant hoppers and moderately resistant to stem borer, leaf folder and sheath mite. ➢ This variety NVSR-396 (GNR-8) recommended for aerobic rice growing areas of Gujarat.	

GR-18 (2019)	➢ Early maturing, non lodging culture NVSR-2528 showed 29.06 % and 8.38 % grain yield superiority over checks GR-4 and Mahisagar, respectively. ➢ The culture NVSR 2528 performed very well in South Gujarat where it exhibited overall 35.6 per cent grain yield superiority over check GR 4. ➢ The proposed culture NVSR 2528 contains intermediate amylose (22.96%) and high head rice recovery (64 %). ➢ With respect to disease, the proposed strain is moderately resistant against bacterial leaf blight, leaf blast and grain discoloration. The proposed culture showed moderately tolerant reaction against stem borer and sheath mite. ➢ Rice variety NVSR-2528 (GR-18) recommended for transplanted rice growing areas of Gujarat.	
GR-19 (2019)	➢ The salt tolerant rice culture, GR-19 (5305 kg/ha) performed very well in Gujarat where it exhibited overall 16.0 % and 12.1 % grain yield superiority with easy threshability over the checks Dandi and GNR-5, respectively. ➢ It has long bold grain, long panicle, more productive tillers and more number of grains per panicle. It contains good quality characters. ➢ GR-19 is moderately resistant against bacterial leaf blight, grain discoloration and sheath rot. It showed tolerant to BPH and moderate resistance against stem borer, leaf folder and sheath mite. ➢ Rice variety NVSR-6150 (GR-19) recommended for transplanted rice growing salt affected areas of Gujarat.	
GNR-9 (2020)	➢ Rice variety GNR-9 (Lalkada Gold) is recommended for transplanted rice growing areas of South Gujarat. ➢ This rice variety recorded average grain yield of 4200 kg/ha which is 40.4 and 19.7 % higher over check varieties Lalkada and GNR-4, respectively. ➢ Long slender grain rice variety GNR-9 contains intermediate amylose (21.5%), high head rice recovery (56.24%), high Protein (8.44 %), Iron (3.4 ppm) and Zinc (19.17) ppm in polished rice. ➢ The variety showed moderately resistant reaction against disease like leaf blast as well as pests like stem borer, leaf folder and sheath mite.	

GR-20 (2020)	➢ The farmers of Gujarat state are recommended to grow aromatic rice variety GR-20 (Navsari Kamod) in transplanted condition during kharif season. ➢ The proposed genotype recorded average grain yield of 4935 kg/ha in Gujarat, which was 118.7, 30.5, 14.3 and 36.6 % higher over the check varieties Krishna Kamod, Narmada, GAR-14 and GR-101, respectively. ➢ It has strong aroma, short slender grain, more productive tillers and more number of grains per panicle. ➢ It has intermediate amount of amylose (23.10%), protein (6.14 %) and high head rice recovery (64.2 %). ➢ The variety is moderately resistant against bacterial leaf blight, grain discoloration and sheath rot. The variety showed tolerant reaction to brown plant hopper and moderately resistant reaction against stem borer, leaf folder and sheath mite.	
GR-23 (2021)	➢ The biofortified rice variety GR 23 (Navsari Paushtik) is recommended for transplanted rice growing areas of Gujarat during kharif season. ➢ The rice variety recorded average grain yield of 5631 kg/ha in Gujarat, which was 25.3, 37.6, 10.9 and 12.9 % higher over the check varieties GNR-2, GR-11, GAR-13 and GNR-7, respectively. ➢ It has medium slender grain, long panicle, more productive tillers and more number of grains per panicle. ➢ It has high protein content (12.18 %), an intermediate amount of zinc content (20.40 ppm) and amylose content (24.80 %) with high head rice recovery (60.80%). ➢ The variety is moderately resistant against bacterial leaf blight, grain discoloration and leaf blast diseases whereas tolerant reaction against brown plant hopper and leaf folder pests.	
GR-24 (2021)	➢ The early maturing, non lodging rice variety GR 24 (Navsari Parimal) is recommended for transplanted condition during kharif season in Gujarat. ➢ The rice variety recorded average grain yield of 5038 kg/ha in Gujarat, which was 21.8 %, and 9.0% higher over the check varieties GR-7 and GAR-3, respectively. ➢ Long slender grain rice variety GR 24 contains intermediate amylose (24.8%) and high head rice recovery (58.2%). ➢ The rice variety showed moderately resistant against leaf blast disease and brown plant hopper and white backed plant hopper pests.	

