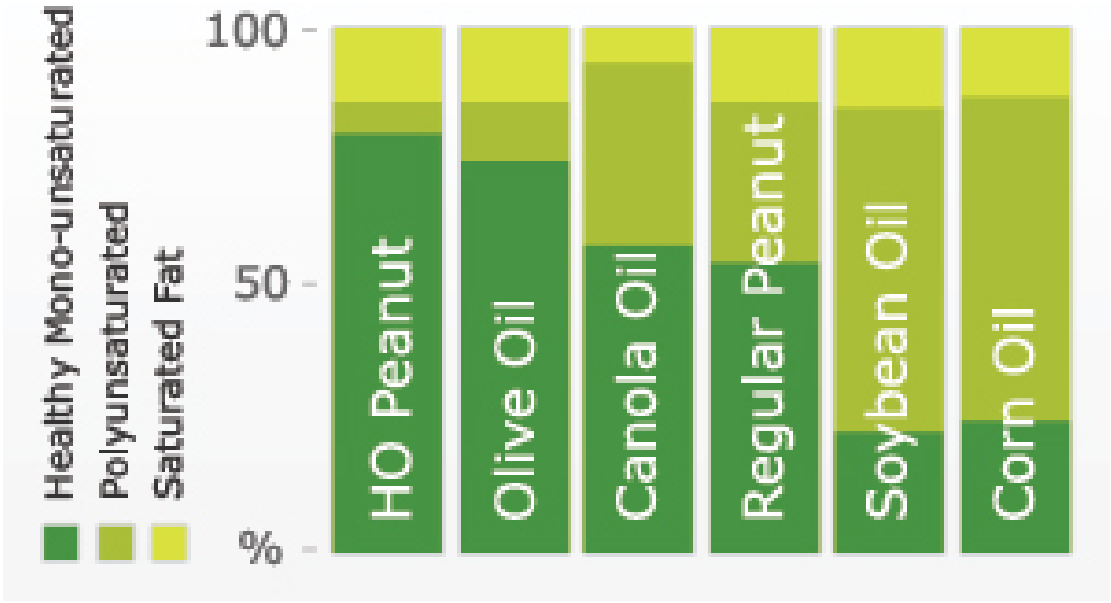
High-Oleic Groundnut for the Health Conscious

WHY HIGH OLEIC GROUNDNUT

High oleic peanut are advocated for their high monounsaturated fat content which contains 80% unsaturated fatty acids (UFA) and, 20% saturated fatty acids (SFA).

Hi Oleic Peanuts	Normal Peanuts
82% monounsaturated	54% monounsaturated
5% polyunsaturated	28% polyunsaturated
13% saturated	18% saturated



Potential Health Benefits

- Preferred for cooking purpose due to its higher UFAs to SFAs ratio
- Same fatty acid profile as olive oil – even better as higher in Oleic Acid (the good acid!) and lower in Linoleic Acid (the bad acid!)
- Lower sugar and sucrose content versus regular peanuts
- Possible anti-oxidant properties
- Potential to regulate appetite
- Reduce low density lipoproteins cholesterol and maintains level of high-density lipoproteins and blood pressure
- Reduces cardio vascular diseases
- Potential for disease prevention – heart disease, diabetes, cancers
- Suppress tumorigenesis, and ameliorate inflammatory diseases
- Weight Management – lower Body Mass Index

Improved flavour over regular peanuts

- Reports have shown high oleic peanuts to have better flavour quality
- Also lower levels of “off” flavours

