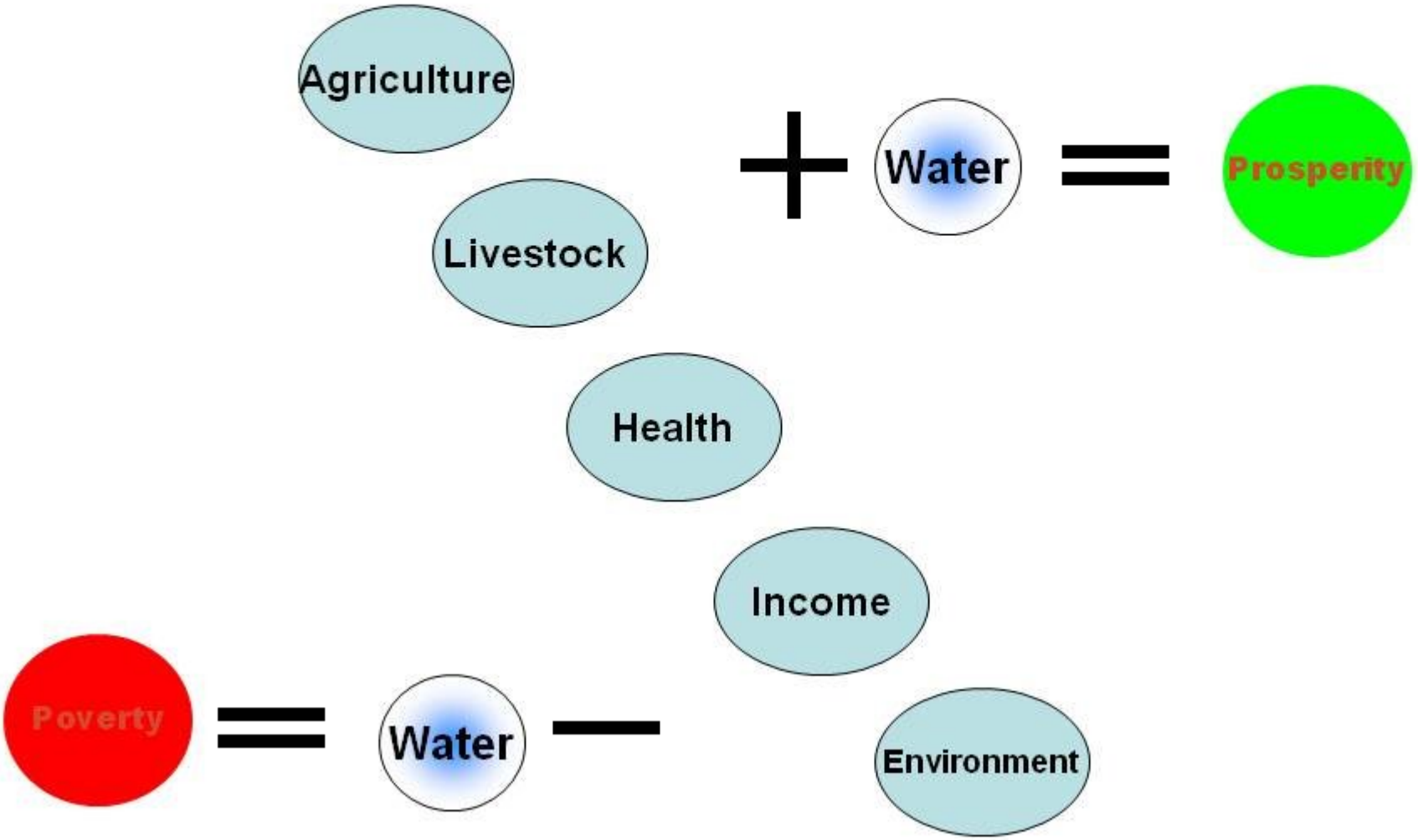
Institute Of Rural Research & Development
(An initiative of S M Sehgal Foundation)

Poverty eradication through water security

"SUSTAINABLE DEVELOPMENT by its nature is a work in progress..."

Suri Sehgal

Water: An Engine that Drive all other activities



Institute Of Rural Research & Development
(An initiative of S M Sehgal Foundation)

Lack of water leads to women struggle.....

Girls loose health & sacrifice school while collecting water from long distances

Lack of water leads to low school enrolment, high drop out rate specially in girls

Millennium Development Goals (MDG) & water

- The Millennium Declaration adopted in September 2000
- 189 Member States
- Set clear time-bound targets for progress on development issues we face.
- The water target reiterated at the 2002 World summit on sustainable development in Johannesburg, where a sanitation target was added.
- Although the MDG 7 is specifically related to water, all MDG goals have some impact in advancing and reaching the water target just as the water target will be important in advancing and reaching all MDG goals.

Highlighting the role of safe water and its contribution to each MDG by goal.....

Goal 1: Eradicate extreme poverty and hunger

- Illnesses caused by unsafe drinking-water and inadequate sanitation generate high health costs relative to income for the poor.
- Healthy people are better able to absorb nutrients in food than those suffering from water-related diseases, particularly helminth infections, which rob their hosts of calories.
- The time lost in water collection from long-distance & poor health contributes to poverty and reduced food security.