GR-25 (2023)	➢ The farmers of Gujarat state are recommended to grow long bold rice variety GR 25 (Mahatma) in transplanted condition during kharif season. ➢ The proposed genotype recorded an average grain yield of 6301 kg/ha in Gujarat, which was 26.0 % and 34.7% higher than the check varieties GNR-3 and Jaya, respectively. ➢ Rice variety GR 25 exhibits high head rice recovery (58.3%) and a high 1000-grain weight (33.8 g). ➢ The proposed variety showed moderate resistance against leaf blast, stem borer, sheath mite, and leaf folder.	
GR-26 (2023)	➢ The farmers of Gujarat state are recommended to grow biofortified rice variety GR-26 (Navsari Lalmoti) in transplanted condition under both normal and salt affected soils during *kharif* season. ➢ The proposed variety recorded an average grain yield of 4898 kg/ha in Gujarat, which was 11.0%, 11.8%, 40.4%, and 24.9% higher than the check varieties GNR-3, GNR-5, GNR-4, and GNR-9, respectively. ➢ It has long, bold grain, a long panicle, and more productive tillers per plant. It has a high amount of protein content (11.91%), an intermediate amount of zinc content (21.68 ppm), and amylose content (23.51%), with a high head rice recovery rate (62.70%). ➢ The variety is moderately resistant to diseases such as bacterial leaf blight, grain discolouration, sheath rot, and leaf blast, whereas it exhibits a tolerant reaction against pests like the brown plant hopper and a moderately resistant reaction against stem borer, leaf folder, and sheath mite.	
GR-27	➢ The farmers of Gujarat state are recommended to grow long bold rice variety GR-27 (Navsari Bhim) in transplanted condition during kharif season. ➢ The proposed variety recorded average grain yield of 5781 kg/ha in Gujarat, which was 13.5 %, 24.6 % and 23.4 % higher over the check varieties GNR-3, GNR-5 and Jaya, respectively. ➢ It has long bold grain, medium maturing and more productive tillers per plant. ➢ It has an intermediate amount of amylose content (23.51%) with high head rice recovery (61.70%). ➢ The variety is moderately resistant against diseases like bacterial leaf blight, grain discoloration, sheath rot and leaf blast, whereas tolerant reaction against pest like brown plant hopper and moderately resistant reaction against stem borer, leaf folder and sheath mite.	

GR-28	➢ The farmers of Gujarat state are recommended to grow long slender rice variety GR-28 (Vyara Parimal) in transplanted conditions during *kharif* season. ➢ The proposed genotype recorded average grain yield of 5353 kg/ha, which was 34.6%, 34.7%, 15.2% and 13.1% higher over the check varieties GR-7, GAR-3, GR-24 and GR-15, respectively. ➢ Long sleder grain rice variety GR-28 contains intermediate amylose (20.3%), medium 1000 grain weight (21.5 g) and high head rice recovery (56.1%). ➢ The variety is moderately resistant to leaf blast disease and moderately tolerant to brown plant hopper, leaf folder, stem borer and sheath mite	

- **Breeding material generated:**

Particulars/ Breeding Objectives	**No. of crosses made / year**			
	2021	**2022**	**2023**	**2024**
Quality rice	35	35	33	24
Salt tolerance	20	15	15	15
RFTP ecosystem	10	10	10	10
Drilled ecosystem	15	15	15	15
Diseases resistance	20	20	20	19
Aerobic ecosystem	15	15	15	14

