

- 
- A collection of various spices and herbs in small paper bags, including black pepper, white rice, green herbs, cinnamon sticks, green peas, orange powder, nutmeg, yellow turmeric, black seeds, brown lentils, red lentils, green cardamom, star anise, and dried herbs.

### For Spices/Herbs/Organic Products





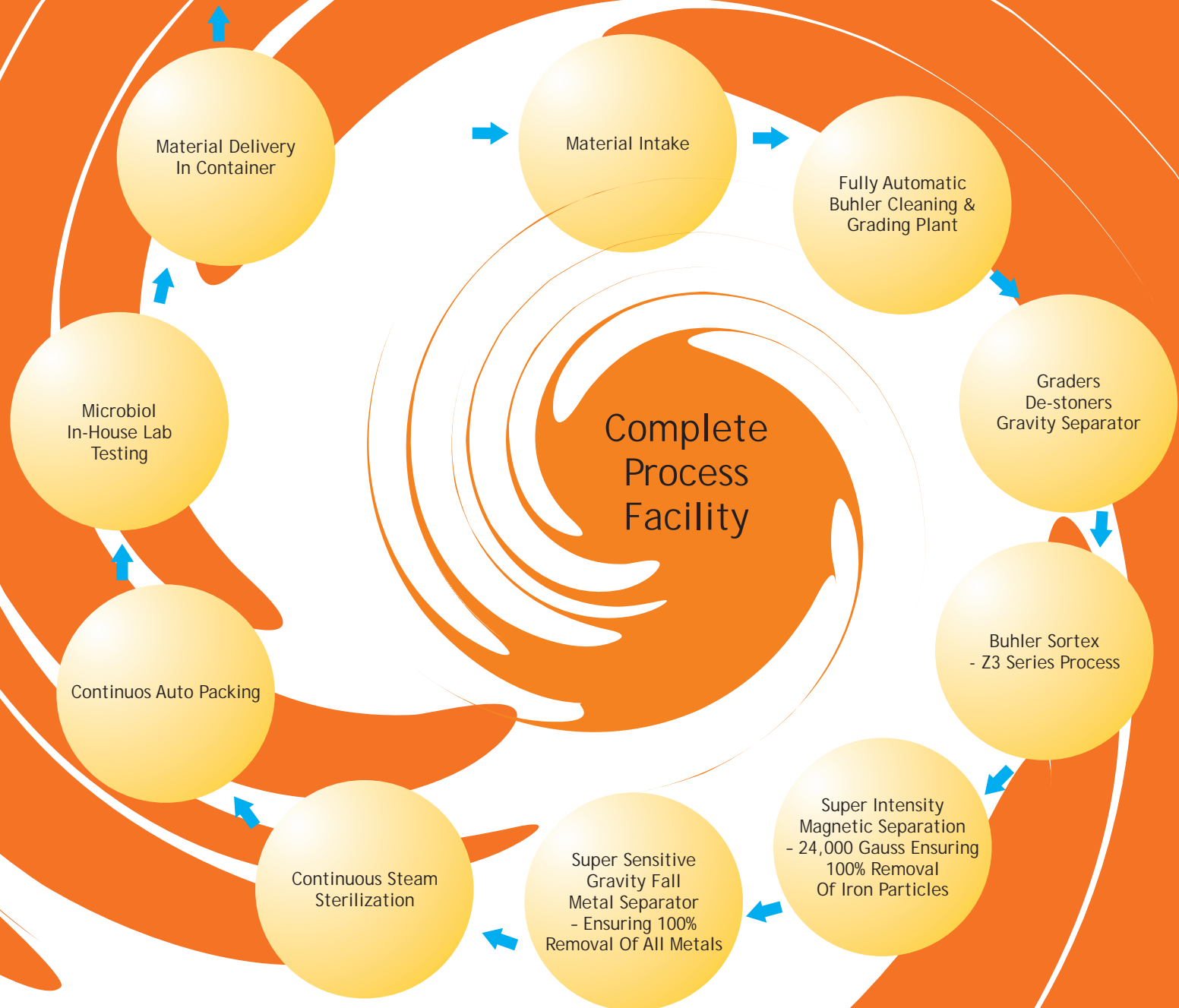


Head Office





## Complete Process Facility





## Steam Sterilization Unit for Food Crops

Inspite of being one of the leading producer of food in the world, India's share in the global food trade is less than two percent. If India has to increase its share in the global market, it has to focus on maintaining high quality standards, as rejection of imports due to sub standards quality of the foods would tarnish the image of the exporting country. The quality of the food crops is the functions of the various steps like harvesting, handling and processing involved in the operations. The people of the world over are now more conscious about the microbial contamination along with impurities and foreign matters in the food produce and products.