Goal 2: Achieve universal primary education

- Improved health and reduced water-carrying burdens improve school attendance, especially among girls.
- Having separate sanitation facilities for girls and boys in school increase girl's attendance, especially after they enter adolescence.

Goal 3: Promote gender equality and empower women

- Reduced time, health and care-giving burdens from improved water services give women more time for productive endeavours, adult education and leisure.

Goal 4: Reduce child mortality

- Improved sanitation and drinking-water sources reduces infant and child morbidity and mortality.

.....highlighting the role of safe water and its contribution to each MDG by goal

Goal 5: Improve maternal health

■ Accessible sources of water reduce labour burdens and health problems resulting from water portage, reducing maternal mortality risks.

■ Safe drinking-water and basic sanitation are needed in health care facilities to ensure basic hygiene practices following delivery.

Goal 6: Combat HIV/AIDS and other diseases

■ Safe drinking-water and basic sanitation help prevent water-related disease, including diarrhoeal diseases, schistosomiasis, filariasis, trachoma and helminths.

■ The reliability of drinking-water supplies and improved water management in human settlement areas reduce transmission risks of malaria and dengue fever.

Goal 7: Ensure environmental sustainability

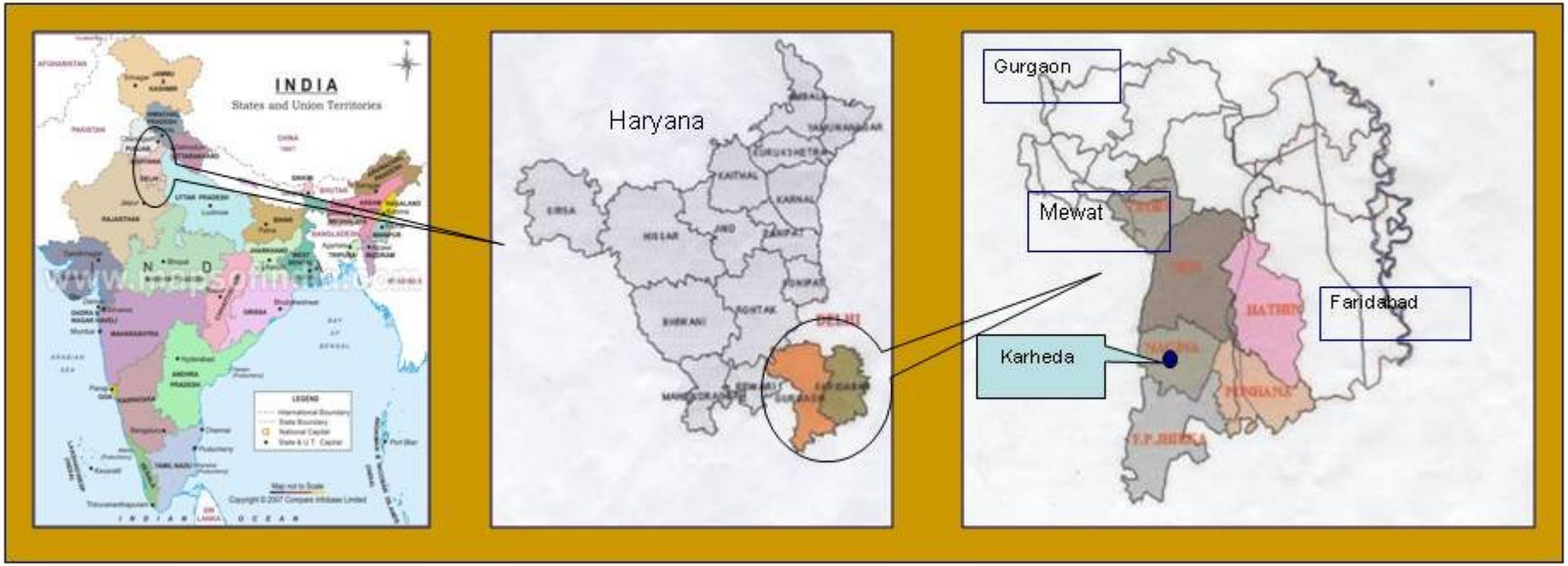
■ Adequate treatment and disposal of WW contributes to better ecosystem conservation and reducing pressure on scarce freshwater resources. Careful use of water resources prevents contamination of groundwater and helps minimize the cost of water treatment.

Goal 8: Develop partnership for development

■ Development agendas and partnerships should recognize the fundamental role that safe drinking-water and basic sanitation play in economic and social development.

