

Sinnar Taluka Overview and preparation for field trip

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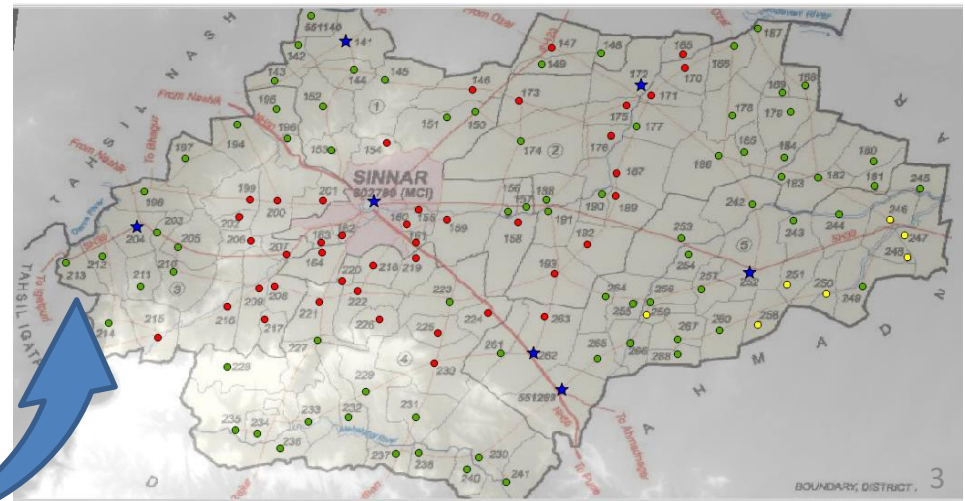
22/8/2017

Topics

- Overview of Sinnar taluka
 - Geo-morphology, cropping patterns
- Diversion based irrigation (DBI) system on Devnadi
- Konambe dam salient features
- Field trip plan

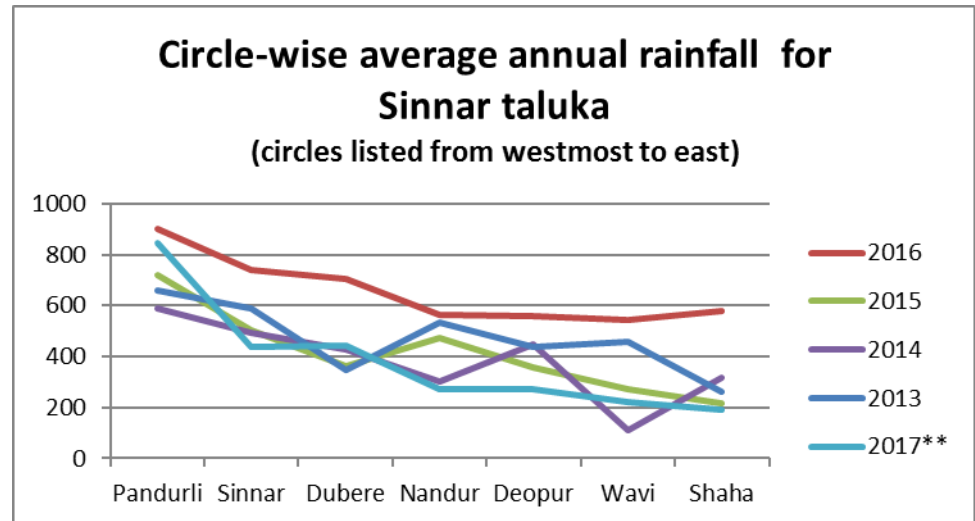
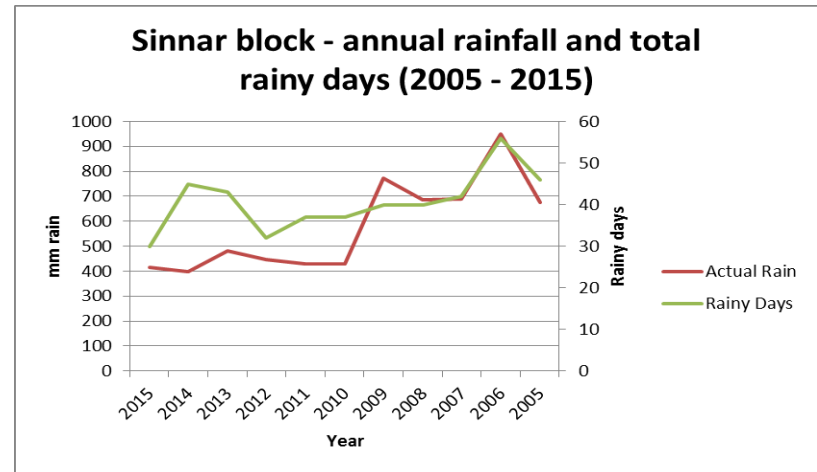
Sinnar Taluka Overview

- Nashik district: large vegetable producing district
- Sinnar Water situation
 - Rainshadow region of the western ghats
 - Largely dry and drought prone with drinking water scarcity
 - Highest groundwater exploited taluka in Nashik district