# What is sterilization?

- Definitions

- Sterile:

- Free from any living organisms.

- Sterilization:

- Process of killing or removing microorganisms from a product to ensure that it is sterile.

## We Are The Peoples With ... ..

" Experience + Quality + Commitment  
= The Right Choice"

We're more than just a contract sterilizer.  
we're a Company with vast experience in  
all facets.

With a reputation for dedication to service  
and quality that exceed any standard you  
would set for yourself !

The Continuous Steam Sterilization Technology is still not fully adopted, as very limited units are established in India. The steam sterilization treatment does not use chemicals and hence, no chemical residual effect is found in the treated products and therefore, it is not harmful to the health. The steam sterilization facility is at present not available, not only in Gujarat, but in the entire western region of India. Due to lack of such facility, our valued exported crops are not getting proper value addition.

With above in view, a state of the art technology of the Continuous Steam Sterilization is established in Vadodara district, 25 km away from Por on off road N.H. 8. The main crops to be sterilized are Psyllium, Cumin, Fennel, Whole Sesame, Ground Spices and many more. The unit is first of its kind established in Gujarat with latest technology of cleaning, grading and colour sortex, steam sterilization and class 100 cleaned and sterilized air system with packing in sterilized condition. The unit is having the following facilities

### Factory Shed :

The factory shed is of 12650 sq.ft constructed area with hard, strong and smooth kotastone flooring. All the four walls of the shed are fitted with ceramic tiles to its full height to maintain cleaning and hygienic conditions of the international standards. The fixed glass windows at upper half of the walls' height are provided for better natural light. The roof of the shed is fitted with galvanized sheets with few transparent PVC sheet coupled with axial turbo fans for better and constant air circulation.



### Cleaning, Grading and Colour Sorting :

The unit is established with world class “Buhler” equipment for cleaning, grading, de-stoning and colour sorting. The mechanical handling system is provided to minimize the human touch to the product to avoid microbiological contamination. The exportable grade material is directly feed from the hopper to the Steam Sterilization Unit.

### Steam Sterilization Unit :

The Continuous Steam Sterilization unit is imported from world renowned manufacturer “ETIA” of France of Safe Strile Brand. The equipment are made from SS 304. The product is sterilized with dried steam at the pre-decided temperature for specified period decided for the different crops. The product is passed through Teflon Coated Auger Conduit with zero clearance in between auger vanes and body to remove total material without sticking and accumulating on the bottom surface of the conduit. After passing steam, the material is immediately passed in the cooling zone, in which, the chilled water is use to cool the material. The entire process is computerized to maintain the feed rate, steam temperature, steam pressure, steaming time, cooling temperature and cooling period. The unit has the capacity to reduce microbiological level to zero percent depending upon the original microbiological load of the crop. The capacity of the plant is 2.5 MT per hour.

### Sterilized Packing :

The sterilized cooled material is packed in the room with class 100 cleaned and sterilized air at control temperature. The packing temperature of the product is maintained. The special PVC bags are used for packing with proper sealing to avoid entry of the external atmospheric air in the bag. The entire packing operation is under sterilized condition.

### Laboratory :

The unit is established with inhoused laboratory for physical, chemical and microbiological analysis of the product. The laboratory room is provided with class 100 cleaned and sterilized air to avoid contamination during analysis in the laboratory.

### Cleaning of the Factory and Hygiene of Staff :

The factory is cleaned frequently as per scheduled to maintain the international standards. Regular chemical spraying is made surrounding the area to minimize insects and pest population. The members working in the processing and packaging area are with clean dress.



BUHLER PLANT  
Cleaning/Grading Plant with Sortex - Z3 Series





## Buhler Cleaning - Grading / Z3 Series Sortex Plant





# Namah | We offer

Steam Sterilization

contract sterilization and fumigation  
using dry steam technology  
for nuts, spices, herbs and botanical

- TPC REDUCTION UPTO 99.99%.