- **The number of AICRIP trials conducted at MRRC, Navsari centre are as follows.**

Trial intended and conducted	**2021 (Allotted/ conducted)**	**2022 (Allotted/ conducted)**	**2023 (Allotted/ conducted)**	**2024 (Allotted/ conducted)**
Plant Breeding	20/20	24/24	23/23	22/22
Hybrid Rice	2/2	2/2	2/2	2/2
Agronomy	7/7	9/9	8/8	7/7
Plant pathology	11/11	16/16	18/18	18/18
Entomology	12/12	12/12	12/12	13/13

E. AICRP Nominations at the National level:

Name of culture	Pedigree	Nominated Trial	Year of nomination
NVSR-467	(RP Bio-226 x IRGC 4059) x IET-8116	IVT-Aerobic	*kharif*-2020
NVSR-481	(CST-7-1 x IRGC 26872) x CSR-36	IVT-Aerobic	*kharif*-2020
NVSR-418	(CST-7-1 x IRGC 26872) x FL-478	IVT- MS	*kharif*-2020
NVSR-566	(RP Bio-226 x IRGC69910) x IET-22071	IVT- MS	*kharif*-2020
NVSR-494	(CST-7-1 x IRGC 50836) x Pusa-1601	IVT-E-TP	*kharif*-2020
NVSR-555	(RP Bio-226 x IRGC16449) x MTU-1081	IVT-E-TP	*kharif*-2020
NVSR-544	(RP Bio- 226 x IRGC71598) x Nidhi	IVT-E-TP	*kharif*-2020
NVSR-502	(CST-7-1 x IRGC 69861) x Pusa-44	IVT-IME	*kharif*-2020
NVSR-556	(RP Bio-226 x IRGC16449) x MTU-1081	IVT-IME	*kharif*-2020
NVSR-438	(CSR-36 x IRGC 13496) x Pusa-1609)	IVT-IM	*kharif*-2020
NVSR-598	(CSR-36 x IRGC77840) x MTU-1010	IVT-IM	*kharif*-2020
NVSR-409	IET-19347 x Pusa-834	IVT-ASG	*kharif*-2020
NVSR-408	IET-19347 x Pusa Basmati-1	IVT-ASG	*kharif*-2020
NVSR-522	NVSR-303 x IRRI-AMT-301	IVT-Biofort	*kharif*-2020
NVSR-532	NVSR-303 -6 x IET-22121	IVT-Biofort	*kharif*-2020
NVSR-569	(RP Bio-226 x IRGC69910) x IET-22071	IVT-Biofort	*kharif*-2020
NVSR-6109	SLR-51214 x NVSR-26	IVT-CSTVT	*kharif*-2020
NVSR-6302	(CST-7-1 x IRGC74613) x RP Bio-226	IVT-CSTVT	*kharif*-2020
NVSR-6241	IET-15429 x IET-18850	IVT-CSTVT	*kharif*-2020
NVSR-6177	GNR-2 x IET-18710	IVT-AL&ISTVT	*kharif*-2020
NVSR-6236	IET-15429 x IR-72046-B-R-8-3-1-2	IVT-AL&ISTVT	*kharif*-2020
NVSR-825	GAR-13 x RP Bio-226	IVT-Aerobic	*kharif*-2021
NVSR-756	(CST-7-1 x IRGC 26872) x CSR-36	IVT-Aerobic	*kharif*-2021
NVSR-726	GAR-13 x Z-31	IVT-Aerobic	*kharif*-2021
NVSR-827	GAR-13 x RP Bio-226	IVT- MS	*kharif*-2021
NVSR-710	JGL 11470 x 186	IVT- MS	*kharif*-2021
NVSR-538	(Sampada x IRGC44455) x RP Bio-226	IVT-IME	*kharif*-2021
NVSR-476	(CST-7-1 x IRGC 26872) x CSR-36	IVT-IME	*kharif*-2021
NVSR-805	NVSR-303-14 x IET-22121	IVT- IM	*kharif*-2021
NVSR-438	(CSR-36 x IRGC 13496) x Pusa-1609)	IVT-ASG	*kharif*-2021
NVSR-603	IRRI-AMT-101 x GAR-13	IVT-ASG	*kharif*-2021
NVSR-604	IRRI-AMT-101 x GNR-2	IVT-ASG	*kharif*-2021
NVSR-526	NVSR-303 x IET-22121	IVT-Biofort	*kharif*-2021
NVSR-527	NVSR-303 x GNR-2	IVT-Biofort	*kharif*-2021
NVSR-784	NVSR-303-14 x NAUR-1	IVT-Biofort	*kharif*-2021
NVSR-781	NVSR-303-06 x IRRI-AMT-301	IVT-E-TP	*kharif*-2021
NVSR-610	IRRI-AMT-301 x IET-22121	IVT-E-TP	*kharif*-2021
NVSR-687	JGL 3855 x Z-31	IVT-Late	*kharif*-2021