Water situation of Mewat

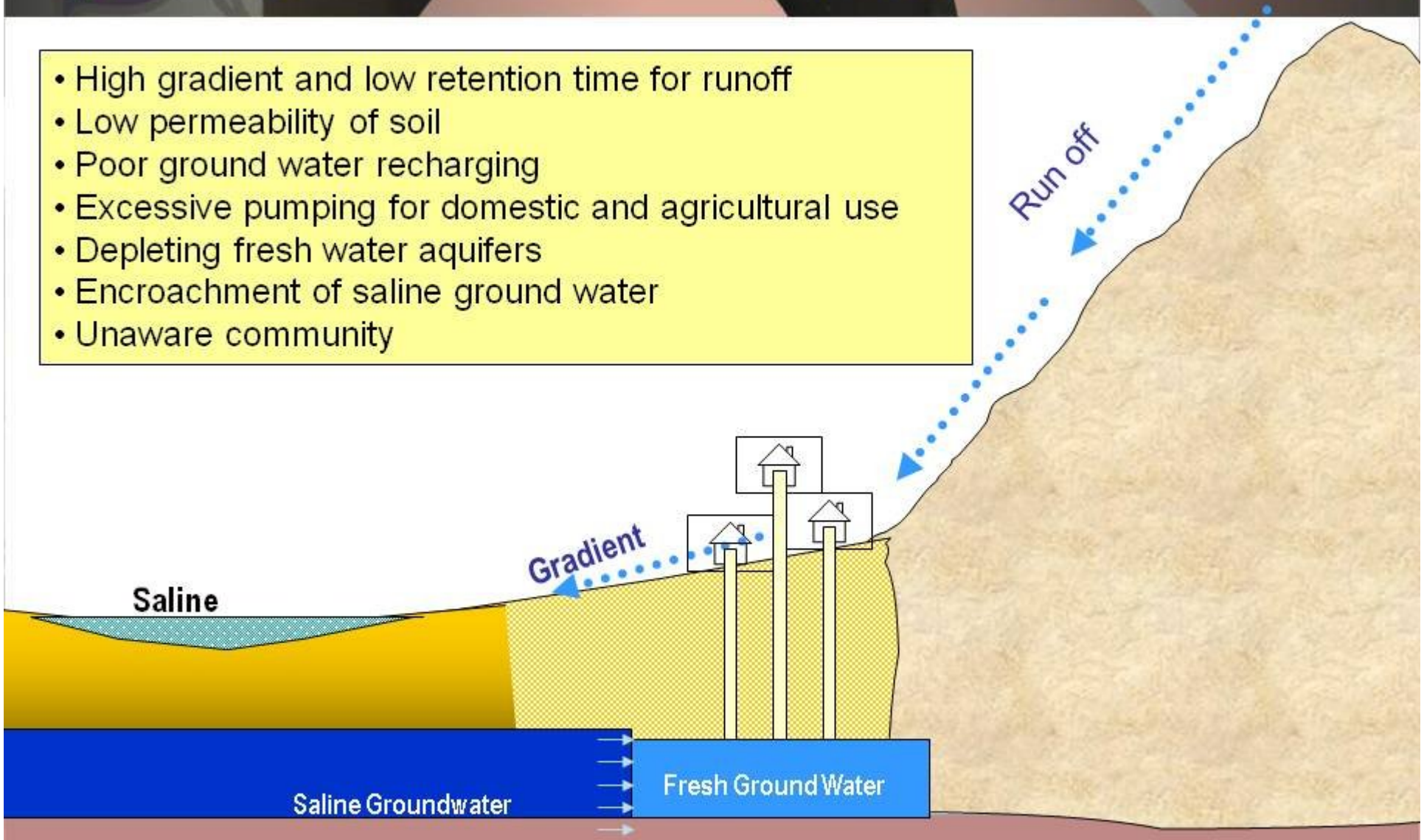
District Mewat: over one million population
Source of water: Only groundwater, no surface water



Out of 503 only 63 villages have fresh ground water

Mewat: Ground conditions

- High gradient and low retention time for runoff
- Low permeability of soil
- Poor ground water recharging
- Excessive pumping for domestic and agricultural use
- Depleting fresh water aquifers
- Encroachment of saline ground water
- Unaware community



Tip of the Iceberg

Water Quantity and Quality : *Ghagas situation*

- *Ground water depleting @ 250-300 mm per year*
- *Small pockets of sweet water supplying to 8 villages*
- *Drinking water unfit for consumption*

(Against WHO standards)