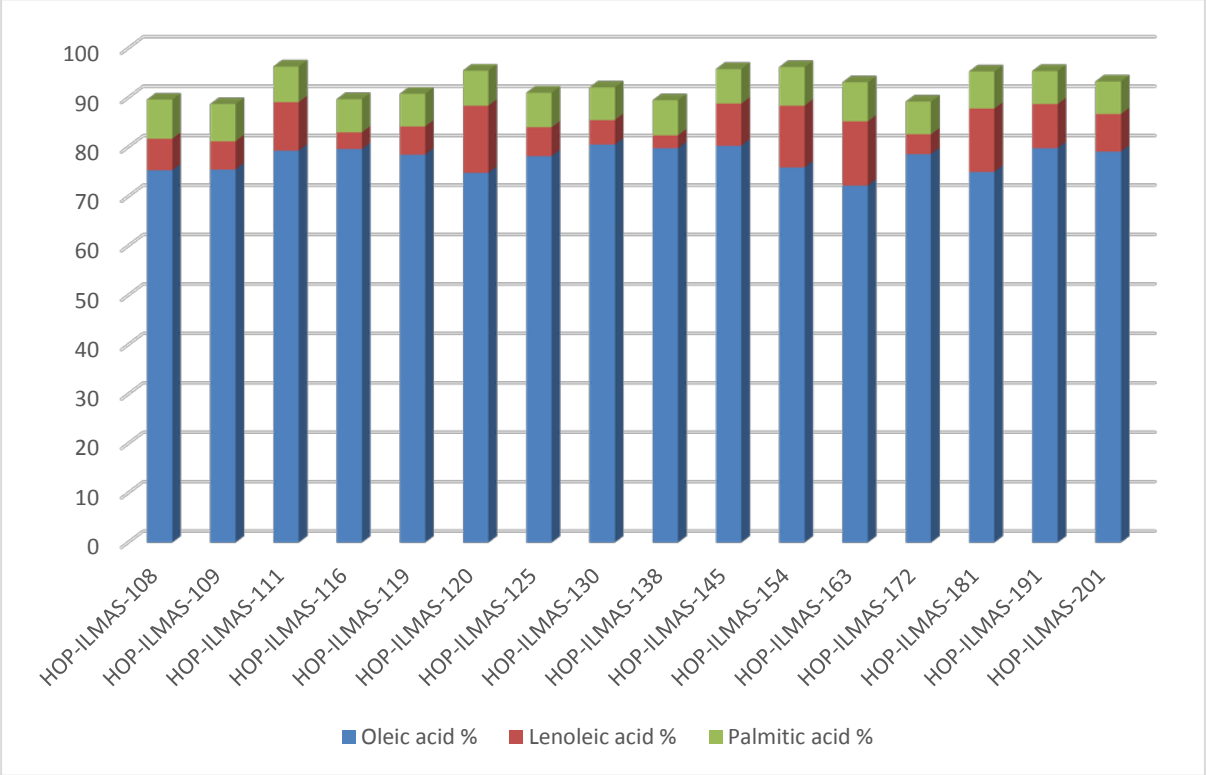
Reported Shelf Life Benefits

- Extended shelf life by up to 14 times
- Creating storage and distribution advantages

High oleic groundnut will continue to trade at a premium to normal oleic oil groundnut for functional and health properties. High oleic groundnut acid has greater demand in the international market for peanut butter and other food products which will increase export potential of Indian groundnut. Cultivation of high oleic groundnut will not only uplift the livelihood of the groundnut farmers' of India but also helps to reduce the national expenditure on health. In US farmers get $50 per ton premium for high oleic peanut production.

High oleic groundnut developed

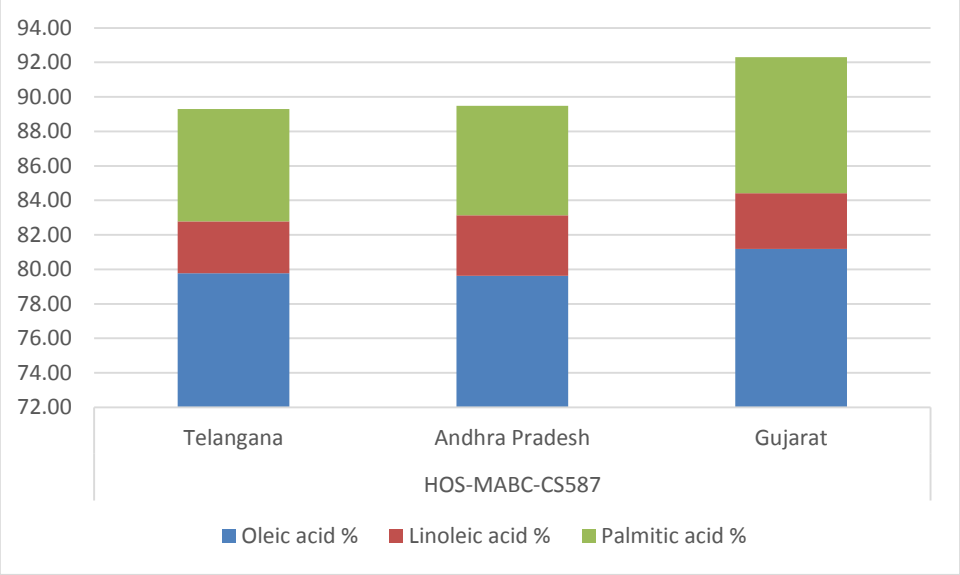
- ICAR-DGR, very recently, has developed high oleic groundnut using molecular breeding devoid of huge resources and manpower.
- Sixteen lines were found with high oleic acid (~70 to ~80%) and high oil content (~54%) over years and are currently under seed multiplication and testing
- Some of lines showed stable expression of high oil and high oleic acid over year and location
- Besides twenty lines were found with high oleic acid (~80%) and resistant to foliar disease groundnut and are currently under seed multiplication
- Oleic acid content has increased 23 to 44% in high oleic groundnut genotypes than normal groundnut.



