

AGRICULTURAL PATTERNS

An Indian Perspective

SUVAN SHARMA
Jain (Americas), Inc., USA
Jain Irrigation Systems Ltd. India



**HOW MUCH SHOULD BE
COVERED?**

- 1. Overview.**
- 2. Key Issues influencing
Agricultural patterns**
- 3. Indian Scenario**
- 4. Irrigation and contract farming**

THE BIGGER PICTURE



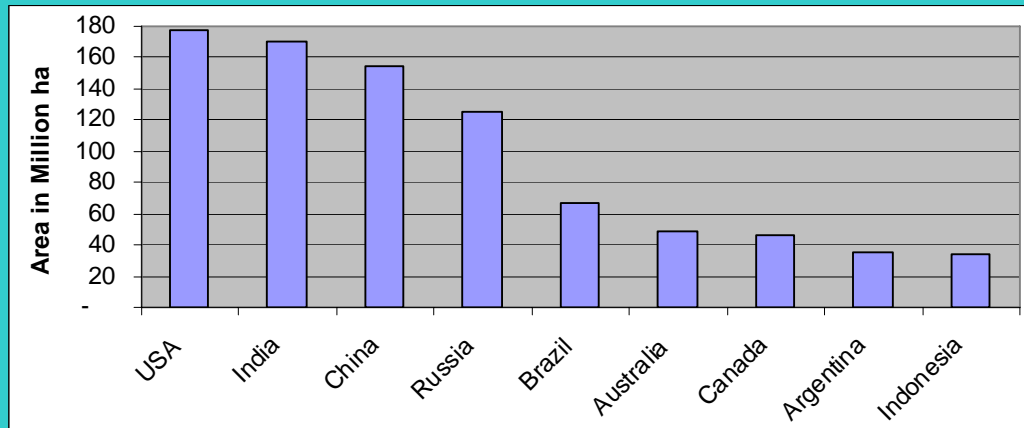
INDIAN AGRICULTURE QUICK FACTS

- 1.1 billion population
- 73% population in villages
- 70% population dependent on agriculture
- Agriculture accounts for 20% of country's GDP.
- Second Largest producer of fruits and vegetables.
- Third largest cereal producer in the world.
- Agricultural productivity half of world's best in many crops.



FACT

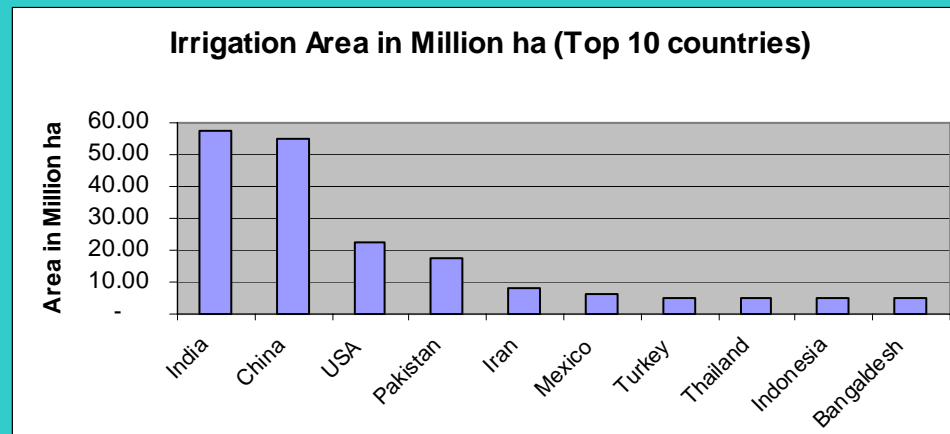
INDIA HAS SECOND LARGEST ARABLE AND PERMANENT CROPPED AREA



**Yet land productivity and returns on
resources is one of the lowest**

FACT

INDIA HAS LARGEST AREA UNDER IRRIGATION



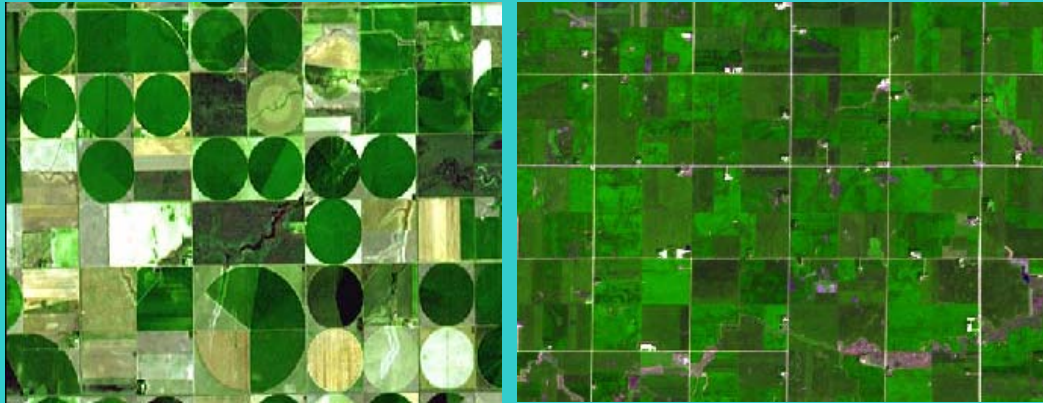
**60% of agri-land in India is
rain-fed**

**MANY THINGS INFLUENCE
AGRICULTURAL PATTERNS**

LETS TALK ABOUT FEW

THE LAND HOLDING PATTERN

USA



> 100 Acre Central Pivot fields or Central Grid Patterns

INDIA



Average land Holding 1.5 ha per farmer.