- **Nitrates : > 122%**

  Blue Baby syndrome, renal failure, hemoglobin reduction, neurological problems

- **Fluorides : > 50%**

  Dental problems, abnormal bone growth in spine and crippling

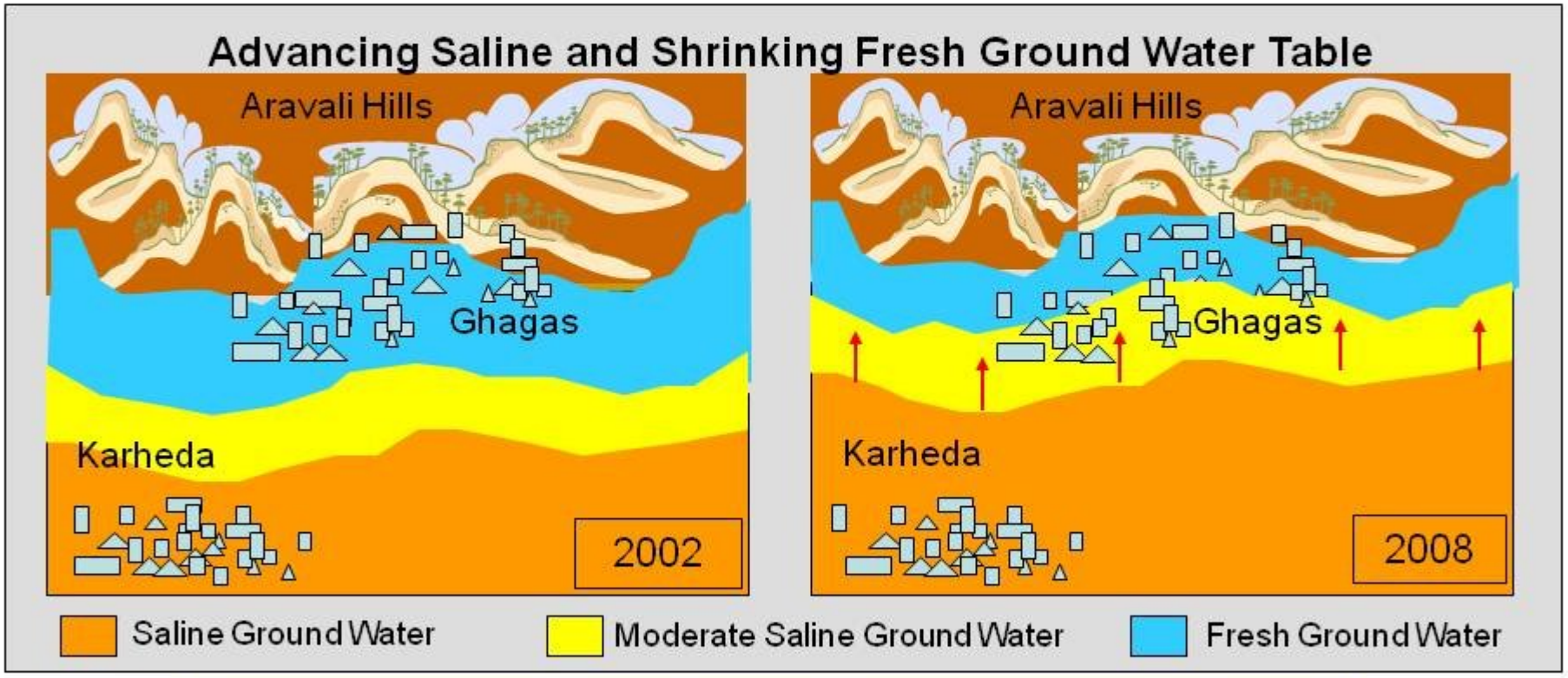
- **Iron : > 233%**

  Pancreatic dysfunction, gastro dysfunction, affects liver and kidney

Community united in Ghagas to revolt against sharing water with other villages

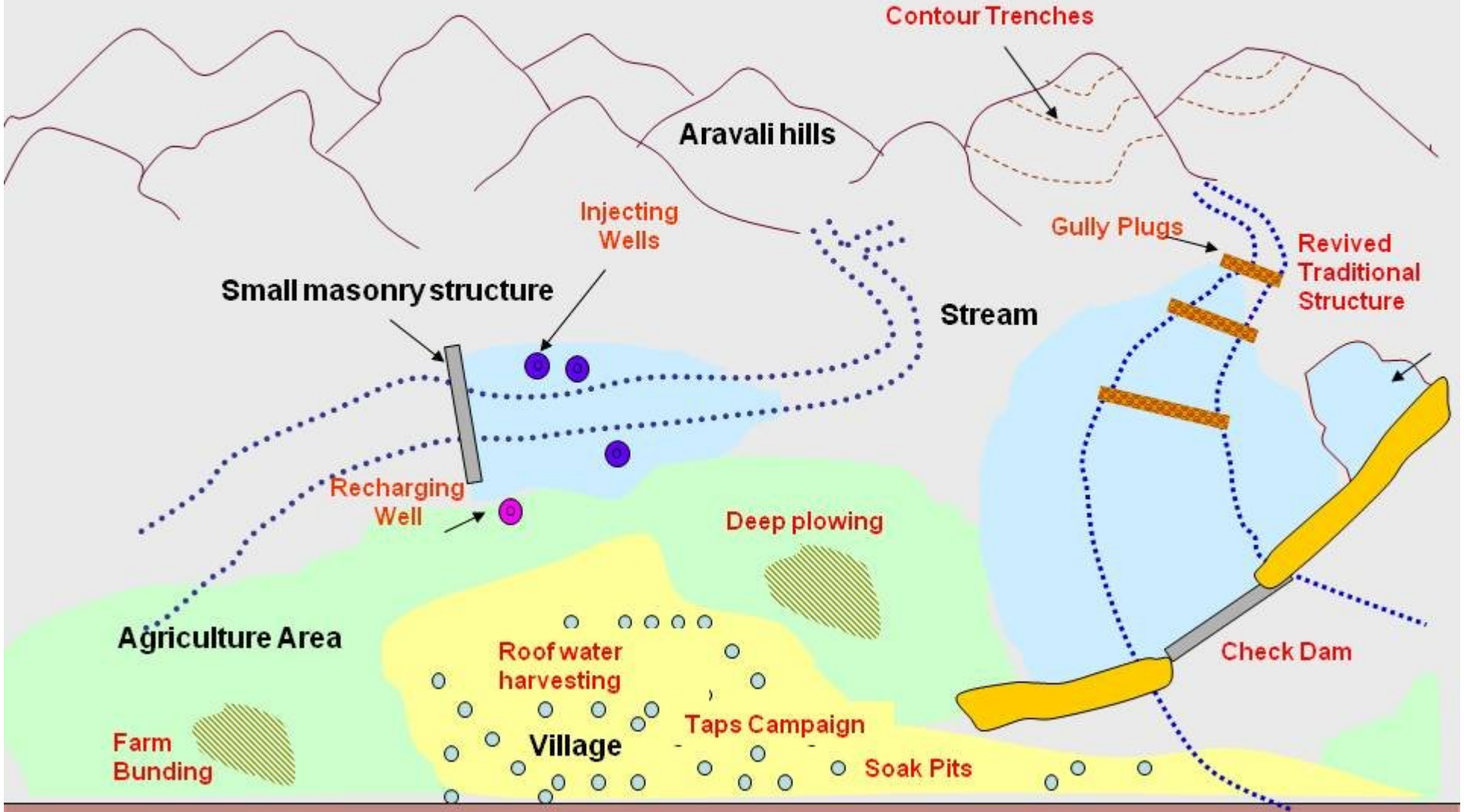
Villages are suffering

Supplying water to 8 villages → Ground water depleting fast → Community resisting water sharing



What to do?????

IWRM - *'ridge to valley'*



Project Stages

- Need assessment:
  - Situation Analysis
  - Issue Identification
- Trust building with community
- Building CBOs (ensuring representation of all sections)