NVSR-706	JGL 11470 x P-206	IVT- Late	*kharif*-2021
NVSR-6243	IET-15429 x IET-18710	IVT-CSTVT	*kharif*-2021
NVSR-6345	GNR-3 x IET-22608	IVT-CSTVT	*kharif*-2021
NVSR-6213	IR 71907-3R-2-1-1 x IET-20036	IVT-CSTVT	*kharif*-2021
NVSR-6361	NVSR-178 x IR- 71907-3R-2-1-1	IVT-AL&ISTVT	*kharif*-2021
NVSR-6403	Gurjari x Jaya	IVT-AL&ISTVT	*kharif*-2021
NVSR-545	(RP Bio- 226 x IRGC71598) x Nidhi	IVT-AL&ISTVT	*kharif*-2021
NVSR-750	NVSR-303-06 x GNR-3	IVT-E-TP	*kharif*-2022
NVSR-908	IET-22121 x IET-24003	IVT-E-TP	*kharif*-2022
NVSR-467	(RP Bio-226 x IRGC 4059) x IET-8116	IVT-IME	*kharif*-2022
NVSR-771	NVSR-303-06 x NVSR-176	IVT-IME	*kharif*-2022
NVSR-624	GNR-4 x GNR-2	IVT-IM	*kharif*-2022
NVSR-745	NVSR-303 x IET-22121	IVT-IM	*kharif*-2022
NVSR-911	IET-22121 x IET-24026	IVT-Aerobic	*kharif*-2022
NVSR-929	Gurjari x IR-28	IVT-Aerobic	*kharif*-2022
NVSR-765	NVSR-303-06 x GAR-1	IVT- MS	*kharif*-2022
NVSR-934	NAUR-1 x Danteshwari	IVT- MS	*kharif*-2022
NVSR-610	IRRI-AMT-301 x IET-22121	IVT-ASG	*kharif*-2022
NVSR-697	Indra MTU x Z-31	IVT-ASG	*kharif*-2022
NVSR-659	NVSR-303-14 x GAR-13	IVT-Biofort	*kharif*-2022
NVSR-662	NVSR-303-14 x GNR-2	IVT-Biofort	*kharif*-2022
NVSR-674	NVSR-308-20 x GAR-13	IVT-Biofort	*kharif*-2022
NVSR- 762	NVSR-303-06 x GAR-1	IVT-Late	*kharif*-2022
NVSR-796	NVSR-303-14 x GAR-1	IVT-Late	*kharif*-2022
NVSR-6226	NAUR-1 x IET-18850	IVT-CSTVT	*kharif*-2022
NVSR-6488	IR76346-B-B-10-1-1-1 x IET-21237	IVT-CSTVT	*kharif*-2022
NVSR-6519	IET-17704 X IR 7204-B-R-22-3-1-1	IVT-CSTVT	*kharif*-2022
NVSR-6526	IET-22016 x GNR-3	IVT-AL&ISTVT	*kharif*-2022
NVSR-6494	IET-22016 x IET-21237	IVT-AL&ISTVT	*kharif*-2022
NVSR-6489	IR76346-B-B-10-1-1-1 x IET-21237	IVT-AL&ISTVT	*kharif*-2022
NVSR-914	IET-22121 x IET-24001	IVT-E-TP	*kharif*-2023
NVSR-908	IET-22121 x IET-24003	IVT-E-TP	*kharif*-2023
NVSR-931	Gurjari x IR-28	IVT-E-TP	*kharif*-2023
NVSR-941	(Gurjari x IR-28) x Gurjari	IVT-IME	*kharif*-2023
NVSR-996	GNR-3 x IET-24762	IVT-IME	*kharif*-2023
NVSR-956	(NAUR-1 x Danteshwari) x Danteshwari	IVT-IME	*kharif*-2023
NVSR-1065	GAR-13 x Gurjari	IVT-IM	*kharif*-2023
NVSR-1063	GAR-13 x IET-24767	IVT-IM	*kharif*-2023
NVSR-1219	Gurjari x IET-23448	IVT-IM	*kharif*-2023
NVSR-1202	Gurjari x IET-23467	IVT-Aerobic	*kharif*-2023
NVSR-1141	NAUR-1 x IR-28	IVT-Aerobic	*kharif*-2023
NVSR-1206	Gurjari x IET-23445	IVT-Aerobic	*kharif*-2023

