

To quote this work:

Cécile COCHETEL, Olivier PHILIPPON, Claire AUBRON and Laurent RUIZ, 2019. Resilience of draught power and manure: insights from 3 case-studies in South India, International seminar "Milk and Dairy in India's Development Path. Lessons, challenges and perspectives", India International Centre, New Delhi, 17-18 December.



Resilience of draught power and manure: insights from 3 case-studies in South India

Cécile COCHETEL, Olivier PHILIPPON, Claire AUBRON and Laurent RUIZ



IndiaMilk Seminar, Delhi, 17/12/2019

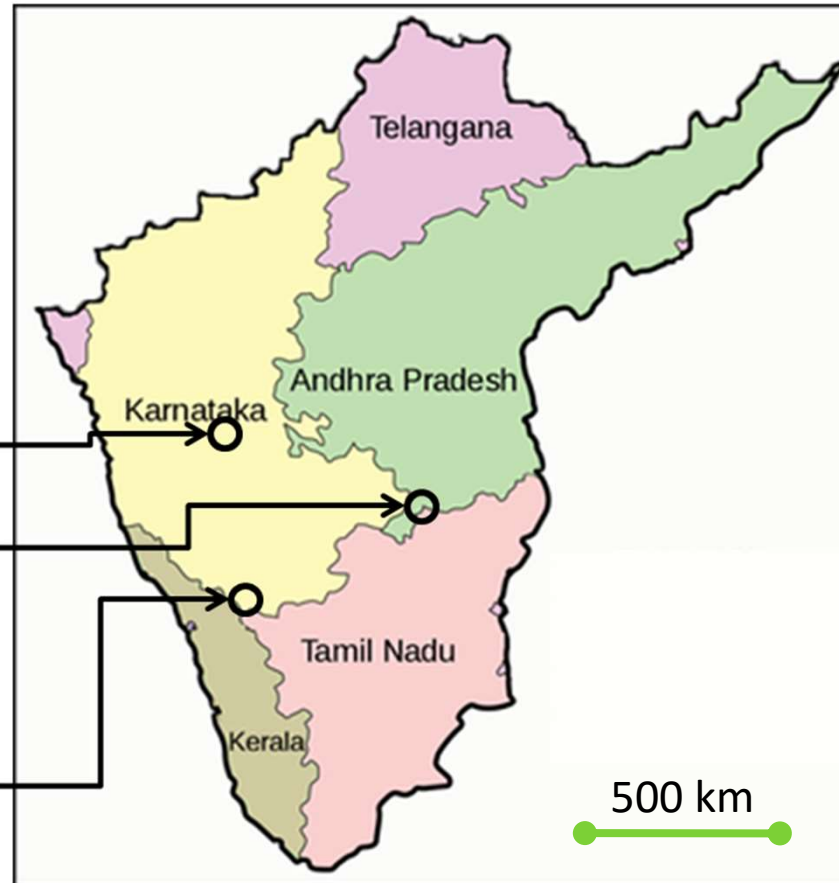
The 3 studied zones



Study area of Channagiri

Study area of Palamaner

Study area of Berambadi



**3 agrarian diagnoses
already done:**

-In 2016 at Berambadi
(Chamrajanagar district)

-in 2018 at Palamaner
(Chittoor district)

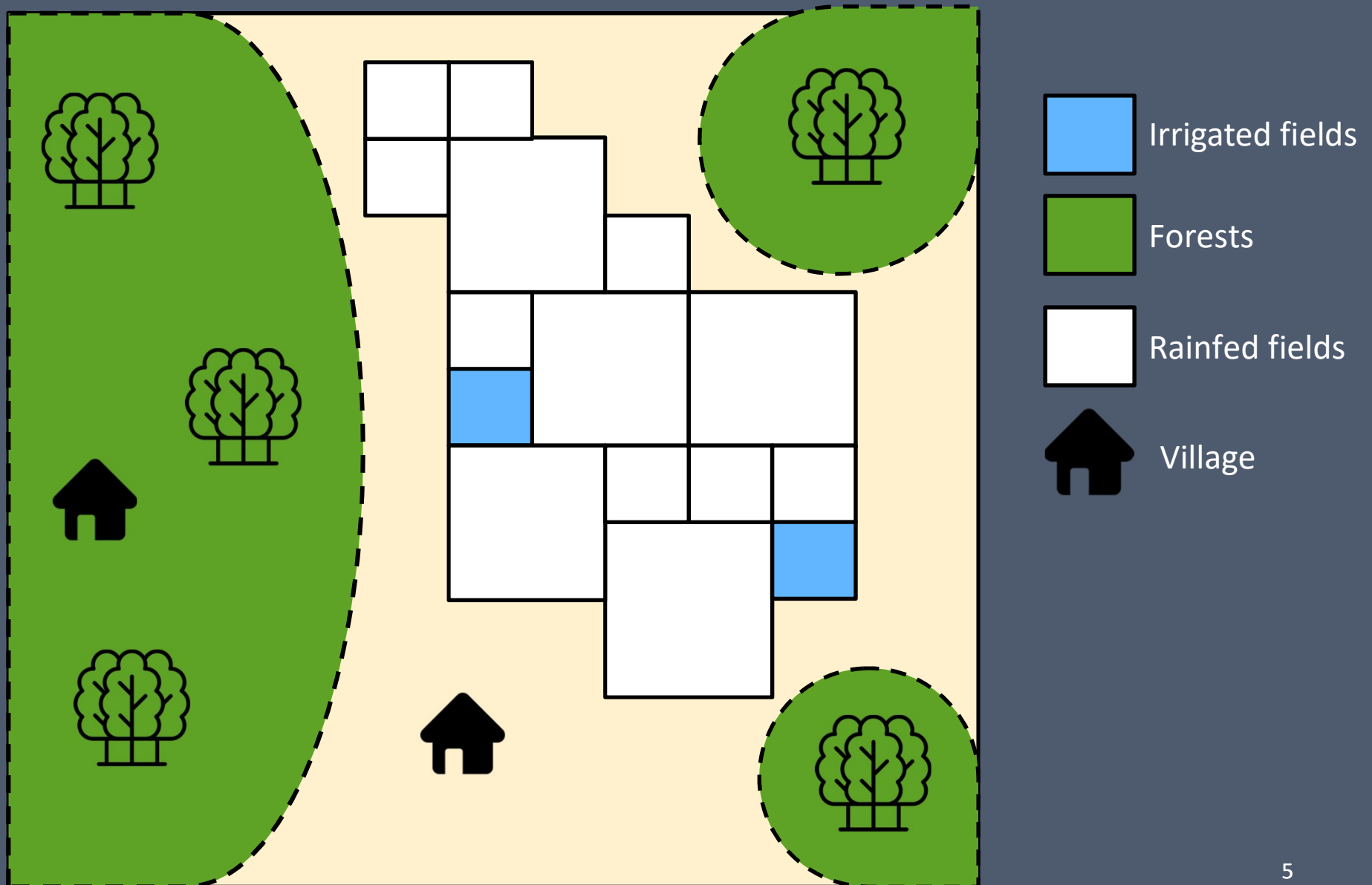
-In 2019 at Channagiri
(Davangere district)