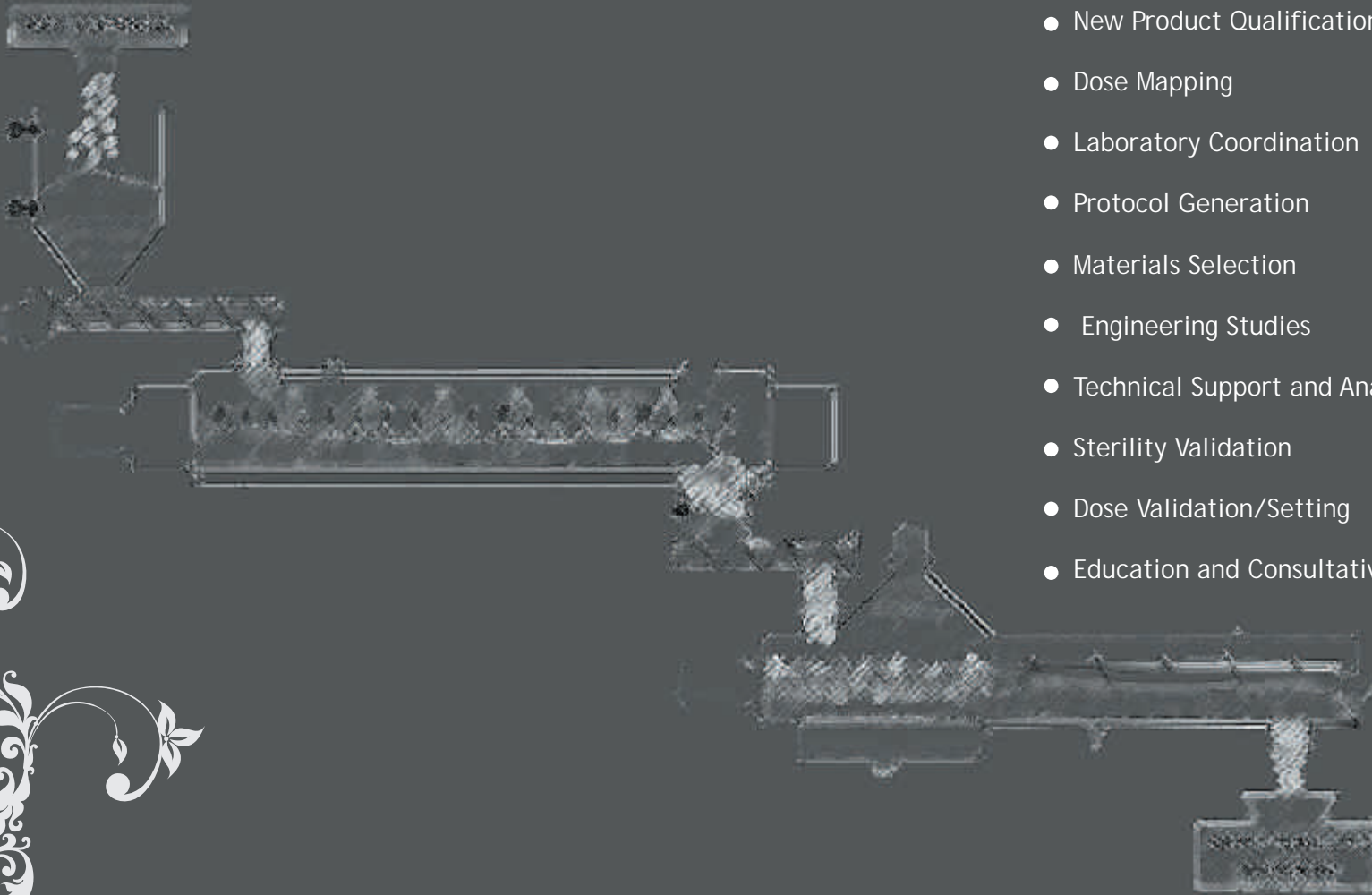
Namah Steam Sterilization Plant



# SERVICES

- Validation Support
- Same Day Service
- New Product Qualification
- Dose Mapping
- Laboratory Coordination
- Protocol Generation
- Materials Selection
- Engineering Studies
- Technical Support and Analysis
- Sterility Validation
- Dose Validation/Setting
- Education and Consultative Services

Raw Material



Steam Sterilized Material

# Namah Steam Sterilization Plant - 2.5 TPH Capacity

## THE NEED

Many dry products need to be pasteurized or sterilized. Several solutions exist like irradiation, ETO, ozone, and UV. However, steam sterilization is the only efficient and globally recognized solution. Ours is a continuous dry steam sterilization process, which is completely safe and natural. It only uses heat to reduce the germ content of the product. We will make your product safer for the consumer, while maintaining its high quality.