Sinnar Taluka - Rainfall

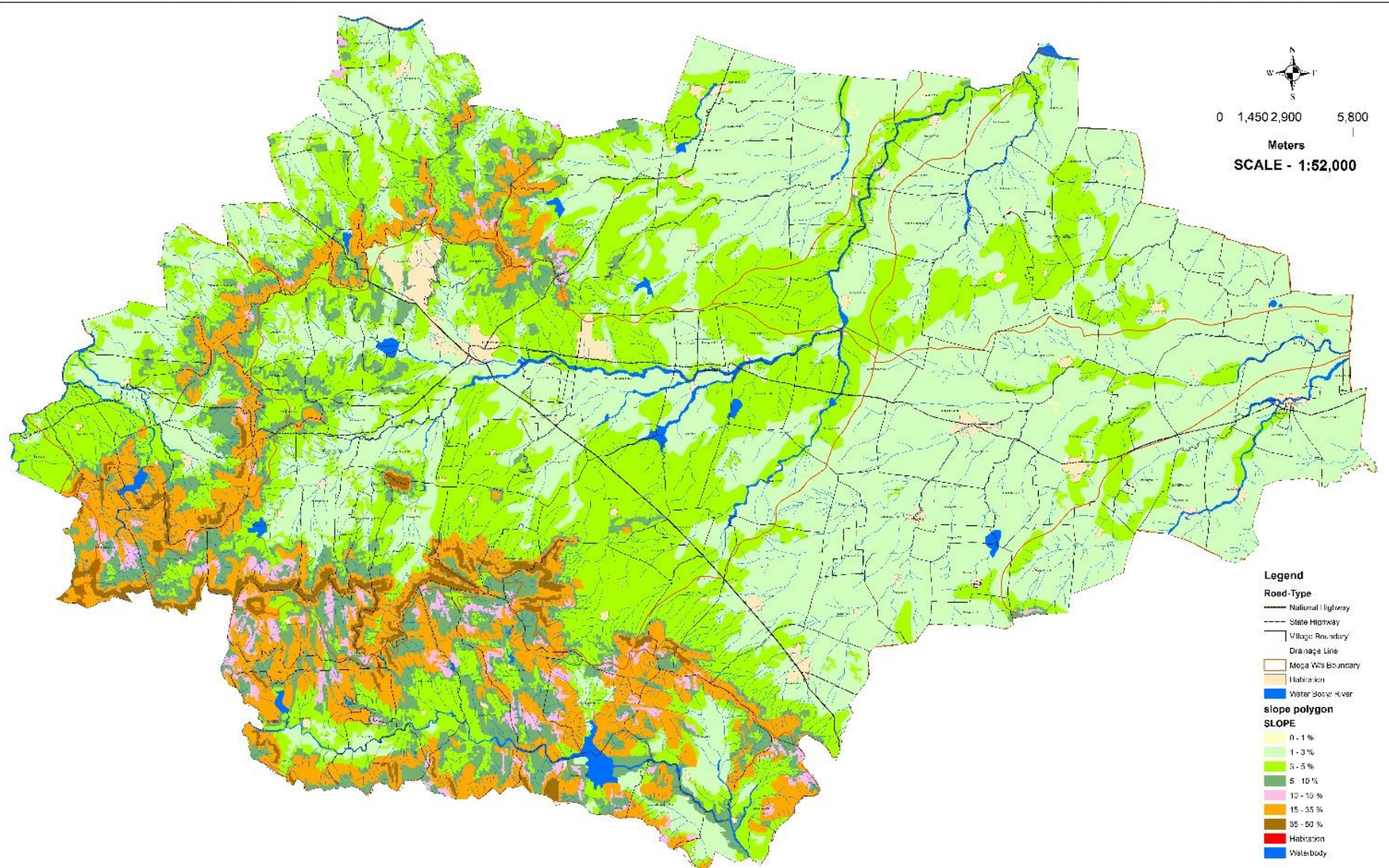
- Taluka average annual rainfall 616 mm
- Steady decline in past 10 years (*382mm, 122% received so far in 2017 monsoon*)
- High regional differences from west to east