Questions

What were the uses of husbandry in the 60's,
before the main public policies of India?

What is husbandry bringing to crops today?

A similar past: organization of the territory in the 60's

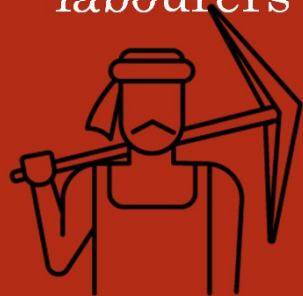


Typology of farmers in the 60's

Landlords



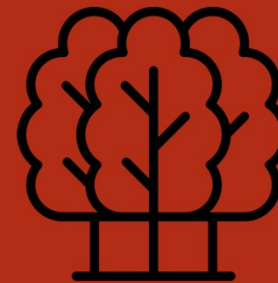
Landless
permanent
labourers



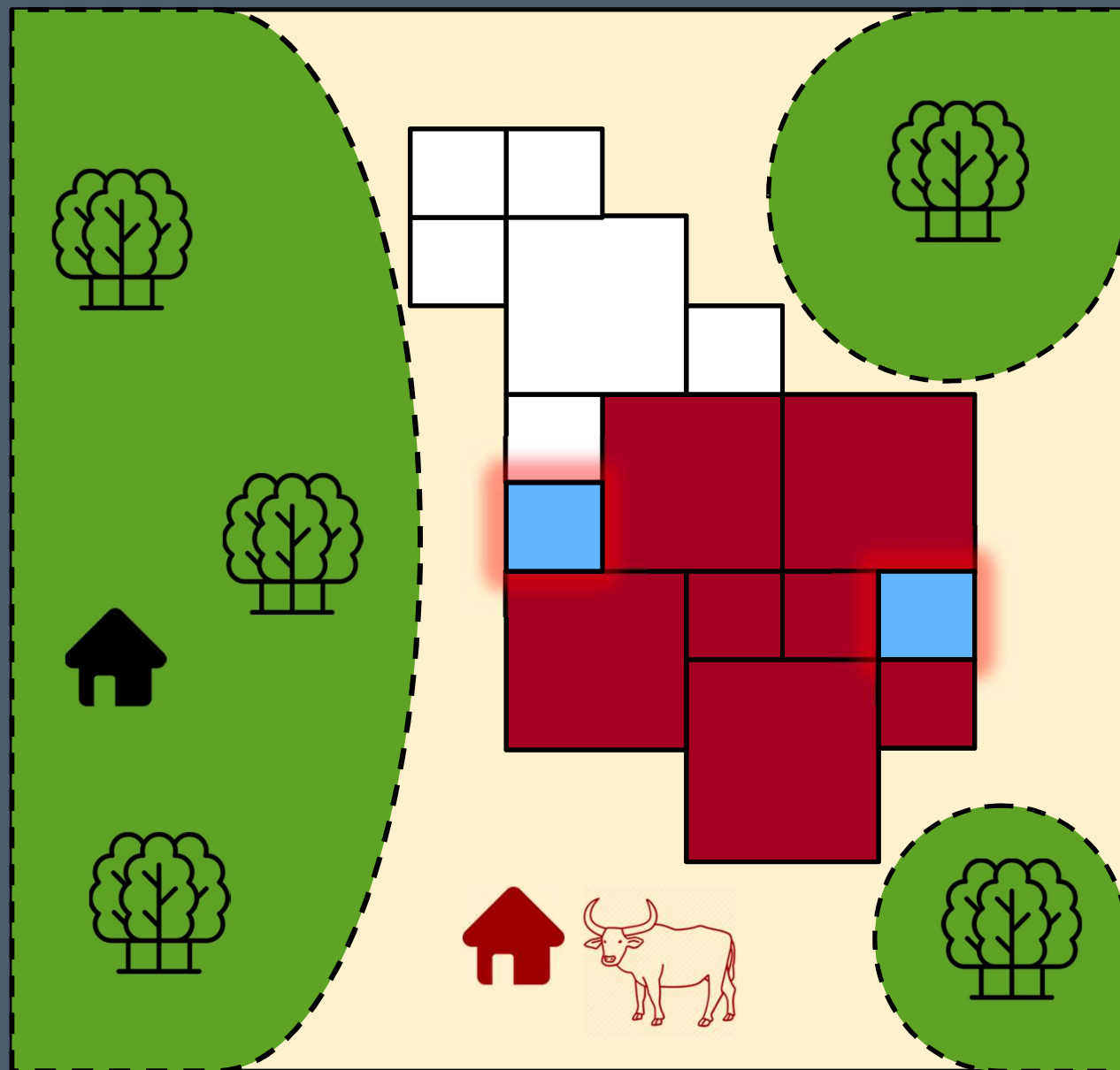
Sharecroppers
and smallholders
(family workforce)