Marginal holdings (<1 ha) make up to 70% of total land holding

**ON AVERAGE, AVERAGE LAND HOLDING SIZE IS ONE-
HUNDREDTH THAT IN THE USA**

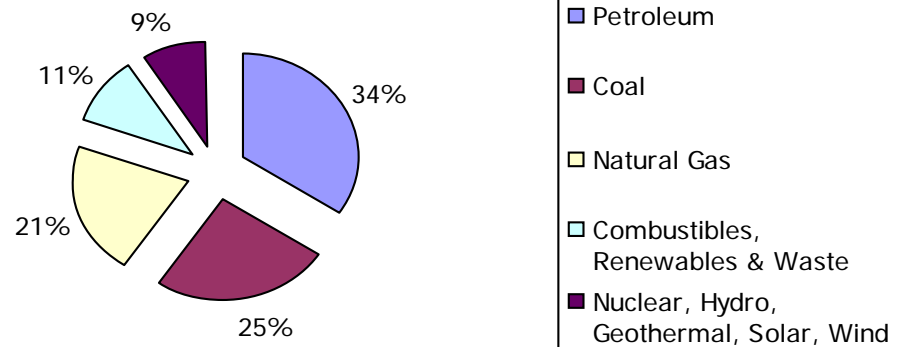
COMPETITION FOR LAND

Energy!!!

Bio-fuels!!!!!!!!!!!!!!