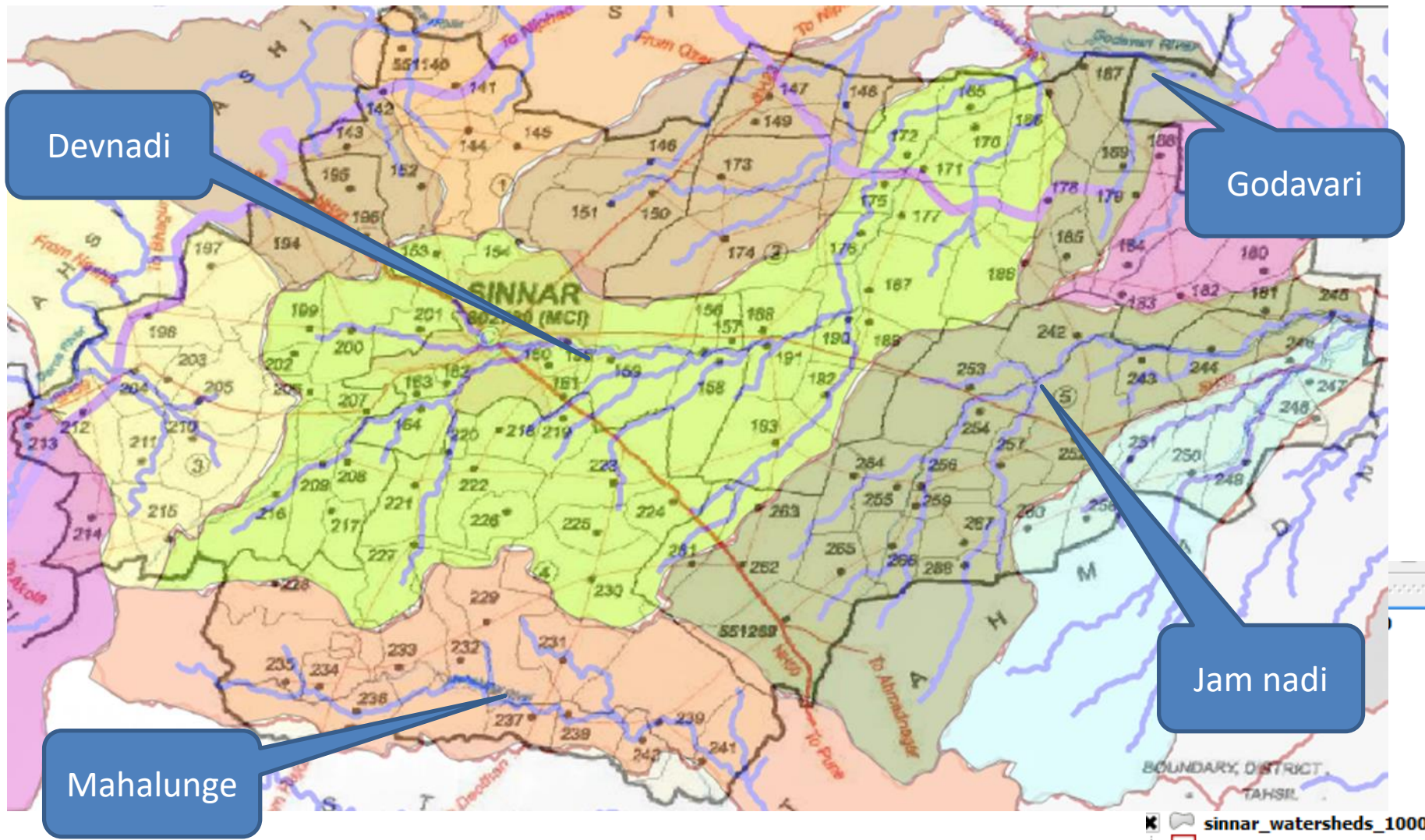
Slope map

Soil Slope Map of Sinnar Taluka

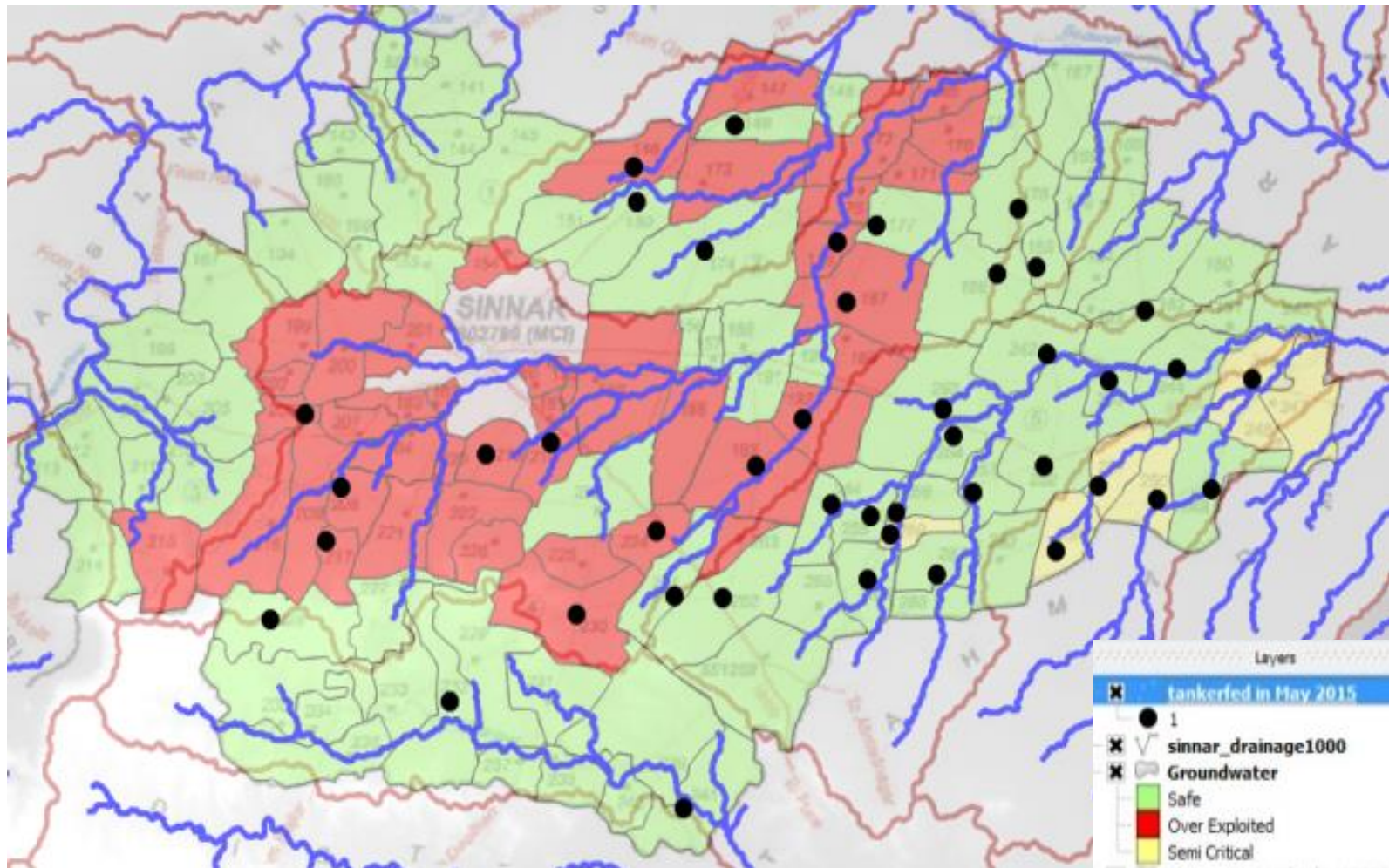
Taluka : - Sinnar, District : - Nashik



Streams and watersheds



GW development and drinking water scarcity



Sinnar block cropping pattern

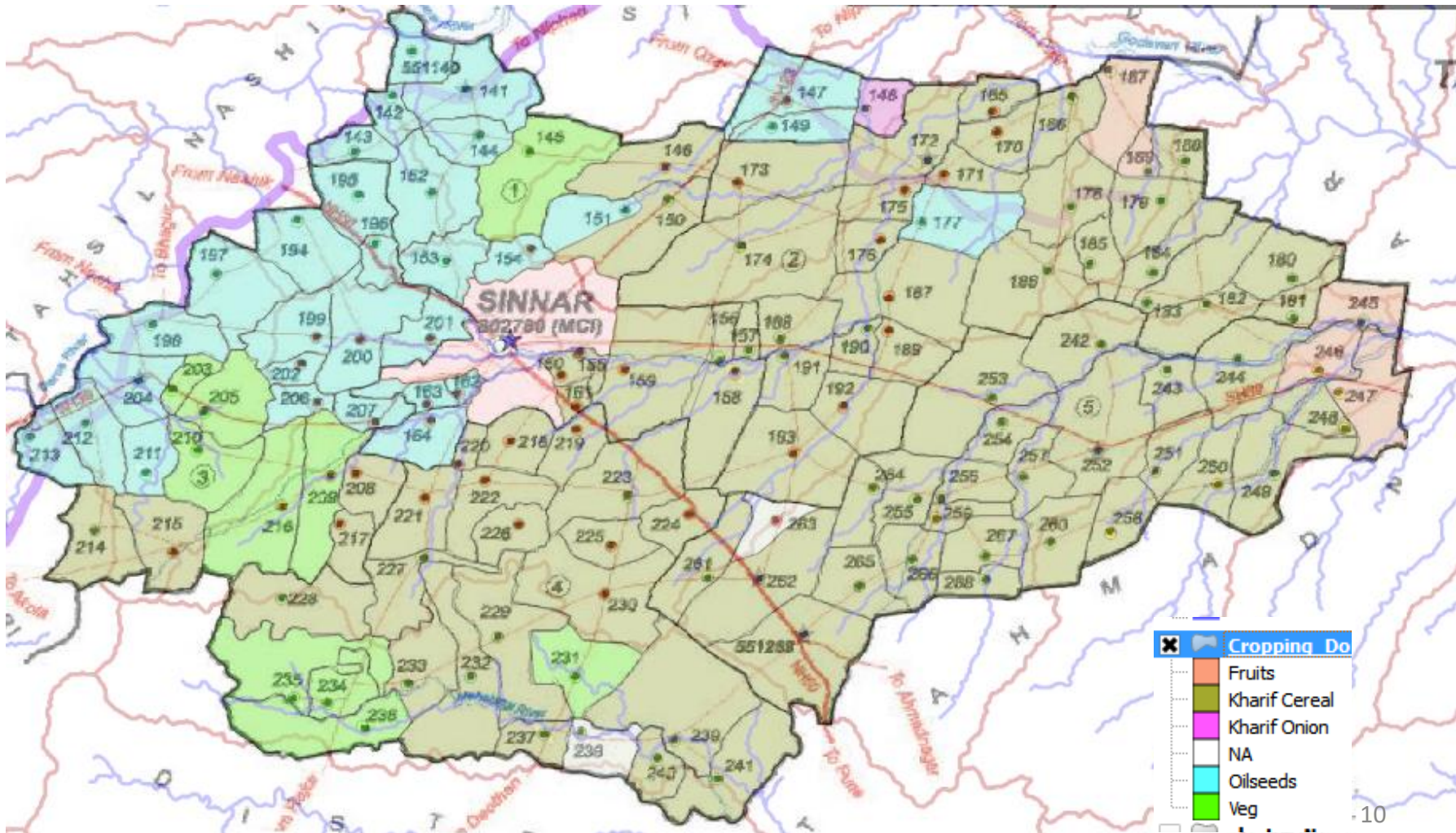
- Significant area under foodgrains (45%) and oilseeds (16%)
- Increasing vegetable cultivation (from 13% of cultivable land in 2008-09 to 18% as of 2014)
- Kharif crops: bajra, soyabean, onions, vegetables, maize, peanuts (also tur, cotton sowing)
- Rabi crops: wheat, harbhara, onions, vegetables

Crop type	Hectares under cultivation (2014-15)	% of cultivable land
Kharif pulses	1,182	1%
Kharif cereal	30,617	31%
Kharif onion	4,558	5%
Rabi cereal	8,330	8%
Rabi harbhara	4,650	5%
Rabi onion	5,607	6%
Sugarcane	532	1%
Cotton	1,583	2%
Oilseeds	15,990	16%
Other Vegetables	7,084	7%
Fruits	4,906	5%
Gross sown area	85,038	87%
Total Cultivable land	98,226	100%