NVSR-917	IET-22121 x IET-24021	IVT- MS	*kharif*-2023
NVSR-933	NAUR-1 x Danteshwari	IVT- MS	*kharif*-2023
NVSR-991	NAUR-1 x IET-25825	IVT- MS	*kharif*-2023
NVSR-1054	NAUR-1 x GR-7	IVT-ASG	*kharif*-2023
NVSR-649	NVSR-303-14 x IET-19347	IVT-Biofort	*kharif*-2023
NVSR-658	GNR-4 x GAR-13	IVT-Biofort	*kharif*-2023
NVSR-787	NVSR-303-14 x NAUR-1	IVT-Biofort	*kharif*-2023
NVSR- 757	NVSR-303-06 x GR-7	IVT-CRPT	*kharif*-2023
NVSR-788	GNR-4 x GNR-3	IVT-CRPT	*kharif*-2023
NVSR-651	NVSR-303-14 x IET-19347	IVT-CRPT	*kharif*-2023
NVSR-1139	NAUR-1 x IET-23445	IVT-LNT	*kharif*-2023
NVSR-1163	NAUR-1 x IET-23471	IVT-LNT	*kharif*-2023
NVSR-1184	GNR-3 x IET-23459	IVT-LNT	*kharif*-2023
NVSR-6572	GNR-3 x Kala rata	IVT-CSTVT	*kharif*-2023
NVSR-6531	GNR-3 x IR71895-3R-9-3-1	IVT-CSTVT	*kharif*-2023
NVSR-6642	Panvel 1 x IR71895-3R-9-3-1	IVT-CSTVT	*kharif*-2023
NVSR-6630	NAUR-1 x IR71895-3R-9-3-1	IVT-AL&ISTVT	*kharif*-2023
NVSR-6532	GNR-3 x IR71895-3R-9-3-1	IVT-AL&ISTVT	*kharif*-2023
NVSR-6580	NAUR-1 x NVSR-6100	IVT-AL&ISTVT	*kharif*-2023
NVSR-1200	Gurjari x IET-23467	IVT-E-TP	*kharif*-2024
NVSR-1307	IET-23998 x IET-24021	IVT-E-TP	*kharif*-2024
NVSR-1310	IET-23998 x NAUR-1	IVT-E-TP	*kharif*-2024
NVSR-1065	GAR-13 x Gurjari	IVT-IME	*kharif*-2024
NVSR-1242	GNR-3 x IET-23814	IVT-IME	*kharif*-2024
NVSR-1066	GAR-13 x NVSR-303-6	IVT-IME	*kharif*-2024
NVSR-1056	GAR-13 x IET-24765	IVT-IM	*kharif*-2024
NVSR-1284	GAR-13 x IET-23814	IVT-IM	*kharif*-2024
NVSR-1221	GAR-13 x IET-23467	IVT-IM	*kharif*-2024
NVSR-1202	Gurjari x IET-23467	IVT-Aerobic	*kharif*-2024
NVSR-1225	GAR-13 x IR 28	IVT-Aerobic	*kharif*-2024
NVSR-1309	IET-23998 x IET-23448	IVT-Aerobic	*kharif*-2024
NVSR-917	IET-22121 x IET-24021	IVT- MS	*kharif*-2024
NVSR-1099	IET-24767 x IET-24772	IVT- MS	*kharif*-2024
NVSR-1057	GAR-13 x IET-24765	IVT- MS	*kharif*-2024
NVSR-1299	GAR-13 x IET-24774	IVT-LATE	*kharif*-2024
NVSR-1222	GAR-13 x IET-23467	IVT-LATE	*kharif*-2024
NVSR-1260	GNR-3 x IET-23832	IVT-Biofort	*kharif*-2024
NVSR-657	NVSR-303-14 x GAR-13	IVT-CRPT	*kharif*-2024
NVSR-1259	GNR-3 x IET-23832	IVT-CRPT	*kharif*-2024
NVSR-1111	IET-24767 x IET-25825	IVT-LNT	*kharif*-2024
NVSR-983	NAUR-1 x IET-24772	IVT-LNT	*kharif*-2024
NVSR-1278	Gurjari x IET-23834	IVT-LNT	*kharif*-2024