Groundnut lines with high oil and high oleic acid

Performance of groundnut lines with high oil and high oleic acid over years

S No	Lines	Oleic acid content %			Oil content %	Present generation
		Kharif 2015	*Kharif* 2016	Pooled		
	HOP-IL$_{MAS}$-108	**79.9**	**70.6**	**75.3**	**55.1**	**F_8**
1	**HOP-IL$_{MAS}$-109**	**76.6**	**74.57**	**75.5**	**56.1**	**F_8**
2	**HOP-IL$_{MAS}$-111**	**79.8**	**78.7**	**79.3**	**54.2**	**F_8**
3	**HOP-IL$_{MAS}$-116**	**80.5**	**78.80**	**79.6**	**49.5**	**F_8**
4	**HOP-IL$_{MAS}$-119**	**79.4**	**77.6**	**78.5**	**51.2**	**F_8**
5	**HOP-IL$_{MAS}$-120**	**79.3**	**70.2**	**74.8**	**53.1**	**F_8**
6	**HOP-IL$_{MAS}$-125**	**74.4**	**82.0**	**78.2**	**54.7**	**F_8**
7	**HOP-IL$_{MAS}$-130**	**80.7**	**80.3**	**80.5**	**54.7**	**F_8**
8	**HOP-IL$_{MAS}$-138**	**80.2**	**79.4**	**79.8**	**54.0**	**F_8**
9	**HOP-IL$_{MAS}$-145**	**80.3**	**80.3**	**80.3**	**54.5**	**F_8**
10	**HOP-IL$_{MAS}$-154**	**76.1**	**75.6**	**75.9**	**53.5**	**F_8**
11	**HOP-IL$_{MAS}$-163**	**71.5**	**72.9**	**72.2**	**52.6**	**F_8**
12	**HOP-IL$_{MAS}$-172**	**78.1**	**79.1**	**78.6**	**48.0**	**F_8**
13	**HOP-IL$_{MAS}$-181**	**79.0**	**70.9**	**75.0**	**51.0**	**F_8**
14	**HOP-IL$_{MAS}$-191**	**79.4**	**80.1**	**79.8**	**53.2**	**F_8**
15	**HOP-IL$_{MAS}$-201**	**76.4**	**81.7**	**79.1**	**51.8**	**F_8**
16	**HOS-MABC-CS587**	**80.8**	**81.1**	**80.9**	**54.0**	**BC_3F_7**



Stable expression of high oleic acid in high oleic groundnut grown in three states during 2016 rainy season

HOS-MABC-CS587

Plant, pod and kernels of high oleic groundnut

Groundnut breeding lines with high oleic acid and resistant to foliar diseases

S No	Lines	Oleic acid Content (%)			Present Generation
		Glasshouse	Field	Mean	
1	MAS_HOIL_1	80.91	79.44	80.17	F_7
2	MAS_HOIL_8	81.66	79.41	80.53	F_7
3	MAS_HOIL_9	81.42	78.56	79.99	F_7
4	MAS_HOIL_31	80.08	78.56	79.32	BC_1F_7
5	MAS_HOIL_33	80.12	79.60	79.86	BC_1F_7
6	MAS_HOIL_34	80.72	78.00	79.36	BC_1F_7
7	MAS_HOIL_35	81.04	78.58	79.81	BC_1F_7
8	MAS_HOIL_37	81.96	78.79	80.37	BC_1F_7
9	MAS_HOIL_39	81.20	78.64	79.92	BC_1F_7
10	MAS_HOIL_40	81.70	79.93	80.82	BC_1F_7
11	MAS_HOIL_41	80.41	81.27	80.84	BC_1F_7
12	MAS_HOIL_44	80.26	81.29	80.78	BC_1F_7
13	MAS_HOIL_47	80.33	78.61	79.47	BC_2F_6
14	MAS_HOIL_49	80.93	78.56	79.75	BC_2F_6
15	MAS_HOIL_52	79.48	81.71	80.59	BC_3F_5
16	MAS_HOIL_54	81.55	80.45	81.00	BC_3F_5
17	MAS_HOIL_55	80.11	80.68	80.39	BC_3F_5
18	MAS_HOIL_60	82.33	80.11	81.22	BC_3F_5
19	MAS_HOIL_62	80.92	79.92	80.42	BC_3F_5
20	MAS_HOIL_63	81.87	80.68	81.28	BC_3F_5