Source: Sinnar block Agriculture dept

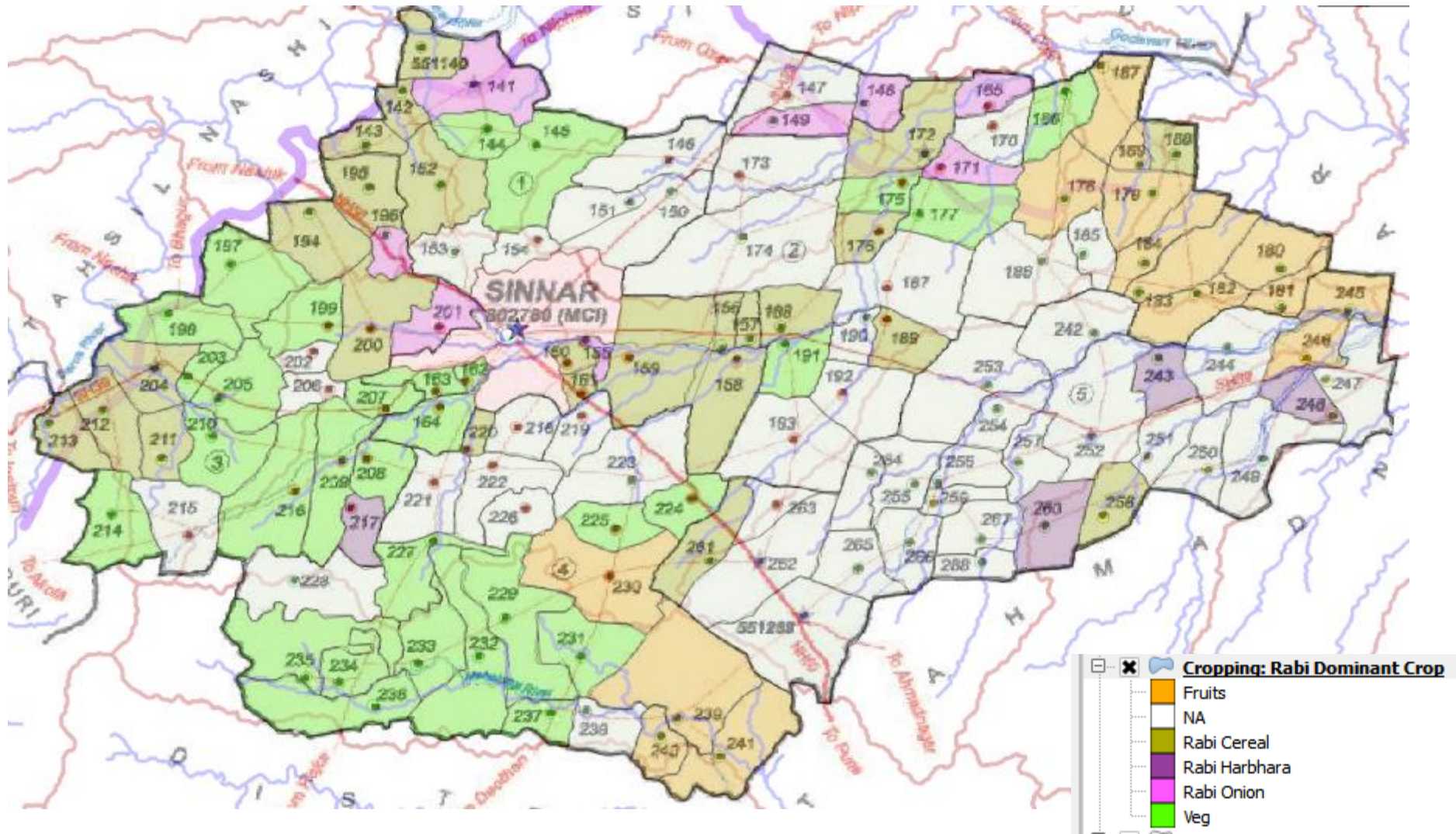
Kharif dominant crop

Kharif crop with largest share of net cultivable land



Rabi Dominant Crop

Rabi crop with largest share of cultivable land
(minimum cut-off 10% share)