NVSR-6529	GNR-3 x IR 71907-3R-2-1-2	IVT-CSTVT	*kharif*-2024
NVSR-6606	GAR-13 x NVSR-6108	IVT-CSTVT	*kharif*-2024
NVSR-6638	GAR-13 x IR 76346-B-B-10-1-1-1	IVT-CSTVT	*kharif*-2024
NVSR-6640	GAR-13 x IR 76346-B-B-10-1-1-1	IVT-AL&ISTVT	*kharif*-2024
NVSR-6655	IET-15429 x Dandi	IVT-AL&ISTVT	*kharif*-2024
NVSR-6666	IET-15429 x IET-22015	IVT-AL&ISTVT	*kharif*-2024

SEED PRODUCTION PROGRAMME:

Rice Seed Production at MRRC, NAU, Navsari:

Year	Variety/stage
2024-25	NAUR-1
	GNR-2
	GNR-3
	GNR-4
	GNR-5
	GNR-7
	GNR-8
	GR-15
	GR-19
	GR-20
	GR-23
	GR-26

B. Crop Production :

The following agro technologies for rice have been recommended for the farmers of South Gujarat.

Year:2022	
1	**Effect of integrated nutrient management on *rabi* vegetable crops in rice-based crop sequence in clay soils of South Gujarat** The farmers of South Gujarat, following *rabi* vegetable crops after *kharif* rice, are recommended to adopt rice-radish cropping sequence. Apply bio compost @ 10 t/ha to radish crop as basal and foliar spray of enriched novel organic liquid nutrients 1% at 20 and 40 DAS for achieving higher yield and net realisation.
2	**Effect of zinc on hybrid rice under South Gujarat** The farmers of South Gujarat transplanting hybrid rice in *kharif* season are recommended to spray 0.05% Zn EDTA at tillering and panicle initiation stages for getting higher yield, net return and Zinc content.
Year: 2023	
1	**Sustainable weed management in an aerobic rice system** The farmers of the south Gujarat heavy rainfall zone growing aerobic rice are recommended to adopt weeding with a mechanical hand weeder, thrice (first weeding at 20 days after sowing and remaining at 15-20 days interval) for efficient weed management, getting higher grain yield and net income.
Year:2024	
1	**Evaluating the performance of rice varieties in different intercropping systems under aerobic rice cultivation** The farmers of South Gujarat growing aerobic rice in *kharif* season with 30 cm row spacing are recommended to sow six lines of aerobic rice and two lines of sorghum as intercrop (application of fertilizer N: P_2O_5: K_2O kg/ha rice: 75:22.5:00, sorghum: 20:10:00 and seed rate kg/ha rice: 37.5, sorghum:3 to 3.75) for achieving higher rice grain equivalent yield and net return.
2	**Effect of foliar application of nutrient on yield and protein content in different varieties of rice** The farmers of South Gujarat transplanting protein rich rice variety GR-23 (Navsari Paushtik) in *kharif* season are recommended to spray 2% urea or 1% KNO_3 at tillering and panicle initiation stage as foliar application along with application of recommended dose of biocompost 5 t/ha and chemical fertilizer 100:30:00 kg N:P_2O_5:K_2O /ha for getting higher yield, net return along with increased protein content in rice grain and straw.