Tribal
communities in
the forest

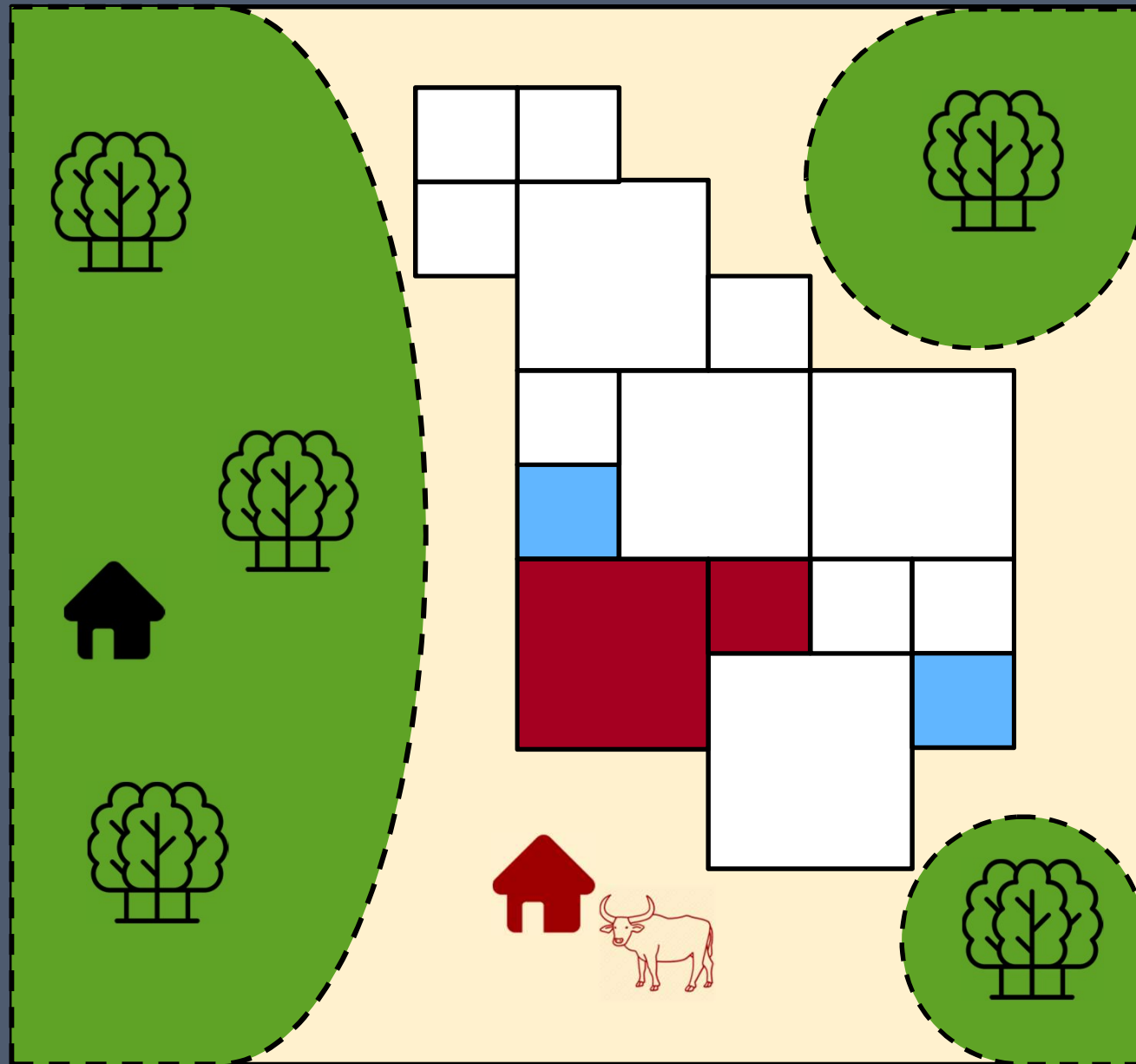


Landlords hiring permanent labourers



-  Irrigated fields
-  Forests
-  Rainfed fields
-  Village
-  Local breed animals