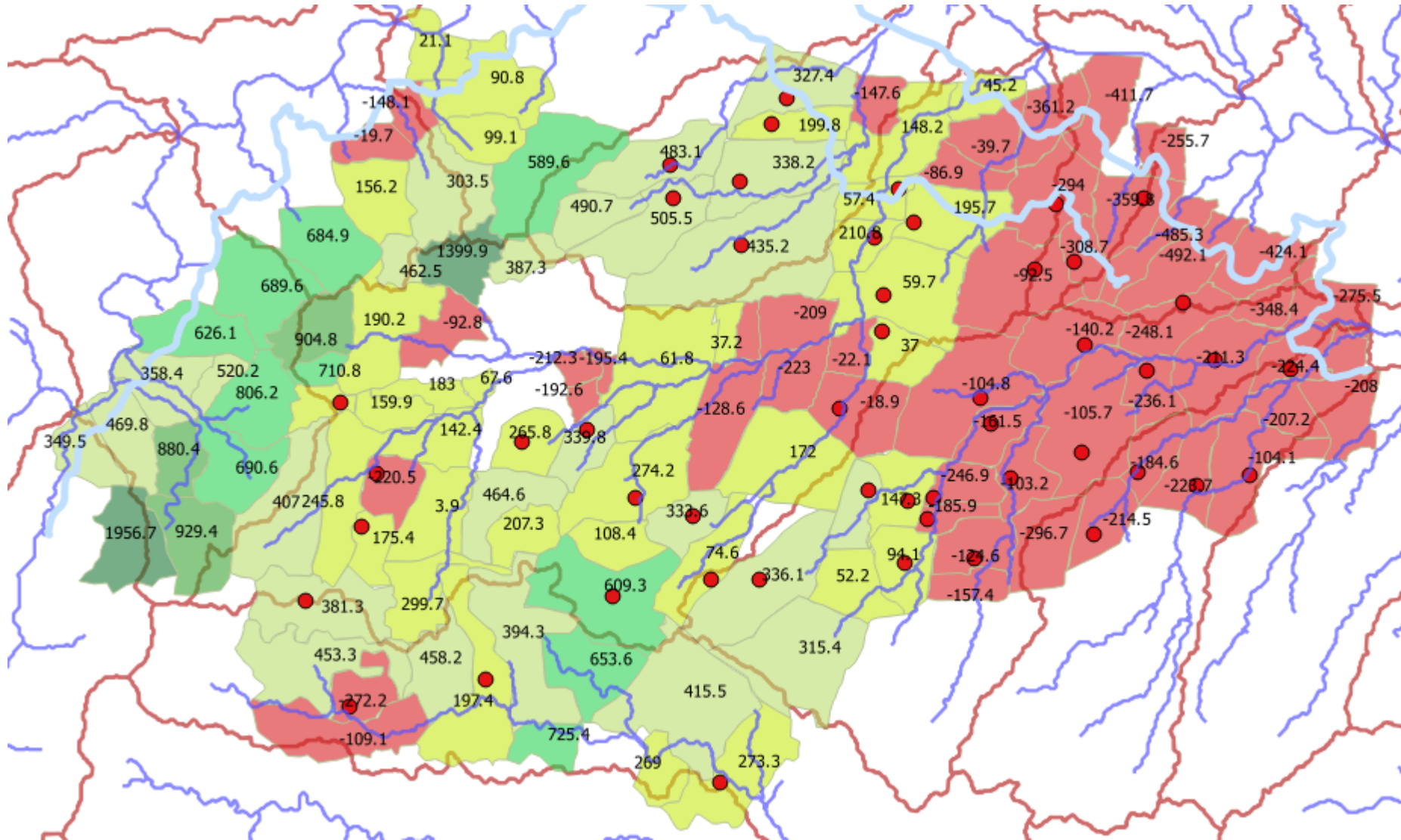


Three year crop-water requirement

Year	Cultivable area (Ha)	Orchards and sugarcane area (Ha)	Kharif cropped area ha	Rabi cropped area ha	Sugarcane, fruits TCM	Kharif CWR TCM	Rabi CWR TCM	Total crop water requirement (TCM)	Total rain TCM	Crop water requirement as fraction of rainfall
2014-15	98,226	5,438	61,823	18,587	70,573	246,807	86,803	404,182	523,679	0.77
2015-16	98,226	4,906	58,443	22,449	58,872	236,040	102,482	397,393	552,444	0.72
2016-17	98,226	5,378	66,692	29,224	69,256	303,501	136,079	508,836	882,784	0.58

- Spatial imbalances in demand and supply
- Importance of irrigation systems

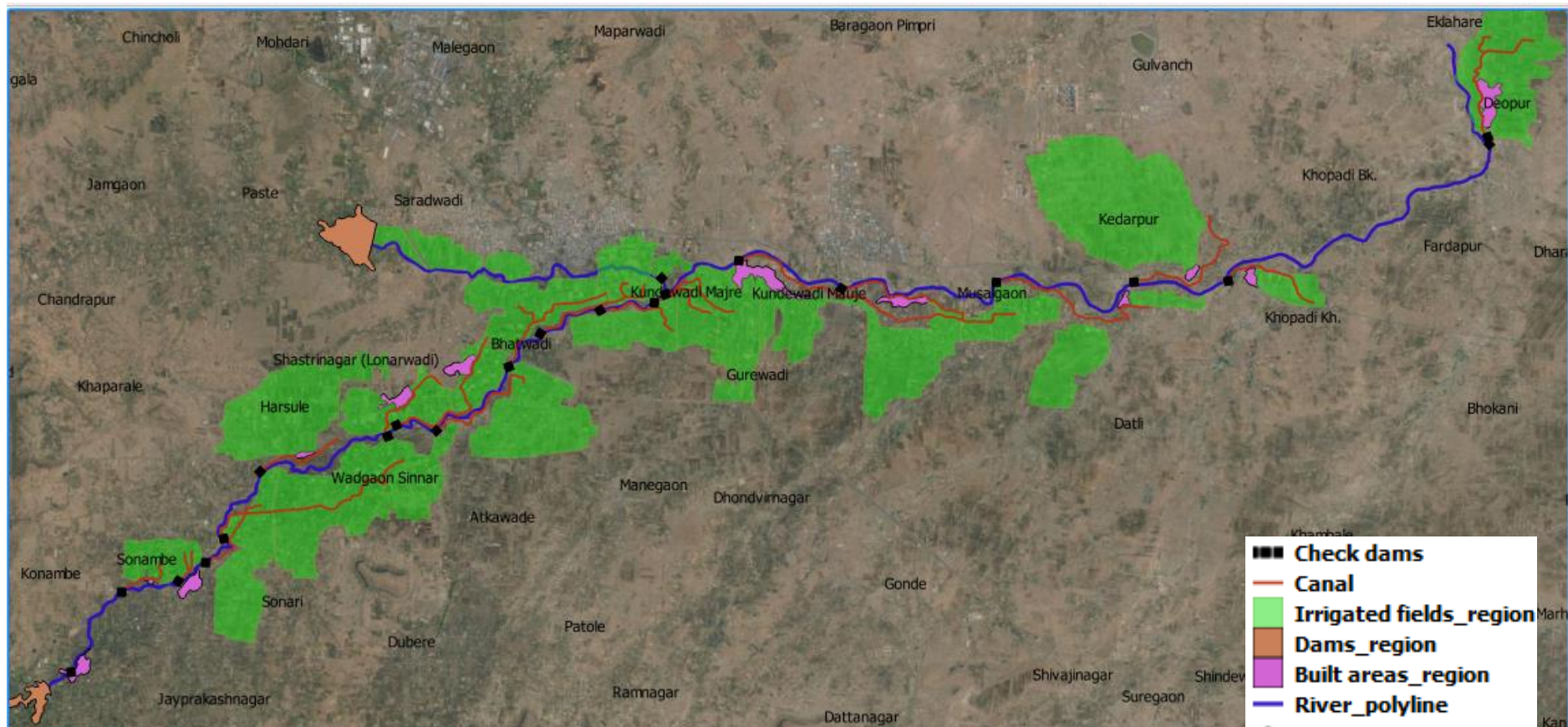
2015-16 Net water balance in mm (based on cultivable area)