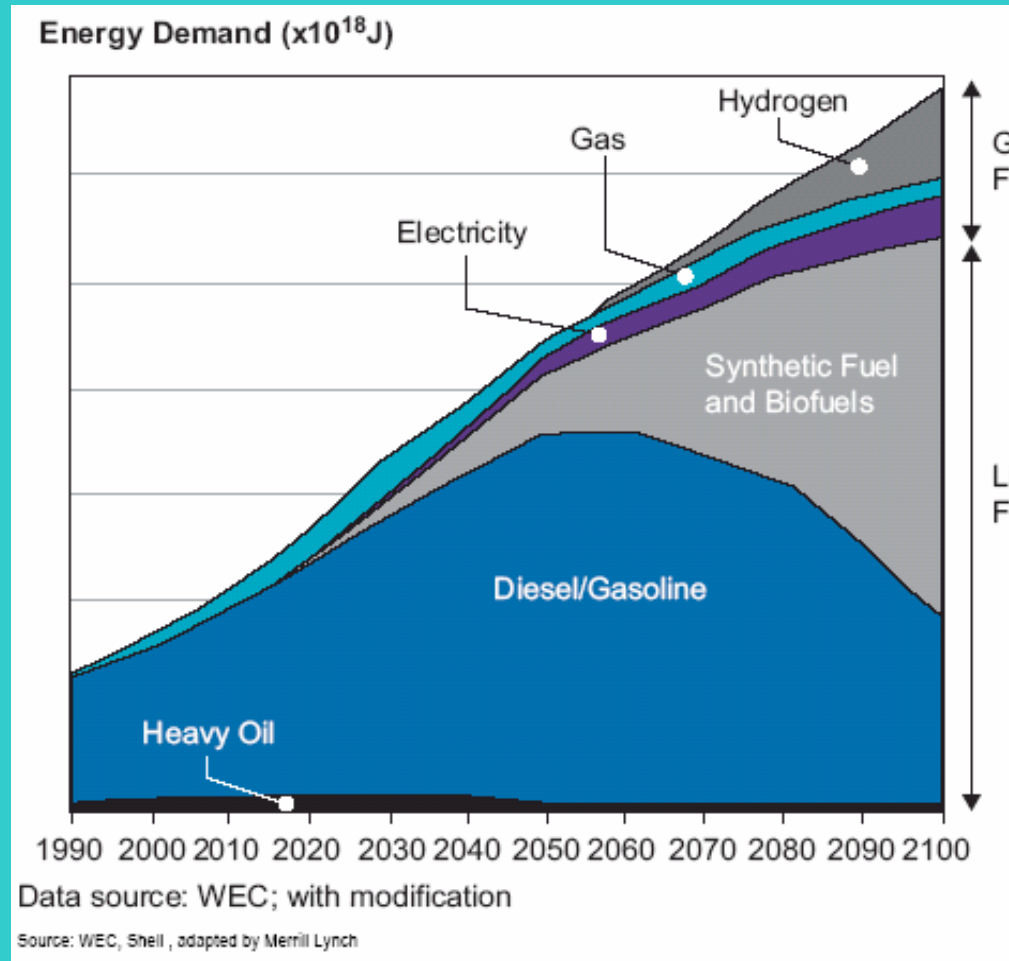
CURRENT ENERGY SOURCES

Table 2.1
World Energy Sources



Source: International Energy Agency 2004

100 YEARS VIEW



BIOFUELS

Bioethanol or Ethyl Alcohol

- Corn (330-420 Gallon/acre)
- Sugarcane (570-700 Gallon/acre)
- Sweet Sorghum (270-750 gallons/acre)
- Miscanthus grasses (780 gallons/acre)

Biodiesels

- Palm Oil (600-650 gallons/acre)
- Jatropha (300-350 gallons/acre)

Biogases

- Agricultural or organic waste
- Sewage gas
- Landfill gas, etc.

Bioethanol from Cellulosic conversion

Agriculture and forest biobass conversion

EFFECT OF ALCOHOL ON HUMANS IS KNOWN TO US

Blood Alcohol Content (BAC) (Mg/Millilitres)	Symptoms
50	Euphoria, Talkativeness, Relaxation
100	Central Nervous System Depression, impaired motor and sensory function, impaired cognition
>140	Decreased blood flow to brain
300	Stupefaction, possible unconsciousness
400	Possible death
>550	Expiration

**EFFECT OF ETHANOL or ETHYLE
ALCOHOL (OR GRAIN ALCOHOL)**

ON AGRICULTURE

**We don't completely know
yet.**

WATER AVAILABILITY

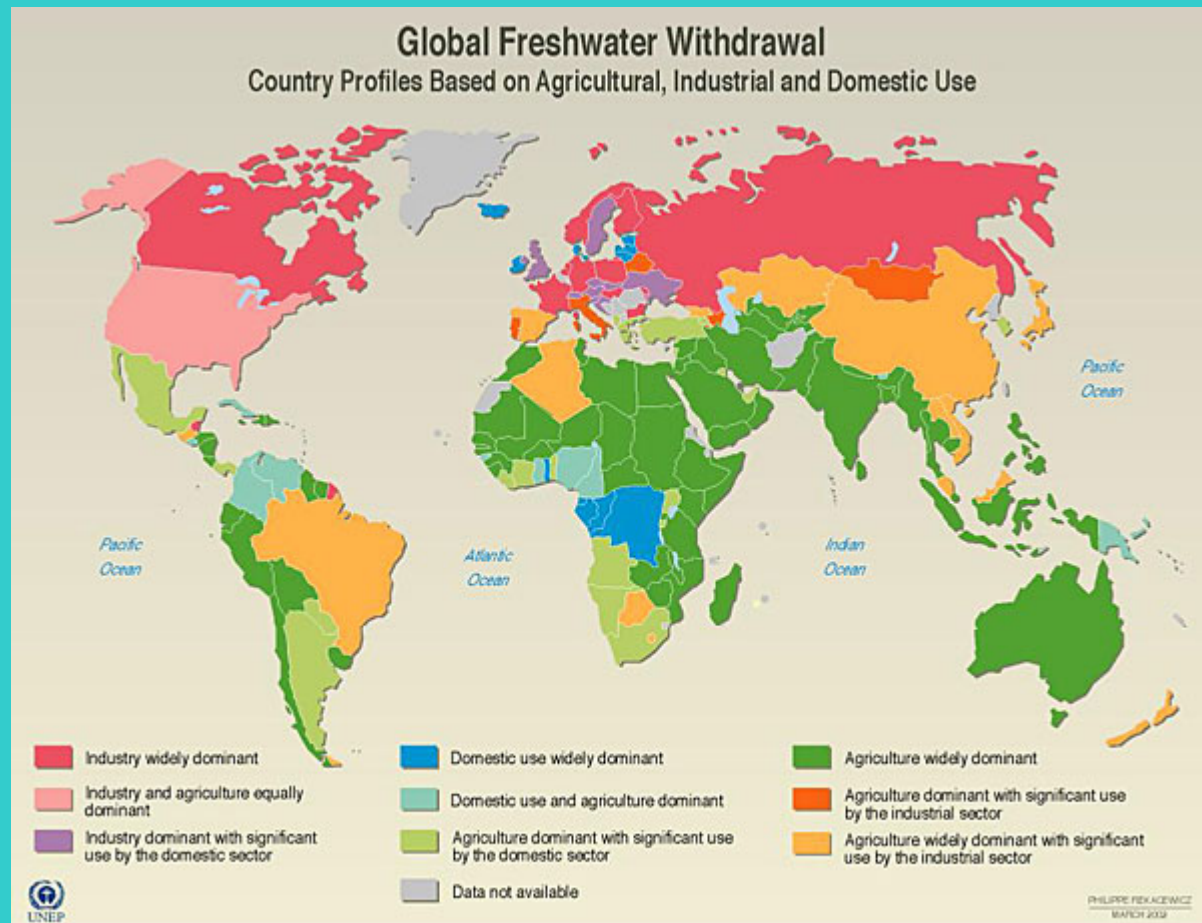
70% of earth is
Covered with
water

97% of this is
Seawater

2% Polar Ice Cap

1% is freshwater

USE OF THIS 1% FRESH WATER



Source: Based on data from Table FW1 in *World Resources 2000-2001, People and Ecosystems: The Fraying Web of Life*, World Resources Institute (WRI), Washington DC, 2000.