Year:2025

1 **Effect of land configuration and irrigation level for beetroot grown after *kharif* rice**

The farmers of South Gujarat growing beetroot during *rabi* season in *kyari* land are recommended to irrigate beetroot as per below table (1.0 IW/CPE) and to sow on broad bed furrow method with bed width: 90 cm and furrow depth: 30 cm by pair row planting at 30 cm (3 rows) x 15 cm: 45 cm for getting higher beetroot yield and net return.

Irrigation scheduling: No. of Irrigation	**Month**	**Interval (Days)**
1st	December	At the time of sowing
2nd and 3rd	January	16-19 days
4th to 5th	February- April	12-14 days

2 **Enhancing the productivity of rice based cropping system under aerobic rice cultivation**

The farmers of South Gujarat, following *kharif* aerobic rice based cropping system are recommended to adopt Rice (*kharif*)-Indian bean (vegetable) cropping sequence for achieving higher rice equivalent yield and net return along with improvement in soil chemical properties.

A. Crop Protection:

The following control measures for paddy pests and diseases have been recommended for the farmers of South Gujarat.

Year: 2020	
1	The paddy growers of South Gujarat Agro-Climate Zone are advised to apply two sprays of trifloxystrobin 25 + tebuconazole 50 (75 WG) 0.03 per cent (4 gm/10 l.) or propiconazole 25 EC, 0.025 per cent (10 ml/10 l.) for effective control of false smut. The first spray should be given at boot leaf stage and the second spray at milking stage. PHI 21 days for trifloxystrobin 25 + tebuconazole 50 (75 WG) or 30 days for propiconazole 25 EC.
Year: 2021	
1	The Paddy growers of South Gujarat are advised to apply two sprays of azoxystrobin 11 + tebuconazole 18.3 (29.3 SC) 0.045 per cent (15 ml/10 l.) or azoxystrobin 18.2 + difenoconazole 11.4 (29.6 SC), 0.030 per cent (10 ml/10 l.) for effective control of sheath rot. The first spray should be given at appearance of disease and second spray at booting stage. PHI 21 days for azoxystrobin 11 + tebuconazole 18.3 (29.3 SC) or 31 days for azoxystrobin 18.2 + difenoconazole 11.4 (29.6 SC).
Year: 2022	
1	Efficacy of biorational insecticides against rice yellow stem borer, Scirpophaga spp and leaf folder, Cnaphalocrosis spp. The paddy growers of South Gujarat are recommended to apply chlorantraniliprole 0.4 GR@ 10 kg/ha as soil application (twice) or chlorantraniliprole 18.5 SC @ 3 ml/10 litre of water as foliar spray for effective management of rice stem borer as well as leaf folder and get higher grain and straw yield. The first spray or soil application should be given at 30 days after transplanting and second spray at 15 days after first spray or soil application.
Year: 2023	
1	The Paddy growers of South Gujarat Agro-climate zone are advised to apply two sprays of azoxystrobin 18.2 + difenoconazole 11.4 (29.6 SC) at 0.03 per cent (10 ml/10 L. water) or trifloxystrobin 25 + tebuconazole 50 (75 WG), 0.03 per cent (04g/10 L.water) for effective management of sheath blight. The first spray should be given at appearance of disease and second spray at booting stage. PHI 31 days for azoxystrobin 18.2 + difenoconazole 11.4 (29.6 SC) or 21 days for trifloxystrobin 25 + tebuconazole 50 (75 WG).
Year: 2024	
1	Farmers of South Gujarat growing rice are recommended to dip the roots of paddy seedlings in thiamethoxam 25WG @ 4.0 g/10l water solution for three hours and after 30 days of transplanting give field application by broadcasting of either chlorantraniliprole 0.40 GR @ 10kg/ha or flubendiamide 0.70 GR @15kg/ha to manage the rice yellow stem borer. *For field broadcasting of granule insecticides mix it with sand @20kg/ha