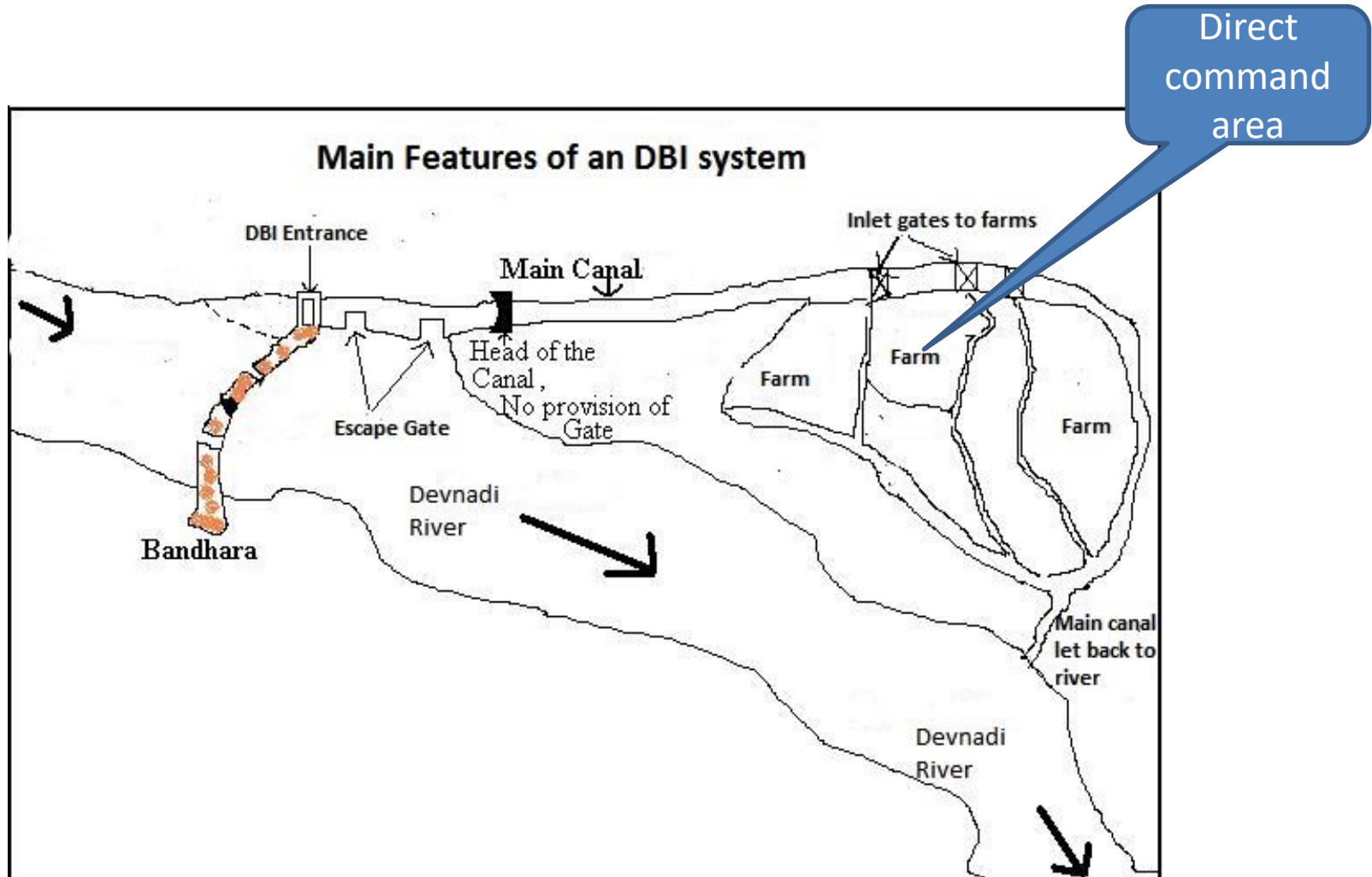
Sinnar Taluka – Changing trends

- Changing trends in cropping pattern
 - Shift towards cash crops including horticulture
 - *per acre more crop/more cash, greater market dependence*
 - Move towards higher water infrastructure for assured access
 - High well density, horizontal bores, farm ponds, increasing distance from water source to farm (multi-stage pumping)
 - drip irrigation, sprinklers
 - *Rising cost of per unit water => more incentive for cash crops*
- What is the impact of this on low-irrigation farmers? Do the overall gains offset the losses in the region?
 - Promotion of horticulture: is it sustainable? Can it be done sustainably?
 - Allocation of irrigation water : how do we ensure *Per drop more crop* across the region?

Diversion based irrigation on Devnadi



Working of DBI

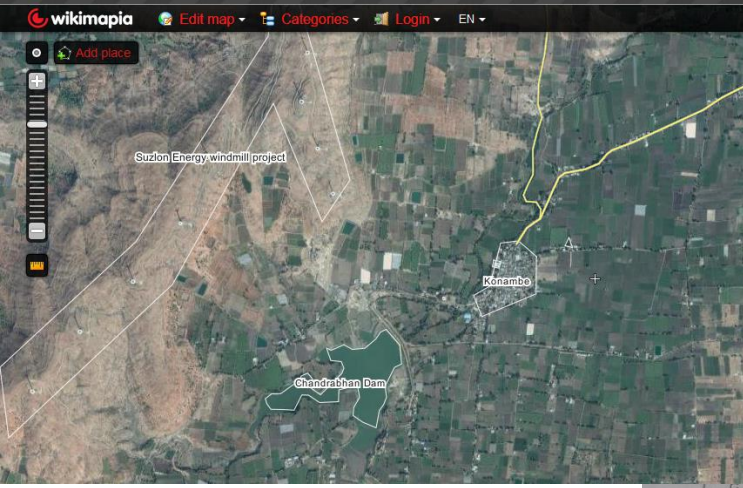


Source: Anish Holla MTP

DBI

- Key design consideration:
 - Slope determines the extent of command area
 - Canal opening designed based on flowrate required to meet irrigation needs of command area *assumes a cropping pattern*
- Low cost irrigation system but offers few controls
- Beneficiaries
 - Direct irrigation through *chari*
 - Indirect benefit from groundwater recharge in wells
- Kharif dry-spell protection and increase in soil moisture for Rabi
- Cost-benefit analysis
 - How is command area cropping pattern different from non-command? *effect of river or DBI?*
 - Are yields different? *Effect of soil type or DBI?*
 - Impact on drinking water? Water scarce zones?