Smallholders



Irrigated fields



Forests



Rainfed fields

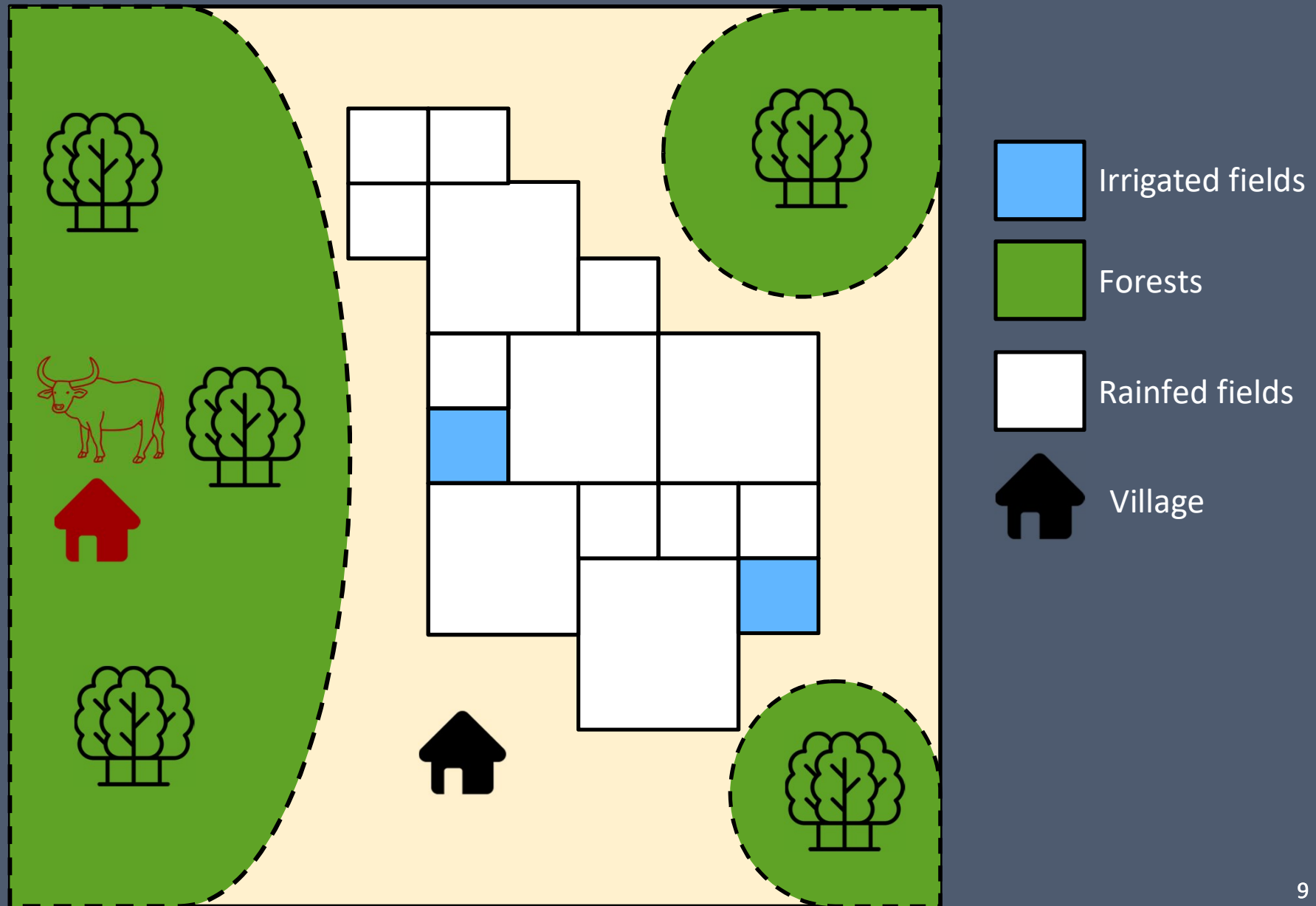


Village



Local breed
animals

Tribal communities in the forest



Draught power in the 60's



«Hallikar»-typed oxen

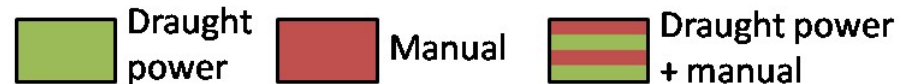
Technical itinerary in the 60's:

2 tools:

- Swing plough (« negilu »)
- Wooden rake (« kunta »)