NAFI can treat most dry and wet products.  
These include :

- Spices, seeds, herbs, botanicals, dehydrated fruits and vegetables.
- All shapes of products, from whole to the finest form of powder.





### .....THE NEED

- Pasteurization or sterilization
- Alternative to Irradiation, Ozone, UV, IR.
- NAFI Steam Sterilization is 100% organic

### .....NAFI CAN TREAT

- Most products :  
Spices, seeds, herbs, botanical,  
dehydrated fruits and vegetables

### The product

- Can deal with all shapes of products:  
powder, whole, cuts, peelings, seeds,  
fibers...

- All shapes of products, from whole to  
the finest form of powder.

### • Steam - Advantages

#### -Simple process:

The only two parameters to control are time and temperature. Highly reliable and easily controlled.

-Widespread capability: All hospitals and many other health care facilities have steam sterilizers.

-Excellent process for reusable medical devices that are not adversely affected by temperatures  $>121^{\circ}\text{C}$  (up to  $135^{\circ}\text{C}$ ).

-Excellent process for liquids that are not heat sensitive.



# Advantages Of Steam Sterilization

NAFI(Namah Agro Food Industries) continuous steam sterilizing system for effective decontamination of spices, herbs, vegetables and seeds.

The continuous steam sterilizing process results in simultaneous reduction of the microbiological load and the ample inactivation of enzymes in spices, vegetables, herbs and seeds. These raw materials are heavily contaminated with yeasts, moulds, enterobacteraceae and spore-formers from the soil because of the simple treatments and the drying at low temperatures in the countries of origin.

Sometimes ideal conditions for growth in foodstuffs can easily lead to spoilage. The presence of pathogens, e.g. salmonella can never be excluded despite frequent checking and was the main reason for sterilization and irradiation in the past.

Steam is a most ideal gas as it is non toxic, it is cheap and there is unlimited supply.

The continuous steam sterilizing process offers the following advantages:

- Fastest possible way of product heating to an exact preset temperature.
- Steam condenses on the product and provides the water activity required for effective sterilization while the steam that condensed on the product surface will protect the product against burning. Hence the system concept complies with the condition that the product is subjected to the minimum heat load for adequate decontamination with a minimum adverse effect on flavor, color and loss of volatile oil.





## NAFI ( Namah Agro Food Industries)

- A Natural Solution Designed To Kill Micro organism While Keeping Product Quality.

Aromatic products, especially herbs and botanical are very sensitive to heat and to the moisture. That's why NAFI has been optimized to minimize the impact of sterilization on:

- Flavor and Taste:  
less than 5-8% of the oil content is lost during the process,
- Color:  
no drastic change of color .
- Moisture:  
with our exclusive dry steam device, there is no increase of moisture.
- Versatile as no other, NAFI is adapted to many kinds and shapes of products.

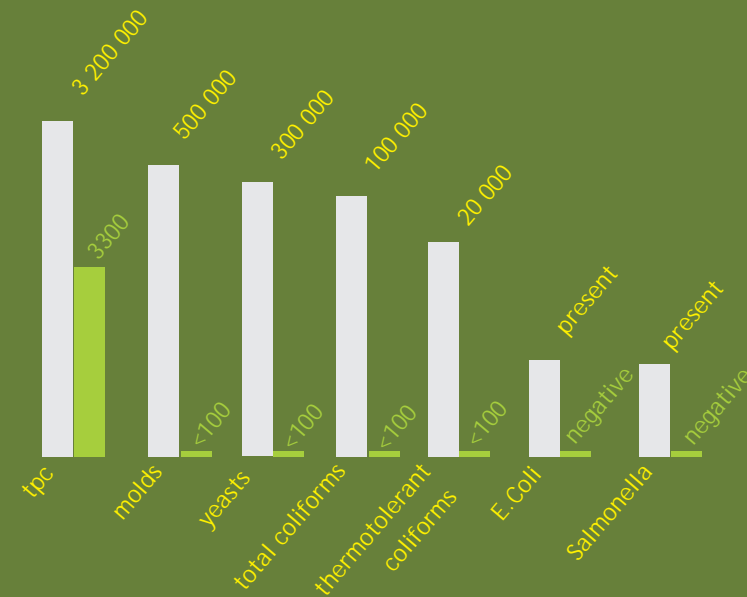
All shapes can be treated: whole, pieces, leaves, chopped, crushed, powdered...





