

## **ORGANIC MILK PRODUCTION PROCESS AND PROTOCOLS**

**Indian Grassland and Fodder Research Institute, Jhansi, UP**

**Organic farming** is a form of agriculture that relies on techniques such as crop rotation, green manure, compost, and biological pest control (practical view). Depending on whose definition is used, organic farming uses fertilizers and pesticides (which include herbicides, insecticides and fungicides) if they are considered natural (such as bone meal from animals or pyrethrin from flowers), but it excludes or strictly limits the use of various methods (including synthetic petrochemical fertilizers and pesticides; plant growth regulators such as hormones; antibiotic use in livestock; genetically modified organisms, human sewage sludge; and nanomaterials) for reasons including sustainability, openness, independence, health, and safety.

**Objective:** Development of organic feeding system for milk production.

### **Standard as guidelines:**

- IFOAM basic standards
- Codex standards
- Indian Standards of NSOP
- India Gazette -2006 for Use of Biofertilizer
- Indian standard---- Strictly followed NPOP system, standards and guidelines.

### **Agency approached for organic certification:**

- Four certification agency accredited by APEDA at Bangalore, Aurangabad, Gurgaon
- INDOCERT as per NPOP
- SGS India Organic Programme- Gurgaon
- National Centre for Organic Farming for Biofertilizers at Ghaziabad

We approached above but followed **SGS India Organic Programme- Gurgaon**, due to easy accessibility.

Address of Certification Agency: SGS India Pvt Ltd, 250, Udyog Vihar, Phase-IV, Gurgaon-122015

Mail: [organic.in@sgs.com](mailto:organic.in@sgs.com); [amresh.pandey@sgs.com](mailto:amresh.pandey@sgs.com), [manish\\_pande@sgs.com](mailto:manish_pande@sgs.com)

### **Process for organic fodder production.....**

- Fix the standards, system of production, area and requirements, livestock( we followed NPOP)
- Primary analysis of soil, water and livestock physiology( Analysis for heavy metals and micronutrients)

- Certification agency and collaborators(WE FOLLOWED SGS)
- Conversion of conventional field to organic at least 3 yrs.
- Prepare farm plan information on area locality, planting materials
- Soil fertility and crop management
- Manures and fertilizers along with sources
- Pest control and management
- Irrigation and weed control
- Farm processing, harvest, storage, transport and marketing
- Animal husbandry-nos, breed, feed and fodder used, housing, vaccination and deworming, fly and rat control in shed, dung disposal, Forage conservation
- Disease control, history of any synthetic hormone antibiotic used
- Manure management
- Milk handling
- All animal records
- Animal identification system
- Transport and Marketing of products
- Maps and all documents of transaction

**Fodder Rotations for Forage production under Irrigated condition.**

Rotation	Sowing	Availability	Green Yield(qt/ha)
1: Jowar + C.pea- oat+must.-Sorghum	June-Nov March	Round the Yr.	2000
Maize+ C pea- Lucern+ Must- Sorgh +C pea	June-Nov March	Round the Yr.	1800
Sorghum+ C pea- Berseem+Must.- Maize+C pea	June-Nov March	Round the Yr.	1800

Guinea+ Intercrop ( c pea- berseem- c pea)	June-(June-Nov-March)	Round the Yr.	1200
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**Fodder Rotation under rain-fed conditions.**

Rotation	Sowing	Availability	Green Yield(qt/ha)
Sorghum+ C pea- Oat + Mustard	June- Nov	July- Feb	1200
Maize+ C pea- Barley +Mustard	June- Nov	July- Feb	1000
Sorghum+ Cow pea- Oat	June- Nov	July- Feb	1000

**Organic milk production strategies....**

- Preferred indigenous breed of cattle- Gir, Tharparkar, Sahiwal cattle and Murrah buffaloes-for high adaptability
- Organic fodder and feed production
- Soil, water and nutrient management
- Fertilizers-FYM, Green manure, Vermi compost, mulching
- Crop/fodder rotation
- Animal health management through vaccination, herbal deworming, herbal/ homaeopathic treatment, limited life saving drugs
- Welfare through spacing, grazing, *ad lib* feeding, watering and natural services
- Herbal pest management
- Use of legumes in pasture

**Standard Protocols.**

- Conversion of conventional field to organic field using biofertilizers by 36 months.
- Production of feed and forages in situ.

- All input and out analysis to maintain residue levels BDL.
- Follow NPOP standard.
- Follow standard husbandry practice.
- Approach certification agency after 1 yr os start of project.
- Maintain standard in situ.

**Fertilization:**

- A. Production of Farm Yard Manure in a separate area without contamination and dung produced from animal fed organic feed and fodder produced in the system.
- B. Green mulching in the system.
- C. Vermicompost production (Earth worm- *I foetida*)

Application of fertilizers: FYM @ 20 t/ha, top dressing with vermicompost @ 1 t/ha, calculated following standard NPK requirement for a particular crop.