- Awareness raising & capacity building
- Developing village development plan
  - Designing solutions and strategies with community
  - Developing micro level implementation plan
  - Formulating withdrawal strategy / handing over plan
- Implementation with community participation
- Monitoring and Evaluation by community/CBOs

Results....

Check dam at Kotla

Check dam at Ghaghas

Institute Of Rural Research & Development
(An initiative of S M Sehgal Foundation)

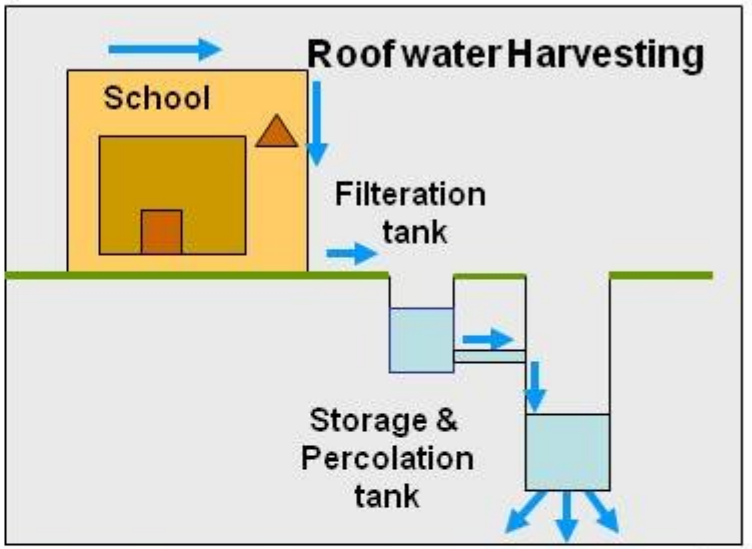
Implementation- *'ridge to valley'*

Implementation- *'ridge to valley'*

Storm water harvesting

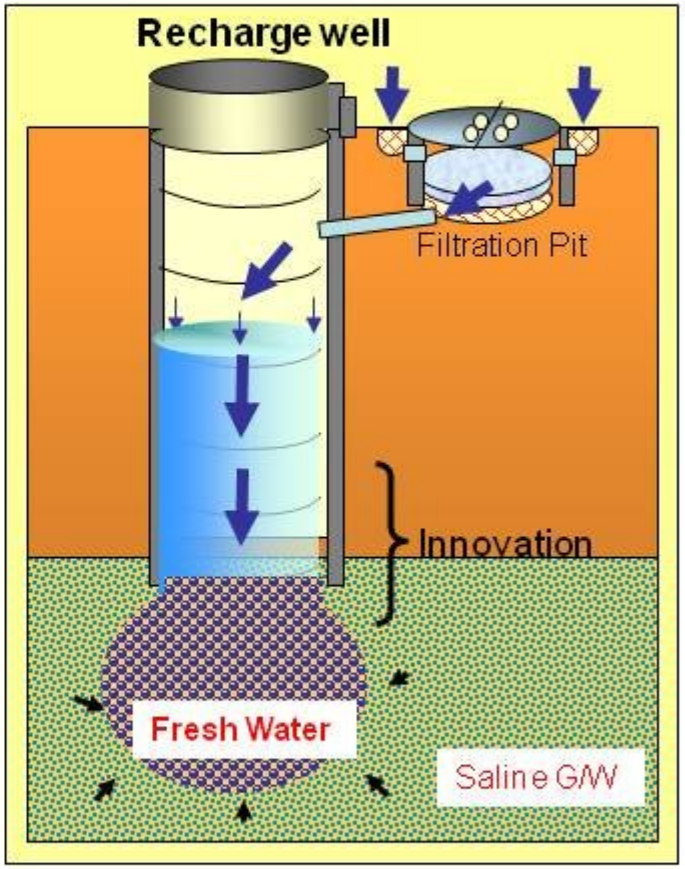
Well recharging structure

Implementation- *'ridge to valley'*



Rooftop rainwater harvesting

IWRM - Rain water storage & recharge



Rainwater storage

Results....