# Performances Eg. Camomille sterilization

- Aspect remains the same
- Mini loss of Volatile oil
- No moisture increase

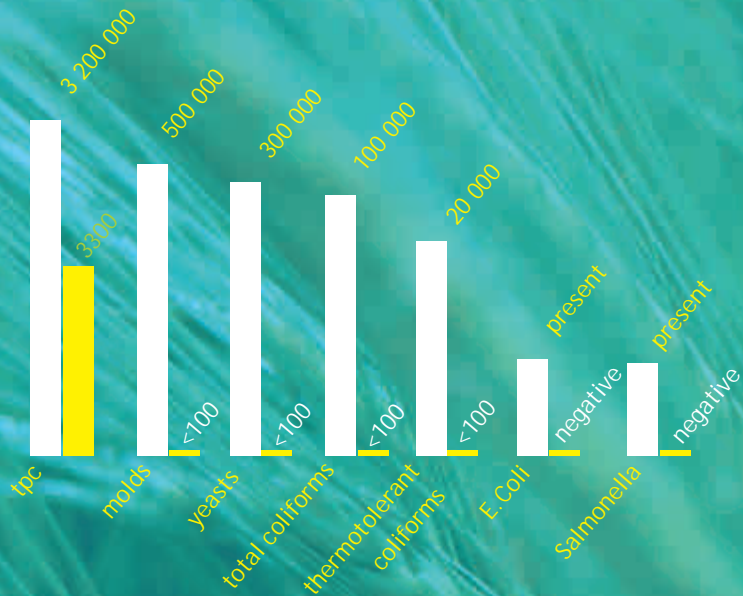


Camomille sterilization - (cfu/gm)

Raw Safe sterilized

	Volatile Oil	Moisture
Raw	0.37%	10.8%
Safesterilized	0.35%	10.3%





Camomille sterilization - (cfu/gm)

Raw Safe sterilized

	Volatile Oil	Moisture
Raw	0.37%	10.8%
Safesterilized	0.35%	10.3%

## Performances Eg. of Paprika Sterilization

Granulometry is stable  
Almost no alteration of  
Key components

	Termeric Powder	Chilly Powder	Paprika Powder
Key Component	Curcumin	Heat Value SHU	Colour Value ASTA
Raw	2.40%	27881	120
Safesterilized	2.39%	27495	117

Impact of Safesterilization on color and other heat sensitive properties

## Natural Pasteurization

Namah Steam Sterile is a new steam-based pasteurization system for spices, flavorings, seeds, botanical, grains, nuts, edible gums and other food ingredients. The process utilizes newly developed technology which facilitates rapid penetration of steam and transfer of heat throughout the materials being pasteurized.



## Product Quality

Because Namah Steam Sterile rapidly and uniformly transfers heat throughout the material being treated, the process does not expose product to temperatures higher than the minimum required for pasteurization. Included in the Namah Steam Sterile process is a rapid cooling stage to minimize residence time at elevated temperatures and maintain product quality.



## Devitalizes Weeds

An additional advantage of the Namah Steam Sterile process over conventional gas or irradiation-based technologies is the complete devitalization of contaminant weed seeds within the product. This is particularly important as Federal and State regulators are increasingly concerned about the possibility of foreign weed seeds harming our nation's agriculture.

## Elimination of Insects

Namah Steam Sterile can also be used for elimination of insects from most commodities including fresh fruits and vegetables. Current heat treatment schedules for fruits and vegetables utilize hot water dips or long-term residence in heated rooms at atmospheric pressure.

Namah Steam Sterile facilitates treatment in a much shorter time and can be performed on palletized product contained within shipping cartons.







## In-House Laboratories & Professional Research Equipment

All spices and herbs  
cultivated/harvested in  
different areas of the world  
and dried in  
different conditions need thorough and  
specialized research work (investigation).

We have our own laboratories on site  
and the most modern  
specialized equipment.

All raw materials & semi-finished  
products go  
through very strict quality  
control processes and testing.

We deliver proven  
products of the highest  
quality with the  
guarantee  
of their health safety.



## NAMAH AGRO FOOD INDUSTRIES

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