Success story

Popular coarse grain rice variety GNR-3 for beaten rice (*Pohuva*)

Navsari, Gujarat is also known as "*pohuva* capital" of the country because of the dense cluster of *pohuva* (beaten rice) processing mills. More than 70 units, comprising 47 per cent mills of the Gujarat are situated in Navsari. Gujarat has 3% of *pohuva* mills of the country. Navsari district alone is transporting 550 tonnes of *pohuva* daily to the other parts of the country.

Coarse grain rice variety with test weight around 30-35g is preferred for the processing and *pohuva* manufacturing. Therefore, demand of coarse grain type rice variety in the south Gujarat which has 2.5 lakhs hectares rice belt is high. Jaya, a variety of rice was most suitable for the *pohuva* manufacturing and was being grown since 1970. This was partially replaced by variety, Gurjari released in 1997 by then Gujarat Agricultural University, Nawagam with the technical support of Navsari centre. Looking at the demand of local farmers, GNR-3 a coarse grain rice variety was breed and released in 2012 by the Main Rice Research Station, Navsari. The variety become popular in the same year of release, as it has 20% higher grain yield (average 6500 kg/ha) as compared to existing varieties and is moderately resistant to major pest and diseases. There was an anticipation of exponential increase in the demand of the quality seed of the variety.

To meet out the upcoming demand and provide quality seed to the farmer, Main Rice research Centre, NAU, Navsari had made MoU with Co-Operative Sector (Navsari Taluka Kharid Vechan Sangh, Navsari) for the seed production. Initially the seed produced and supplied was 1.2 lakh kg in the year 2012 which was jumped to the 8.0 lakh kg merely in five years (year 2016) and the same trend is going to be observed in the future too. The rice variety GNR-3 had expanded to the one fourth (26 thousand ha) rice growing area of the south Gujarat and has been ranked among the list of varieties with rapid replacement rate in the country.

Awards :-

- **Sadvichar Pariwar Award** for the year 2016 for **"Development of Rice varieties [GNR-3, GNR-4, GNR-5, Purna, GNR-6 and Hybrid (GNRH-1)]** for different situations in Gujarat" awarded by **"The Gujarat Association for Agricultural Sciences, Ahmedabad, Gujarat".**
- **Best oral presentation award** to Dr. P.B. Patel, Associate Research Scientist, SWMRU, NAU Navsari for **"Biofortified rice variety Gujarat Rice-15 (GR-15)"** presented in the **National seminar** on "Biochemical and Molecular Biology Intervention for Nutritional Security and Food Safety" from 12th -13th December, 2019 organized by Department of Soil Science & Agricultural Chemistry, NMCA, NAU, Navsari, Gujarat.
- **Main Rice Research Centre** received **Best Overall AICRPR Centre** at the 60th diamond jubilee annual general review meeting organised at IIRR, Telangana, 26-28th April, 2025.
- **Main Rice Research Centre** received **Best AICRPR Centre- Plant Pathology** at the 60th diamond jubilee annual general review meeting organised at IIRR, Telangana, 26-28th April, 2025.
- **Main Rice Research Centre** received **Best AICRPR Centre- Crop Improvement** at the 60th diamond jubilee annual general review meeting organised at IIRR, Telangana, 26-28th April, 2025.

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