**AND MORE ON
THIS LATER**

INDIAN AGRICULTURE

SOME REAL ISSUES

-Share of Agriculture in overall GDP has come down from 57% in 1951 to 20% in 2006-07.

-Horticulture makes up 30% of India's agri GDP but occupies 10% of the area. 1/3rd is lost post harvest.

-India produces 10% of world's fruits and vegetables, accounts for < 1% and processes <1% of F&V.

-Due to poor infrastructure, prices of fruits and vegetables routinely rise X3 along the supply chain.

AGRICULTURE AND FOOD VALUE CHAIN

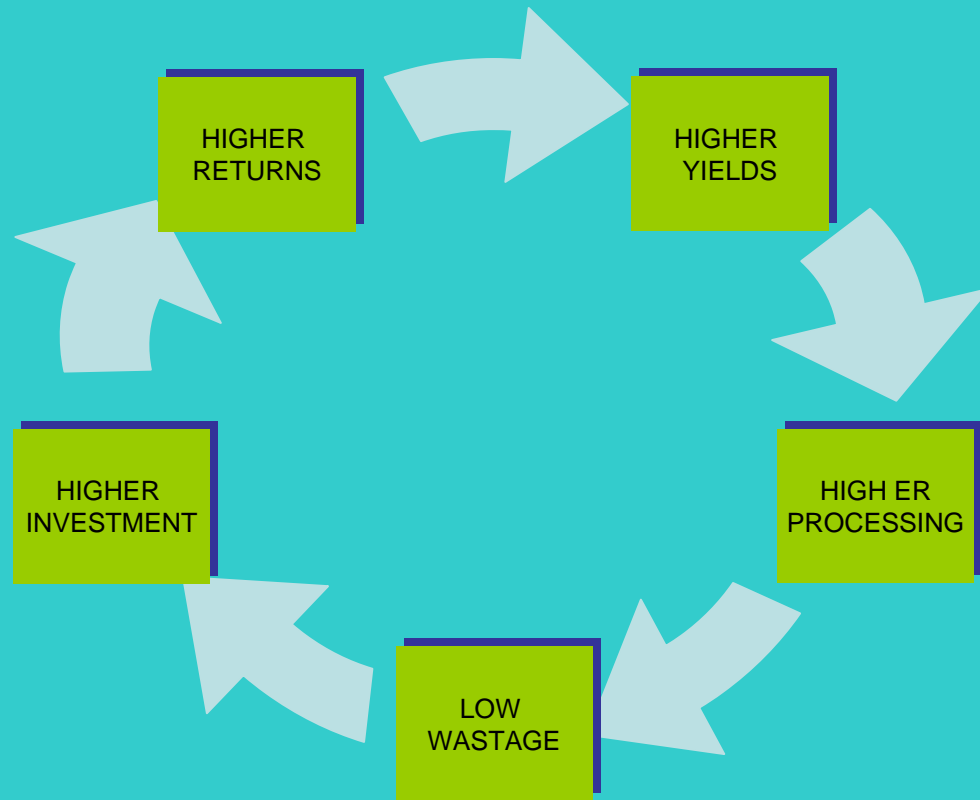
WHATS WRONG

AT THE BACK END	AT THE FRONT END	GOVERNMENT POLICY
FRAGMENTED LAND HOLDING	WEAK RETAIL DISTRIBUTION (ONLY 3% IN ORGANIZED SECTOR)	RESERVATION FOR SSI ENCOURAGES INEFFICIENCIES
INEFFICIENT AGRI-MARKETING CHAINS –TOO MANY INTERMEDIARIES	POOR LOGISTICS INFRASTRUCTURE	FOOD TAXES AMONGST THE HIGHEST IN THE WORLD
LOW CORPORATE PARTICIPATION	CONSUMERS PREFERENCE TO FRESH OVER PACKAGED	HIGHLY REGULATED - HALF A DOZEN MINISTRIES, MULTIPLE FOOD LAWS
LITTLE INFRASTRUCTURE INVESTMENT		
GROWING SUBSIDIES		