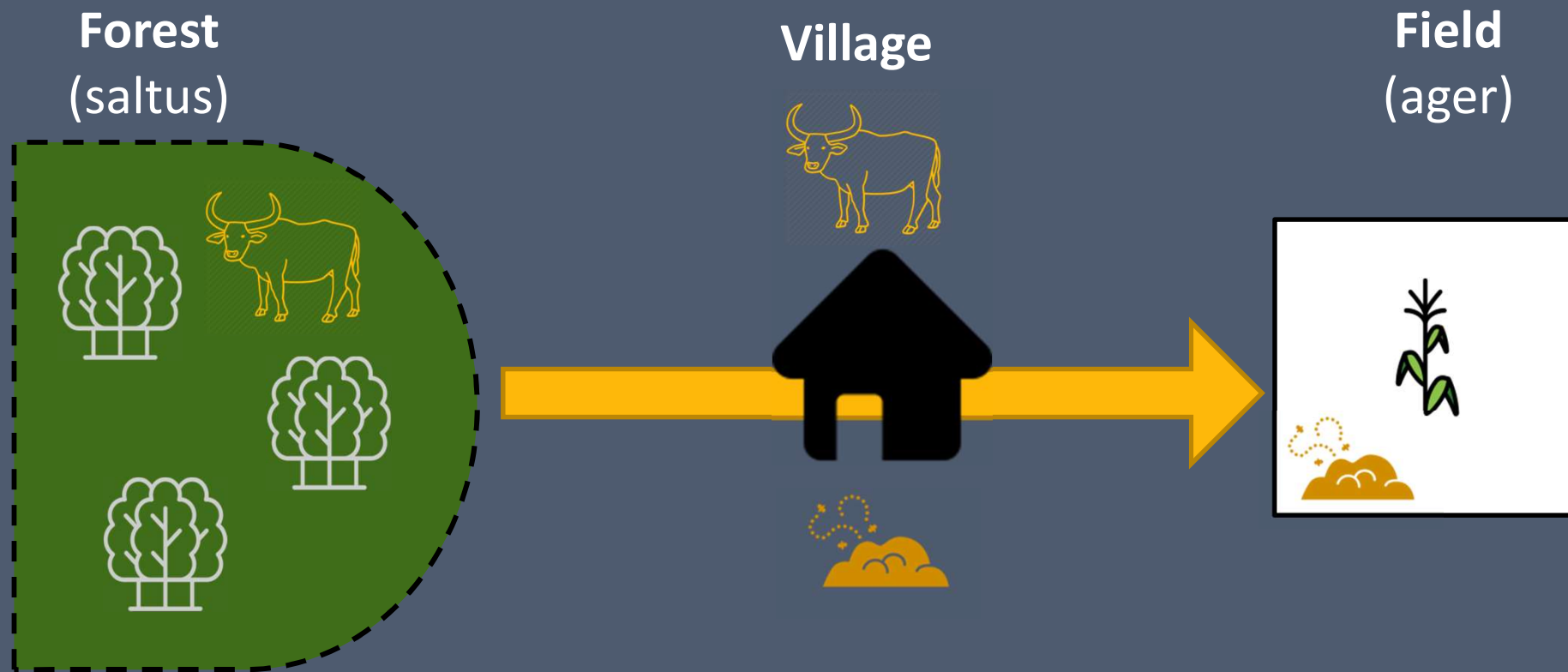


Legend: origins of power:

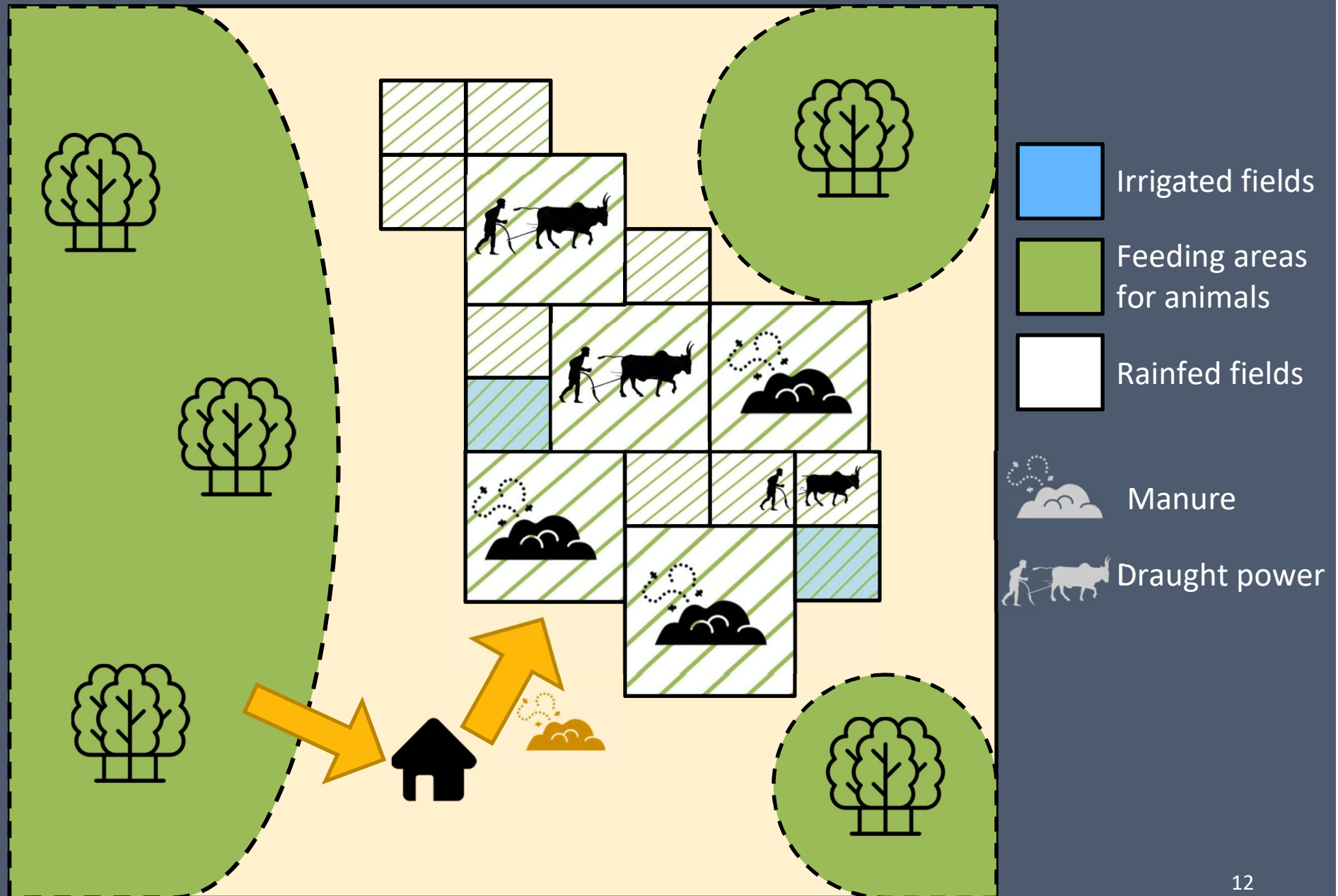


Fertility management in the 60's: thanks to manure

- 1) Nutrients restoration by **fertility transfer**
- 2) Soil structure: improvement of water capacity storage

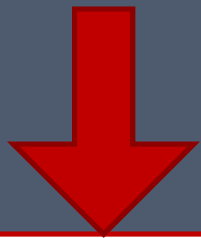


Interactions between animals and crops in the 60's



Fertilizers

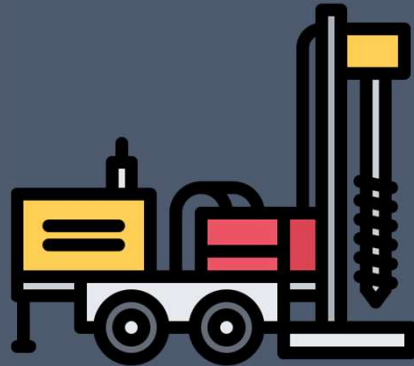
80's



Manure less
necessary

Pump Revolution

80's – 90's



Less feeding areas
for animals

Tractors

90's - 00's



Less oxen

White Revolution

90's - 00's



Dairy orientation
of cows

Functions of husbandry in 2019: only milk production?