Use of Pesticide: Herbal---- Neem oil

**Starting of Organic Milk Production Process:**

1. Select Indigenous breed of cattle either available at your locality or suitable Indian cattle breed like Gir, Tharparkar or Sahiwal.
2. Calculate requirement of Feed & Forage for those animal.. Viz.

**Step A. Calculate ACU and Feed /Fodder requirement**

Dairy Unit	Adult cow	Bull	Calf	Total ACU	Total daily DM Required	DM through Green(1/3)	Actual Green fodder	DM th. Dry/ Bhoosa	Concentrate
10	10	1	6	12	120 kg	40 kg	200 kg	40 kg	40 kg
20	20	1	12	23	230 kg	77 KG	385 KG	76 KG	76 KG
50	50	2	30	58	580 KG	194 KG	970 KG	194 KG	194 KG
100	100	3	60	113	1130 kg	377 kg	1885 kg	376 kg	376 kg

**Step B: Calculate Area for fodder**

Dairy Unit	Total ACU	Annual Green fodder req.	Area req. ha	Dry/ Bhoosa req qt	Area req. ha	Conc. Mix/ yr	Area req. ha*	Total area req. ha
10	12	730 qt	0.5	146	0.5	146	2.0	3.0 ha
20	23	1405 qt	1.0	277.5	1.0	277.5	4.0	6.0 ha
50	58	3540 qt	2.0	708.0	2.0	708.0	10 .0	14 ha

100	113	6880 qt	6.5	1372.5	6.5	1372.5	20.0	33 ha
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- In the given area Rabi season will be for grain production and Kharif for legume hay as supplement.

**Step C: Analysis of Inputs and out puts:**

1. Chemical analysis for composition from standard laboratory for Input utilized like Soil, Water. FYM etc.
2. Analysis of output like – milk, fodder, grains or any product.

**Step D: Animal Housing and management:**

1. Space per animal should be given as per Indian standard( >ISI standard, we have given double the ISI space).
2. Housing should be loose type East-West direction.
3. Vaccination and deworming allowed as per NPOP norms.
4. Treatment of illness will be through Ayurvedic or organic means.
5. If life saving drugs used- animal should be withdrawn from system up to 30 days of last treatment used.
6. Drinking water should be free from any pesticide or chemical residues.
7. Hygienic means to be followed for every operation.

**Step E: Auditing by certification agency:**

Every year of auditing and check analysis, residue control in inputs and out put products.

**Quality assurance:** Milk quality analysis for fatty acid and residues ( we have done it from CMFRI, Mysore).

Step F: Phased certification of system.

**Out Come:**

1. Conventional field (4.5ha) converted to **certified organic field** by 30 months of initiation of project following NPOP standards.
2. Organic fodder production system developed. Certified organic fodder and grain produced from the system to produce organic milk. GFY increased up to 15-30% under different organic production process.

3. Soil quality in terms of available Organic C & NPK increased (2-3%) in 6 years of organic fertilization.

4. Soil health in terms of nematode, bacteria and soil nutrients was better under organic system.

**B. 1. Certified organic milk** produced from the 4<sup>th</sup> yr of project. **Certification done by SGS India Ltd, Gurgaon, affiliated afterwards by APEDA.**

2. Fatty acid in milk was palmitic (25.2-26.62%), Oleic (18.11-20.98) and Myristic acid(10.05-11.00). Linoleic i.e Omega 6 and Linolenic i.e Omega 3 was more in organic milk.

3. Tharparkar cows produced more Omega 6&3 fatty acid than Sahiwal and Gir.

**C. Disease incidence in animal was negligible except more external injuries under organic system. Routine vaccination and deworming followed as per recommendation.**

Reproductive performance, in terms of calving interval, dry period, AFC was better under organic feeding system.

**Certificates:**

# SGS

Page 1 of 2



## Scope Certificate

Certificate No. **ORG/SC/1110/002403**

**Indian Grassland and Fodder Research Institute**  
JHANSI, UTTAR PRADESH (284003)



This is to certify that the product(s) and area(s) of the mentioned organisation inspected by **SGS India Pvt. Ltd.** are in accordance with requirements of **India's National Programme for Organic Production Standards** (considered equivalent to Council Regulation (EC) No. 834/2007 and Swiss Organic Farming Ordinance for plant products originating in India)

Accreditation No. under NPOP  
NPOP/NAB/009

For the following process,  
**Production**  
this Certificate is issued.

This certificate is valid from  
**14/09/2011 until 13/09/2012**

This certificate is valid for those product(s) and area(s) that are specified in the annex **ORG/SC/1110/002403 A.**

The validity of this certificate solely depends on the continued compliance with the required standards and is subject to annual surveillance inspections.

Authorised by:

*A. Pandey*

Organic Certification Manager

SGS India Pvt. Ltd. 250 Udyog Vihar Phase - IV, Gurgaon

Haryana Pin: 122015 India Ph: 0124 - 6776225 Fax No: 124-2399764



(253) 8509001143011110002403