AGRICULTURE AND FOOD VALUE CHAIN AT PRESENT IN A VICIOUS CYCLE



VICIOUS CYCLE NEEDS TO BECOME A VIRTUOUS CYCLE

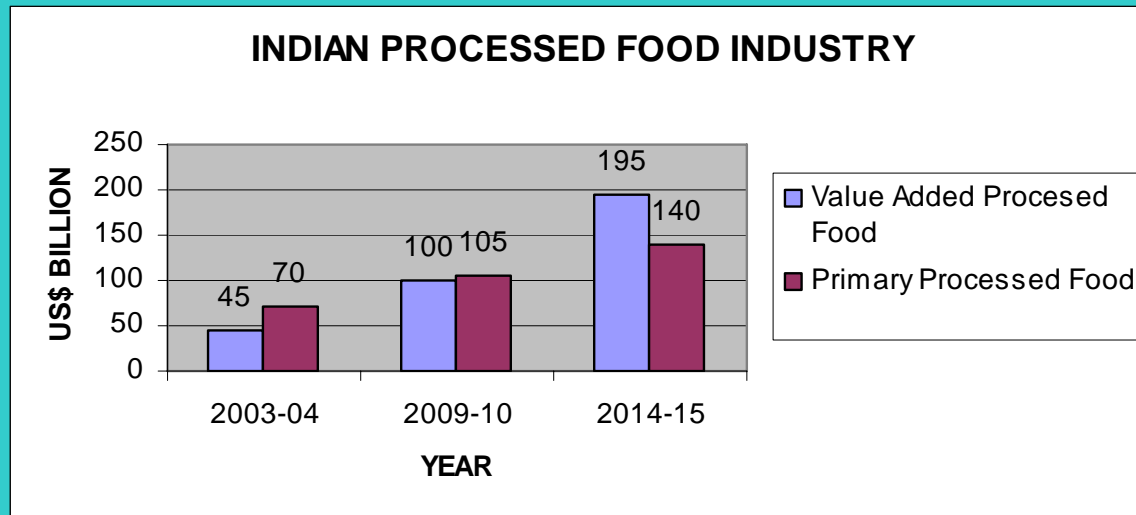


KEY FOCUS AREAS

- BETTER INPUT TO FARMERS TO
INCREASE YIELDS**
- ASSURED RETURNS TO FARMERS**
- HIGHER PROCESSING**

VALUE ADDITION IN AGRICULTURE AND PROCESSED FOOD WILL DRIVE THE NEW AGRICULTURAL PATTERNS

**By 2015, INDIAN PROCESSED FOOD INDUSTRY
WILL BE US\$ 335 BILLION INDUSTRY**



THE KEY PLAYERS

					ORGANIZED RETAIL
				ANCILLARY BUSINESS	BIG BAZAAR SUBHIKSHA RELIANCE BHARATI FOOD WORLD HYPERCITY (Shoppers Stop) SPINACH (Wadhwan Group)
		LOGISTICS	FOOD PROCESSORS	PAPER PRODUCTS	
AGGREGATORS		CON CORP.	ITC	BARTRONICS	
FARM INPUTS	ITC	SNOMAN (GDL)	HLL	AMUL	
JAIN IRRIGATION	DCM-SHRIRAM	NBHC (FIN. TECH)	NESTLE	MCX	
ADVANTA	GODREJ	CWC	DABUR	NCDEX	
SYNGENTA	PEPSI		MTR		
M&M			SPICE PROCESSORS (McC, VKL, ETC)		
			JAIN IRRIGATION		

**BETTER INPUTS TO FARMERS
WILL LEAD TO HIGHER
PRODUCTIVITY**

BETTER WATER MANAGEMENT WILL BE THE KEY

Presently, the problem facing the country is not the development of water resources, but the management of the developed water resources in sustainable manner.