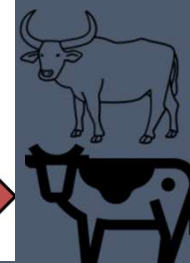


Draught power in 2019

Same animals & same tools as in the past



Technical itinerary today in Berambadi (Sorghum, sunflower, vegetables)



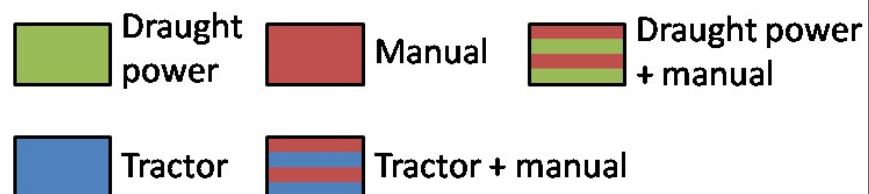
Technical itinerary today in Channagiri (Maize)





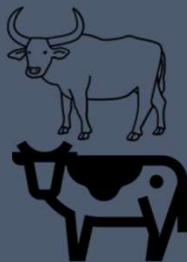






Technical itinerary today in Palamaner (Vegetables, Elephant Grass and Paddy)



Legend: origins of power:



Nutrients restoration in 2019: from manure or from fertilizers?

	Rainfed fields	Irrigated fields	
Berambadi			
Channagiri			
Palamaner			



= use of manure as soil structure improver

Animals feeding today

Dry fodder:

Crop residues from rainfed crops:
straws of sorghum, ragi, maize and rice



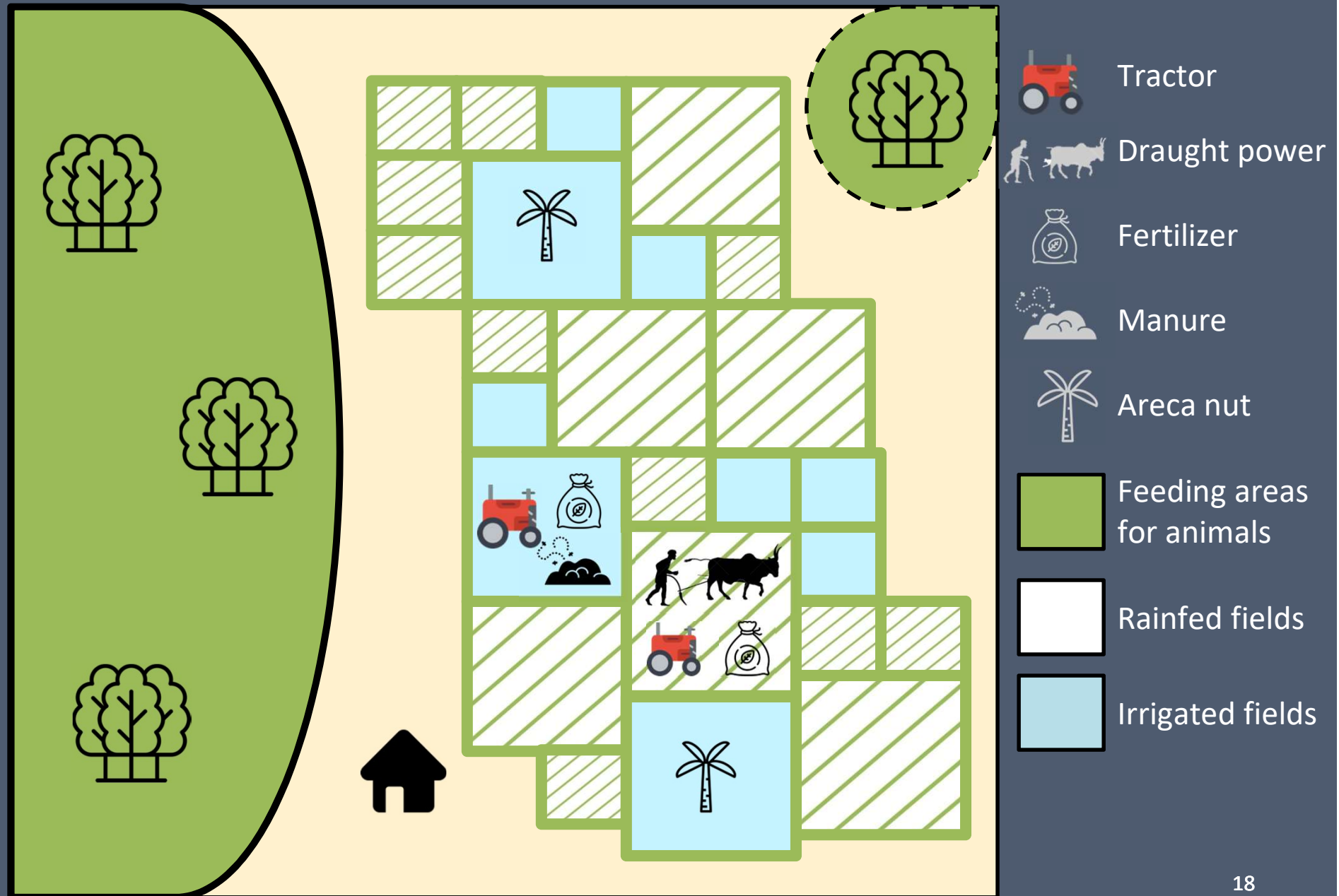
Spontaneous green fodder:

weeds from weeding or grasses from
fields' borders

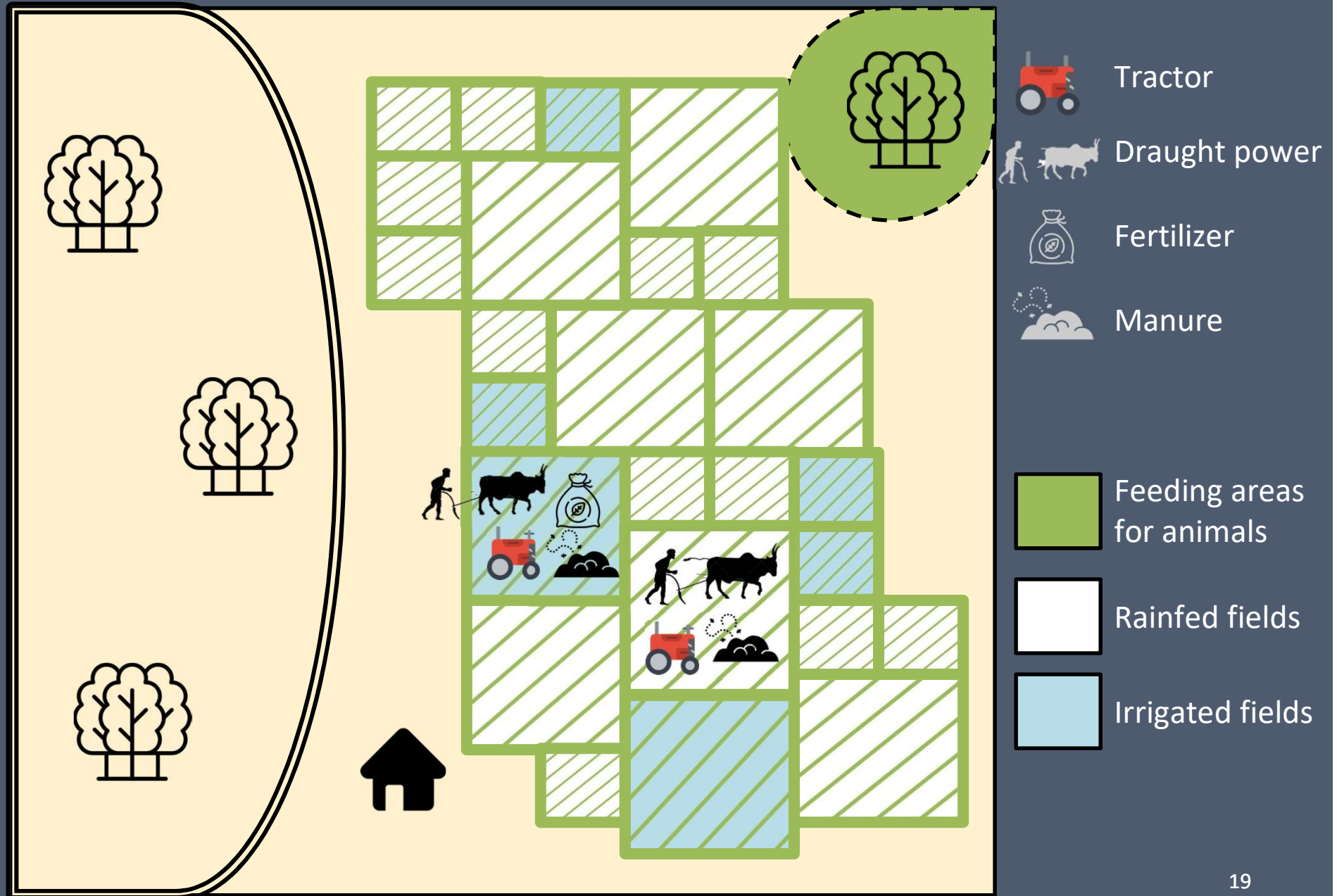


...Plus concentrated feeds

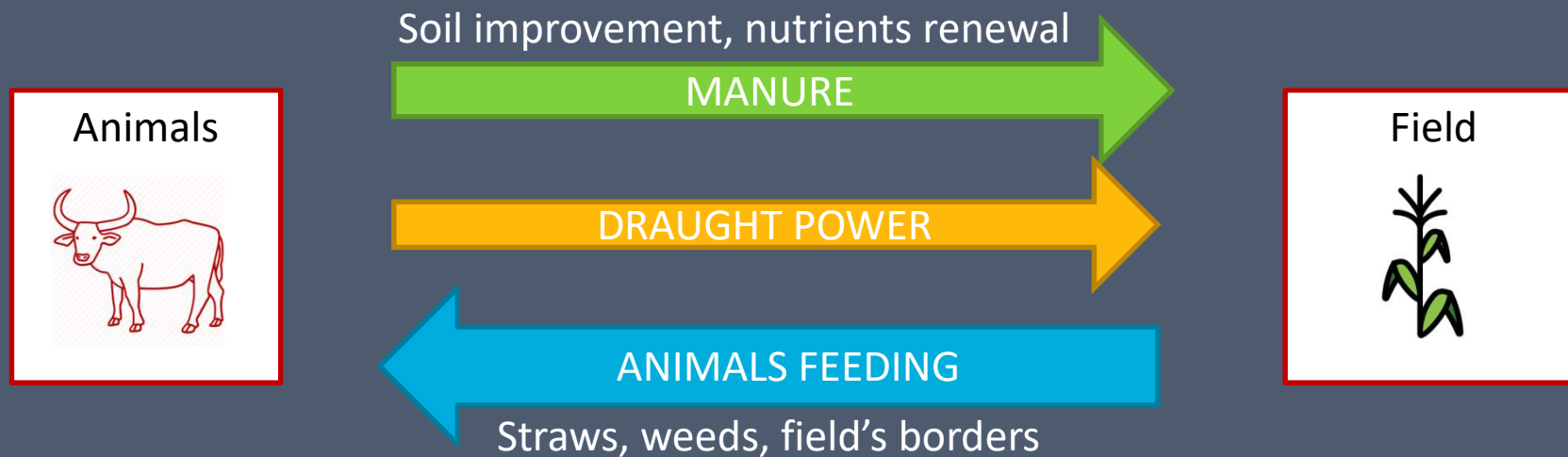
The territory in 2019 : Example of Channagiri