SOAK PITs.....
for Safe disposal of waste water

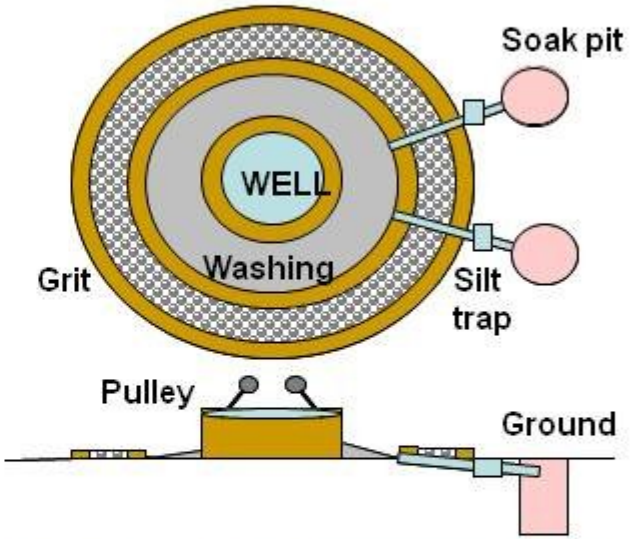
- Safety from diseases
- Ground water recharging
- Dry surroundings
- Cleanliness