Konambe dam on Devnadi



नाशिक पाटबंधारे विभागांतर्गत असलेले लघु पाटबंधारे प्रकल्पांची ठळक वैशिष्ट्ये

वर्णन / परिमाण	धाऊर	उमराळे	ठाणगांव	कोनांबे
ठिकाण गाव/तालुका/जिल्हा	धाऊर, ता.दिंडोरी	उमराळे, ता.दिंडोरी	ठाणगांव, ता.सिन्नर	कोनांबे, ता.सिन्नर
नदीचे नांव	देवनळे नाला	देवनळे नाला	उंबरदरी	देवनदी
पाणलोट क्षेत्र चौ.कि.मी.	२.५९	१.६८	१८.५३	१९.४५
बुडीत क्षेत्र चौ.कि.मी.	३६.१	२६.५६	२८.३२	४७.७७
महत्तम पाणी पातळी मी.	१०७.१५	१०८.८०	९४.८०	४७.२०
७ पूर्ण संचय पातळी मी.	१०६.३५	१०८.००	९२.००	४६.६०
८ मृतसाठा पाणी पातळी मी.	९५.०२	९८.५०	८५.५०	३८.४०
९ तळ पातळी मी.	९०.८२	९५.२०	७७.५९	३०.८०
१० एकूण साठा दलघमी	१.७२	१.११	१.४७	१.५४
११ नक्त साठा दलघमी	१.६९	१.०८	१.२२	१.३३
१२ मृतसाठा दलघमी	०.०३	०.०३	०.२०	०.२१
१३ सोडव्याचा प्रकार	मुक्त प्रवाही	मुक्त प्रवाही	मुक्त प्रवाही	मुक्त प्रवाही
१४ विसर्ग घमी/सेकंद	१८७८.००	१२०५.८२	३१७.१४	३६१.६१
१५ कालवे	१	१	२	१
१६ डावा कालवा लांबी कि.मी.	०.००	५.००	३.५०	०.००
१७ उजवा कालवा लांबी कि.मी.	५.००	०.००	५.००	३.६०
१८ एकूण समादेश क्षेत्र, हेक्टर	८२२.३७	२६०	५२६	३७८
१९ शेती योग्य समादेश क्षेत्र, हेक्टर	४१०	२००	४२६	३०२
२० नक्त सिंचन क्षेत्र हेक्टर	३३७	१५२	३४२	२४२
२१ वहन क्षमता घमी/प्रति सेकंद	०.३३	०.२८	डावा - ०.१५२ उजवा - ०.१५२	०.५०३

Konambe dam - Salient features

Minor Irrigation Tank @Konambe, Tal:Sinnar,Dist :Nasik,Maharashtra.			
Salient Features.			
1.Year of Completion	1971		
2.Submergence Area.	47.77 Hectar		
3.Submergence Village	Konambe.		
4.Valley.	Godavari.		
5.Catchment Area.	19.45 Sq. Kms		
6.Storage.			
Live Storage	47.00 MCFT/1.3309 Mcum		
Dead Storage	7.50 MCFT/0.2123 Mcum		
Gross Storage	54.50 MCFT/1.5430Mcum		
7.Levels			
A.Nall Bed	30.805 M.	F. T.B.L.	49.60 M.
B.Sill Level	38.40 M.	G.Bottam of Pitching	38.10M.
C.F.R.L.	47.60 M.	H.Top of pitching	42.00 M.
D. Flood Level	47.20 M.	I. H.R.Well	48.85 M.
E.Lenth of Dam	630 M.	J. Width of Dam	3.00M.
8.Waste Weir	Clear Over Flow.		
A. Lenth	112.00 M.	B. Top Width	1.50 M.
C. Igalis Flood.	361.60 Cumecs.		
9 Main H.R Well			
Inner Diameter	2.50M.	Vertical Rod height	9.50 M.
Outer Diameter	3.70M.	Steel Shutter height	1.20 M.
		Width.	0.90 M.
10.Canal	Right Left		
A. Lenth	3615 M.		
B.Discharge Capacity	0.5023 cumecs.		
C. Slop	1 n 1400		
D.Water Level.	0.90 M.		
E.Bottam Width	1.00 M.		
F.Complete Flow height			
G.Free Board	0.50 M.		
I.I.C.A.	180 Hect.		
11.Crop Pattern.			
Kharif	13%	Rabi	77%
Hot W.	%		
12.No.of well in G.C.A.	52	Area	174.00 Hect.
13. G.C.A.	378 Hect.		
14. C.C.A.	302 Hect.		
15. IC.A.	242 Hect.		
16. Cost of the Scheme	12.00 Lakh		
17.B.C.Ratio	1		
18.Sanctioned Water Lift.	10.88	Lift	13.62Hect.
		Thibak	
19. Actual Given.	9.72	Lift	9.72 Hect.
		Thibak	Hect.

Sinnar taluka: Challenges and way forward

- Ensure drinking water security
- Ensure access to protective irrigation during Kharif dry spell
- Improve allocation of irrigation water to increase area under Rabi crop
- Promote appropriate cropping pattern to improve farm income while meeting water budget constraints
- Promote non-farm livelihoods

Field Trip Plan

- Visit Konambe dam
- Visit Yuva Mitra
 - Interaction with founder, Mr. Sunil Pote and his team
 - Interaction with the MLA
- Village visit
 - Understand DBI structure, canal operation,
 - Farmer surveys in command area