- Excerpts from the Report of SSKI Task Force on Micro Irrigation

AGAIN,,,,,

INDIA

16% OF WORLD'S POPULATION

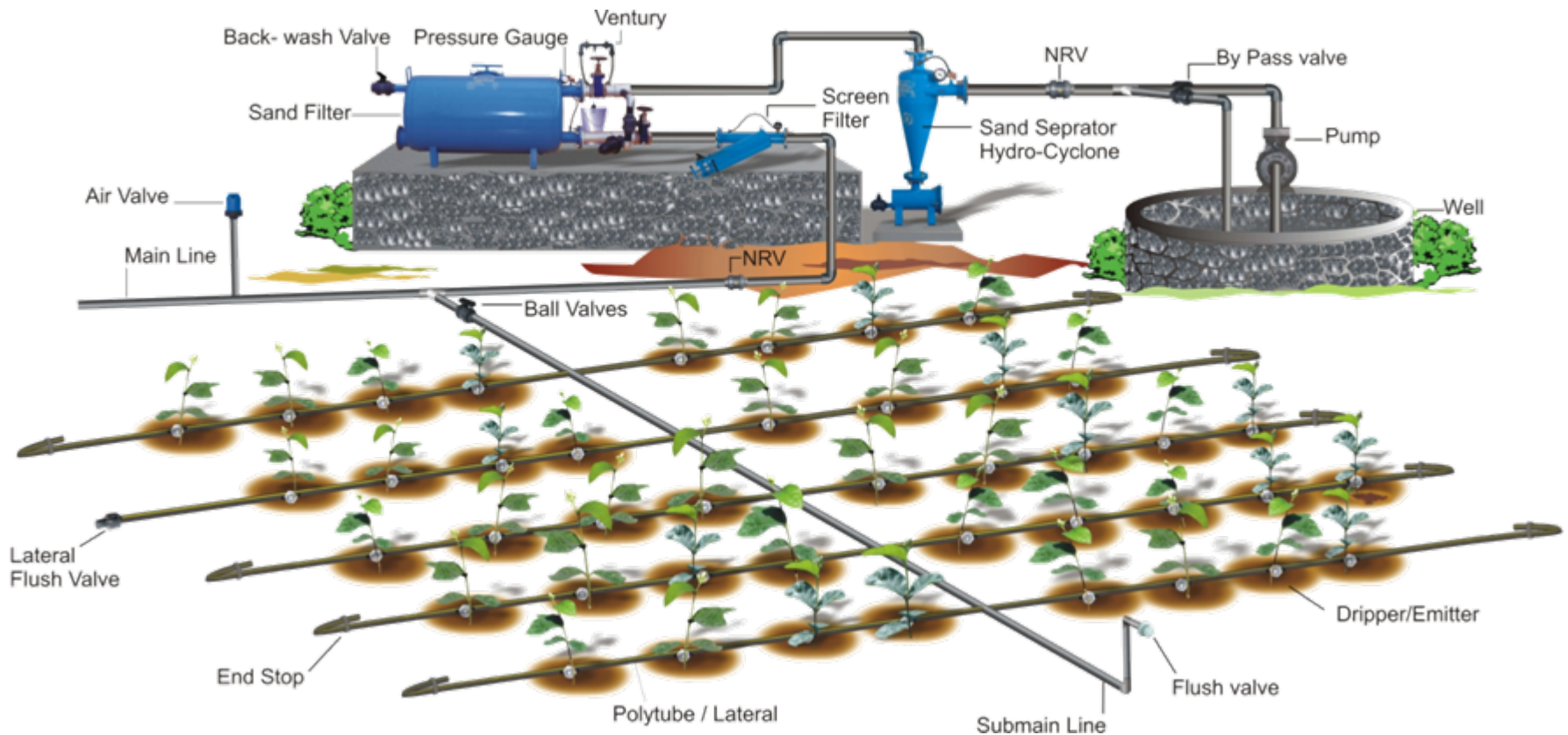
AND 4% OF WATER RESOURCES

SOLUTION

**Micro Irrigation – More Crop
Per Drop**

Micro Irrigation –Water Management Solution

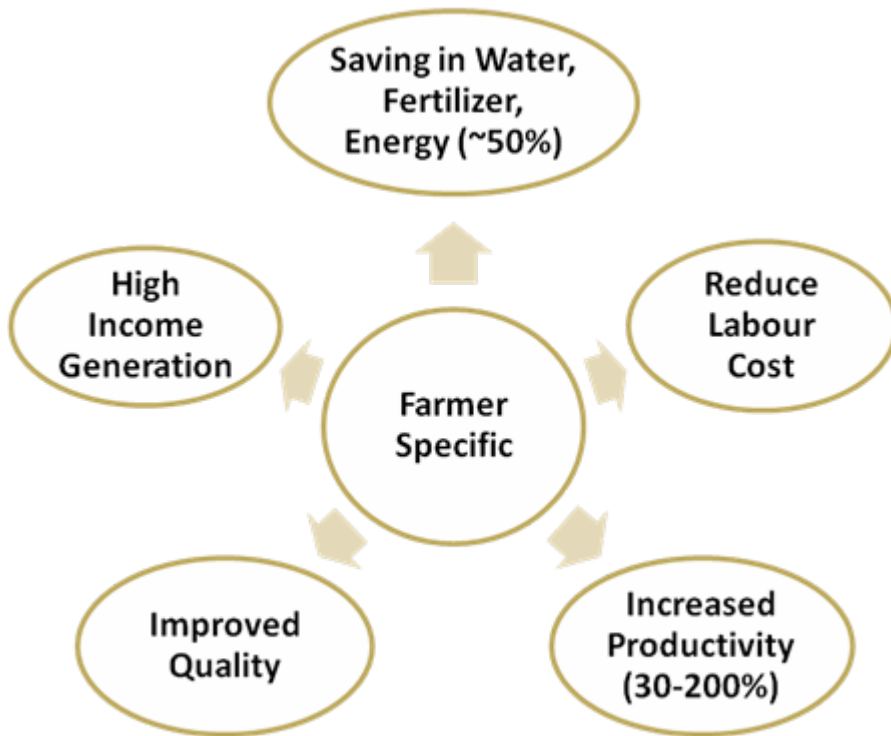
Application of water to root zone through custom designed system as much as crop needs



Average Life of Micro Irrigation System- 7 Years

Micro Irrigation System consist of more than 1000 items & more than 95% are manufactured in-house

Micro Irrigation –Benefits



Helps Govt. to Reduce Subsidy on Energy, Fertilizer, etc.