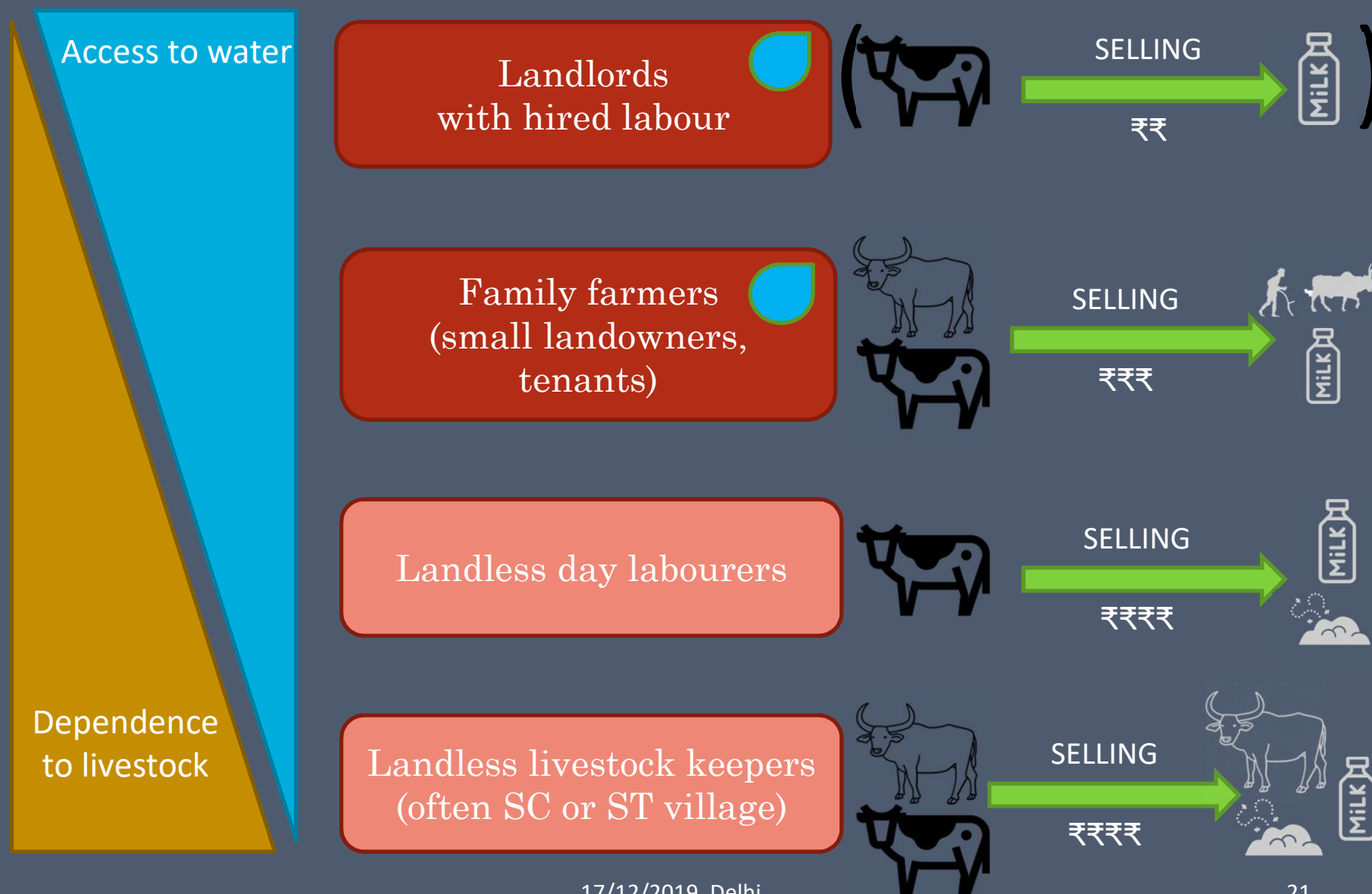
The territory in 2019 : Example of Berambadi



Livestock-crop interactions in 2019



Importance of livestock for farmers in 2019



Conclusion

- **Draught power** is still used for specific operations such as **weeding or sowing** in particular in **family farms**
- **Manure** is today mainly used as a **soil structure improver**.
- **New ways of feeding animals:** from the forest to the **use of marginal areas of irrigated fields** (weed and borders' grasses) in particular for **landless day labourers**

Thank you for listening !



Bibliography

- Buttard Céline, 2018, *Agrarian diagnosis of Palamaner and Gangavaram mandals, Andhra Pradesh, India*. Master thesis presented for graduation of Agronomist Engineer, Montpellier SupAgro.
- Daoût Djavan, 2019, *Diagnostic agraire du taluk de Channagiri*, . Master thesis presented for graduation of Agronomist Engineer, Montpellier SupAgro.
- Fischer Chloé, 2016, *Diagnostic agraire en Inde du sud semi-aride, Vulnérabilité et adaptabilité face à l'épuisement des ressources en eau*. Master thesis presented for graduation of Agronomist Engineer, Agro Paris Tech.