BEFORE

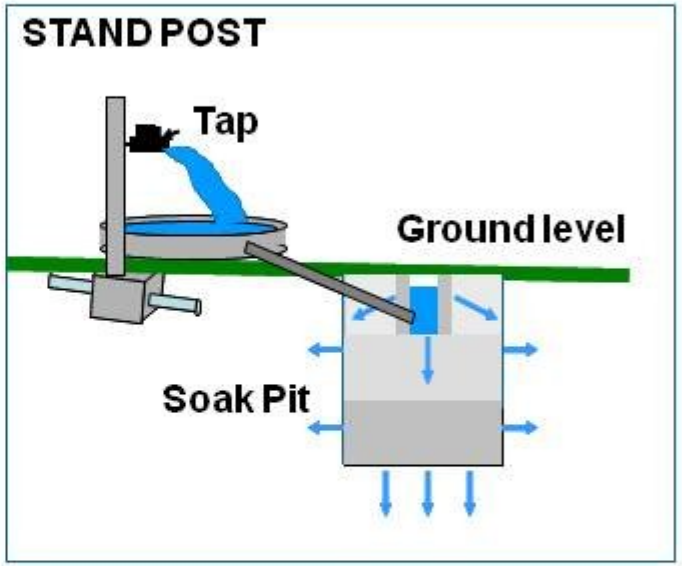
AFTER

Conservation: Safety, hygiene and comfort

Improvised Well



Water Conservation: Safety, hygiene and comfort



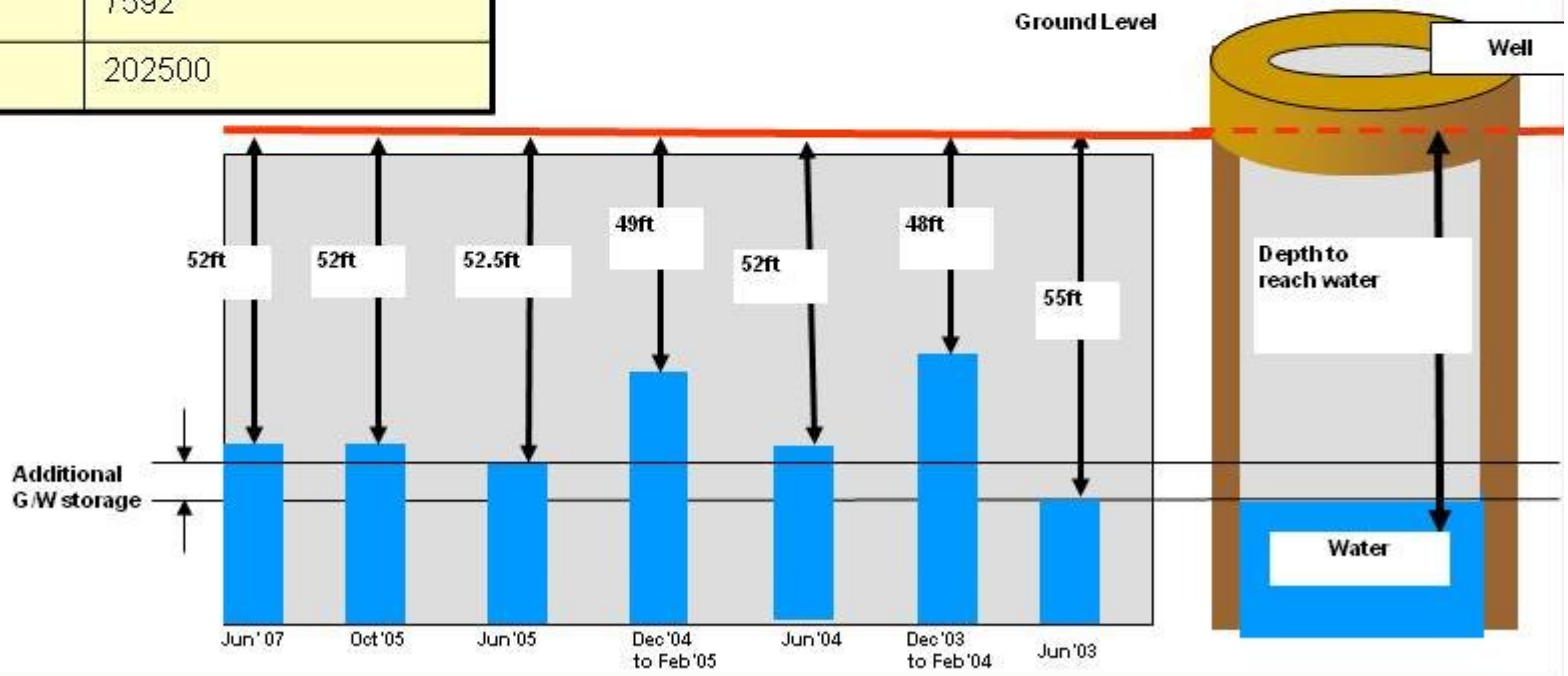
Success Story So Far

- Check Dams – 30
- RWH models – 44
- Recharge wells – 45
- Culvert structures – 7
- Soak pits/Soak wells – 609
- Stand posts/Taps – 264
- Wells D/water – 12
- Hand pumps – 52
- Rejuvenation of trdnl/str. – 28
- Catchment treatment – 355 hac
- Community awareness Trg – 235 sessions/yr
- Forest conservation through social fencing – Aravali foothills in selected villages

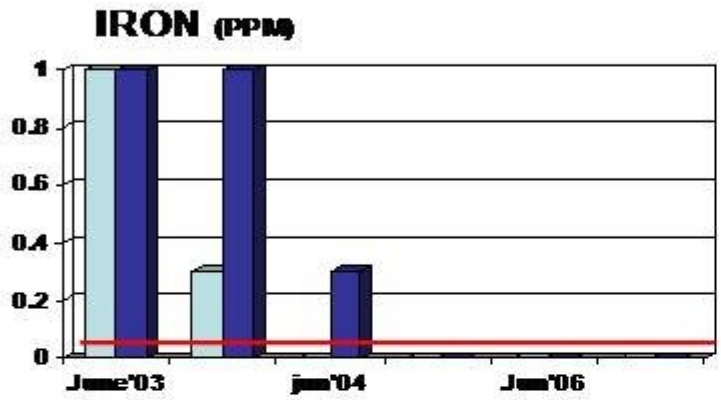
Impact In Ghagas

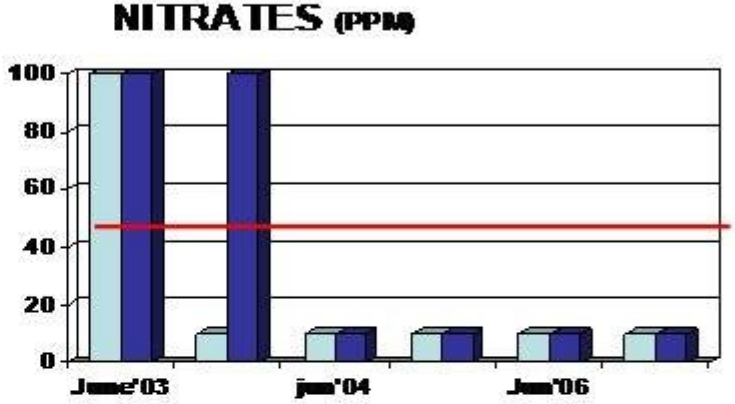
RWH Interventions at Ghagas	
Interventions	**Annual Harvest** (K ltrs)
C. Dams – 3	357000
Recharge well - 3	6360
RWH - 3	900
Soak Pits - 104	7592
Deep Plowing -90 Ac	202500

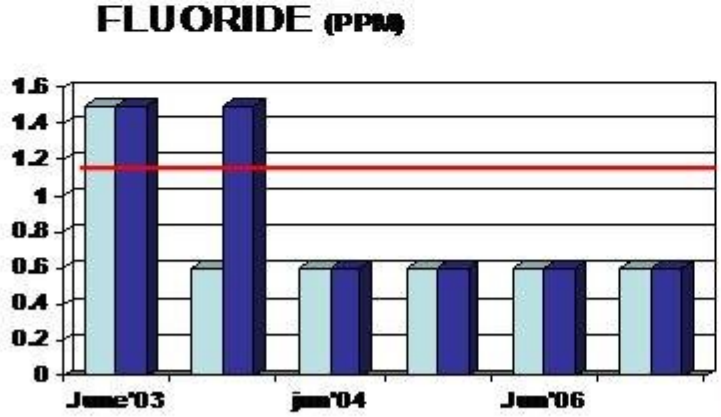
Rising Ground water table



Its beginning to work: G/Water quality improved







Sample Site A (150m away)

Sample Site B (1500m away)

WHO Permissible limits

It took approx. 1 year for the dilution effects to travel 1.5 Km under the ground, indicates that horizontal movement of recharged water is a slower process.