Improve Economics' of Rural Infrastructure Investment

Improve Soil Condition & Reduce Water Degradation

Creation of Rural Wealth & Reduce Pressure on Urbanization

Support Agro-based Industrial Growth

Support overall GDP Growth & Employment Generation

Leads Cropping Diversification from Filed Crop to Horticulture

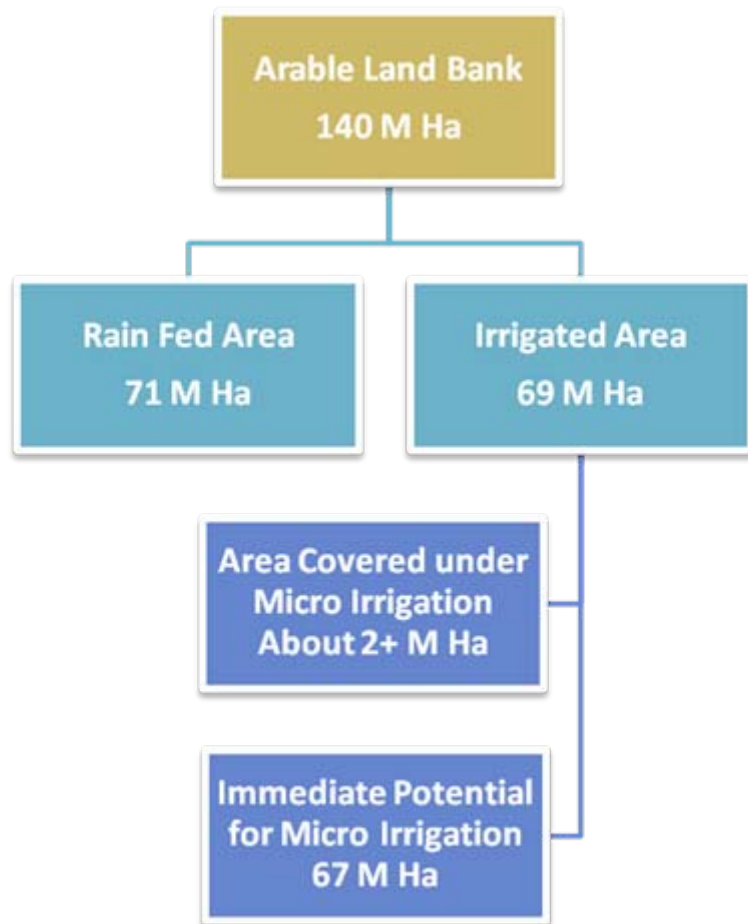
Waste Land Conversion to Productive Land

About 80% of Farmers in India holds Land which is less than 2 hectares.

Beneficial to Resource-poor farmers having access to a limited water supply and small land

With average cost of US\$ 1000 per ha; the pay-back period is between 2-3 Crop Cycle depending on Crop to Crop

Micro Irrigation – Potential in India



Current / Expected Industry Size

	Revenue (Yearly)	Area Covered (Average)
Jain	US\$ 200 Mil	0.20 Mha
Industry	US\$ 330 Mil	0.33 Mha
Potential (by FY10)	US\$ 1,000 Mil	1.0 Mha

Total potential for the irrigated area is about Rs. 2,613 bn (~US\$ 67 bn)
Current Govt. initiative to create additional irrigation potential of 10 Mha by 2010