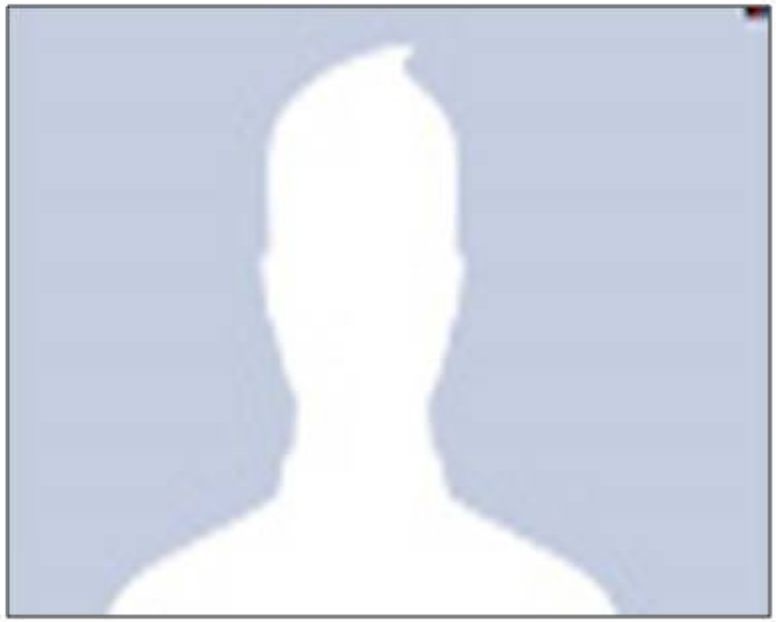
Water management strategy

- Creating surface water in saline GW zones
- Creating fresh water pockets in saline GW aquifers
- Mass recharging of fresh GW aquifers specially along Aravalli foothills
- Promotion of safe disposal of waste water at h/hold or cluster level
- Plantation of deep rooted high ET species in water logged areas
- Awareness creation on water issues in communities
- Promotion of safe drinking water and water efficient technologies
- Empowering communities on IWRM

Institute Of Rural Research & Development
(An initiative of S M Sehgal Foundation)

Water brought prosperity

- Started his career as daily wage labourer because the land he inherited was rainfed.
- He also worked in Horticulture dept, govt of Haryana and learnt skills of raising fruit plant nursery.
- The water management interventions of IRRAD (check dam, soak pit and soak well etc) has led to recharging of ground water converting low productive rain fed land into highly productive irrigated land.
- It has further led to increase in crop yield and thereby increased income for Mr Razaq.
- He also purchased 7 acres of land and living prosperous life.



Abdul Razzak

Institute Of Rural Research & Development
(An initiative of S M Sehgal Foundation)

Water brought prosperity

- Bad socio-economic condition in his childhood.
- Owned 1.75 acres of land from father.
- They lived in a kuchha house and received very low level of education along with siblings
- He worked as a labourer from his childhood till 22 years of age in 1999.
- His socio-economic conditions improved drastically after his association with IRRAD.
- He gained knowledge about new irrigation techniques viz sprinkler, intercropping (vegetable cultivation) etc.
- It has also led to increase productivity thereby resulting in increased income.
- He now has all basic amenities including pukka house, increase livestock (2 Buffaloes) and his family now consume better quality of food than before. With increase income, he now sends his children to school for education, a privilege which he was denied.

Mohd Usman, Goela

Institute Of Rural Research & Development
(An initiative of S M Sehgal Foundation)

Water brought prosperity

- Socio-economic conditions of family was dismal as father and himself has to work as labourer.
- He started farming in 2000 and shifted from single cropping (wheat) to multiple cropping (vegetable plantation) as a result of knowledge gained from IRRAD.
- As a result of IRRADs water intervention program increased water availability resulted in higher crop yield and huge rise in his income.
- He has now installed submersible pump and uses sprinkler irrigation system
- Now he saves on a lot of his time & works as a clerk in a transport company.
- His income has increased doubled now.
- He now has all the basic amenities as well as many luxuries in life such as TV, fridge, motorcycle etc
- IndraRaj feels proud because he is providing education and basic facilities to his children, which was a distant dream for him.

Inder Raj

For more information:

Water Management Program (PIC)
Institute of Rural Research & Development
(An Initiative of S M Sehgal Foundation)
Plot # 34, Sector-44, Gurgaon
Phone- +91-124-4744118, Fax-+91-124-4744123
Website: www.irrad.org E mail: s.saiphy@irrad.org