**JAINS EXPERIENCE IN
CONTRACT FARMING FOR
DEHYDRATOR
ONIONS WITH INDIAN
FARMERS**

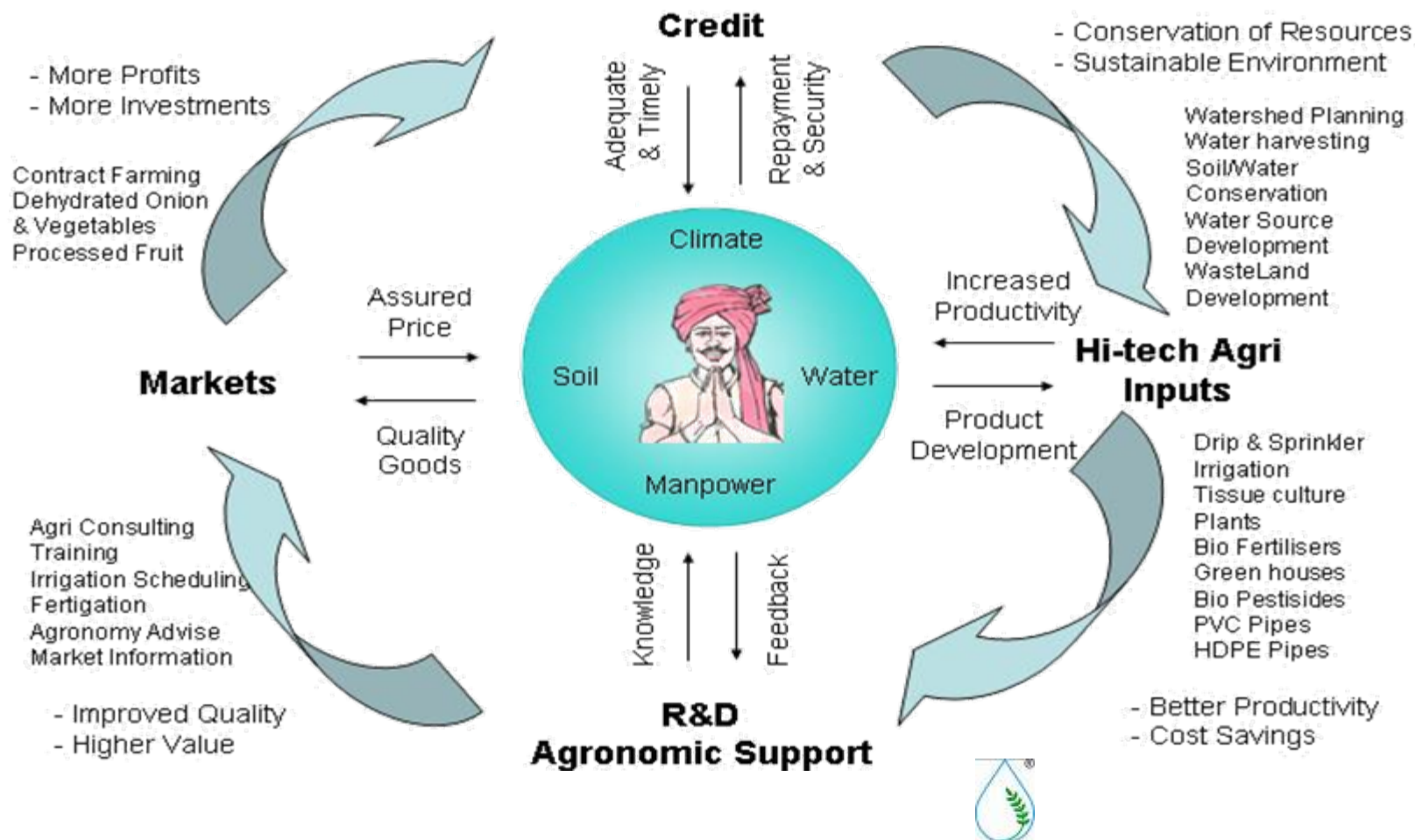
CONTRACT FARMING

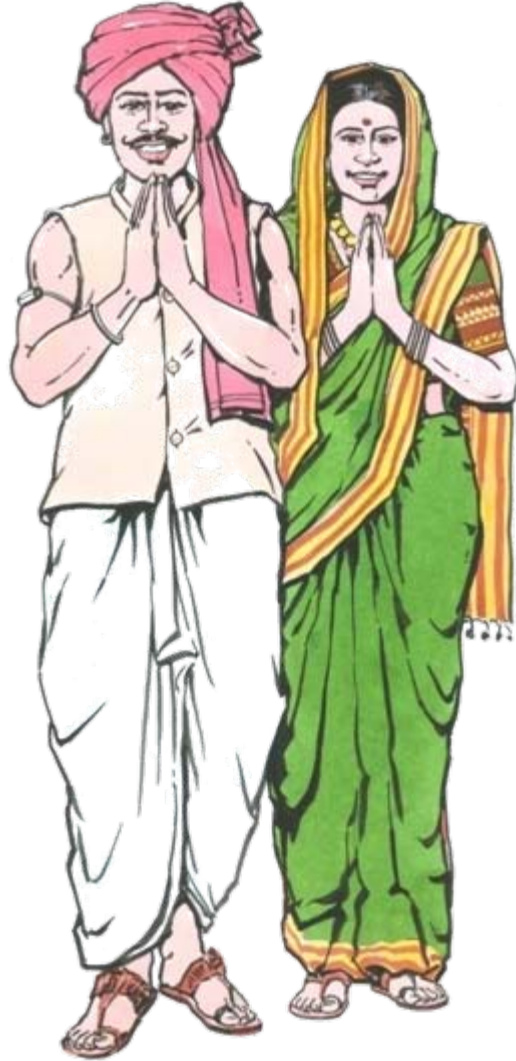
Farmer Our Customer
becomes
Farmer Our Supplier

- Started with 475 farmers 8 years ago to today with more than 2000.
- Education to farmers on yield, consistency, solids, disease resistance, in-field monitoring and performance, agricultural practices schedules, microbiology, harvesting, handling, storability and all that.
- Better returns to farmers due to higher yields
- Appointment of Gram Sewak (Agriculture extension Officers) in rural areas.
- Hi-Tech irrigation and other agronomical support.
- Minimum Contract Price or the higher prevailing market price.

TO SUMMARIZE

Holistic and virtuous self sustaining Agri Cycle Shall Work





Thank You