

# **Building Climate Resilience in Livestock and Fodder Management**

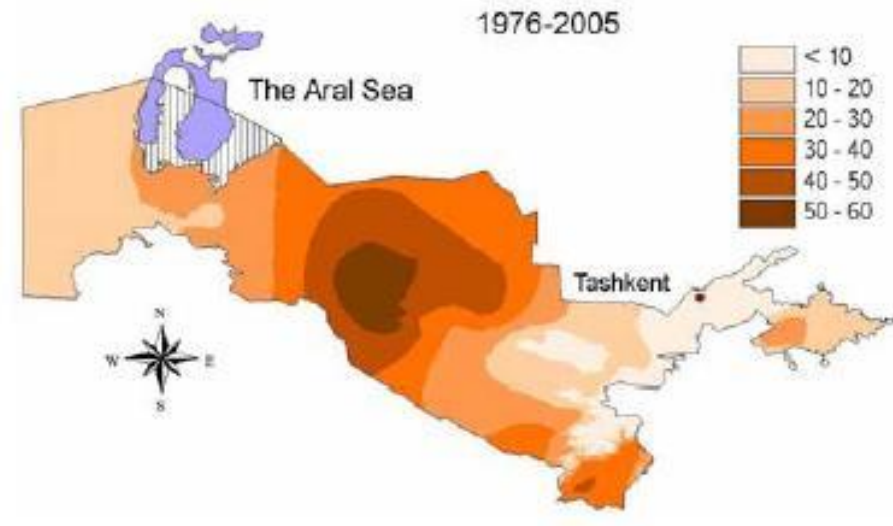
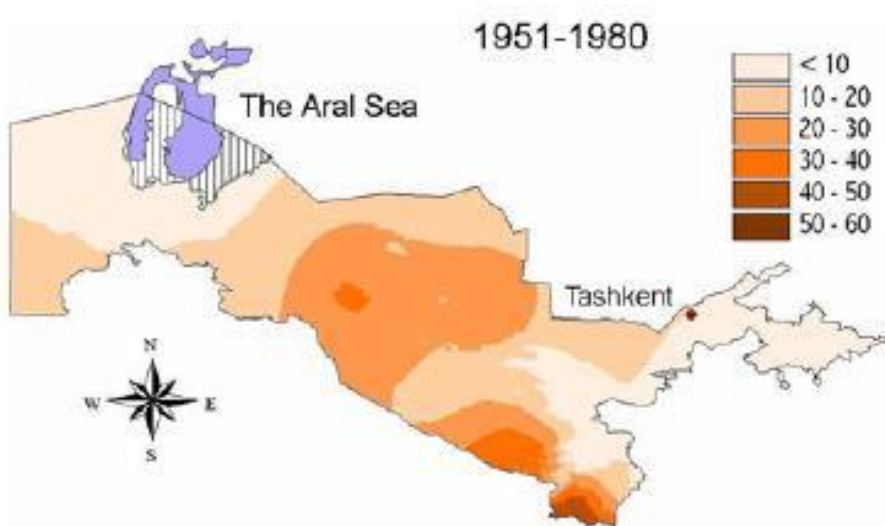
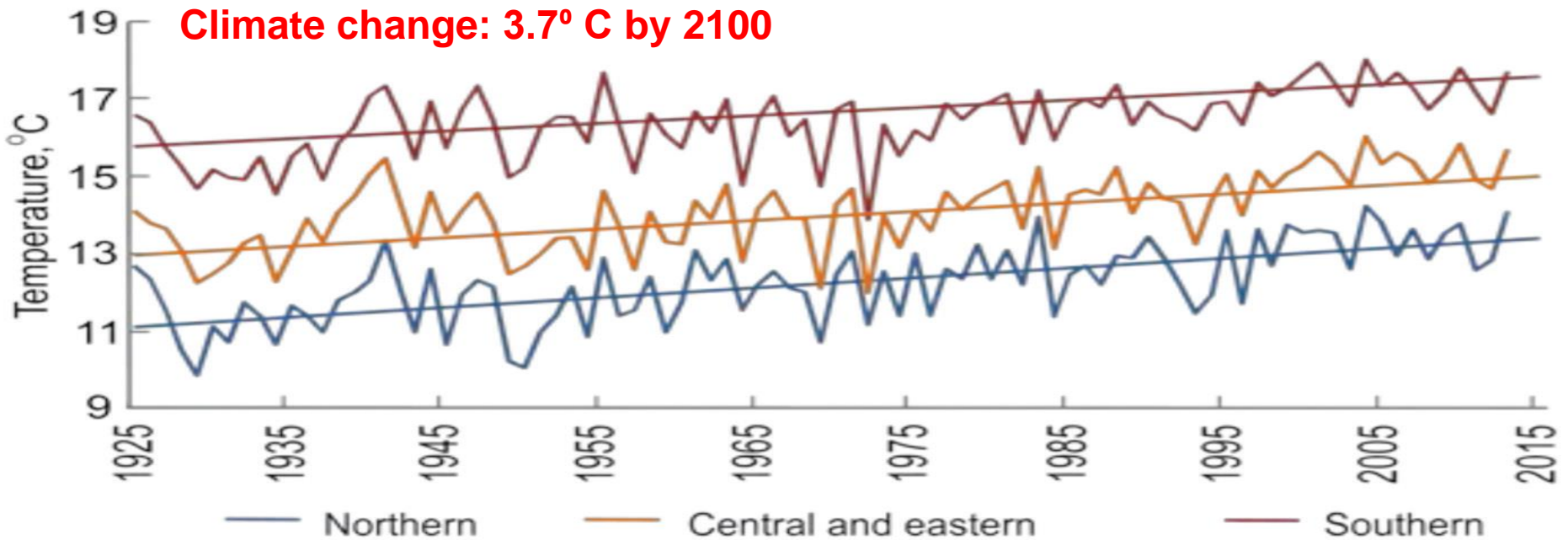
**Case of Uzbekistan**

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# Comparing Change Over Time

Climate change: 3.7° C by 2100




# Expectation Due To Climate Change

Reduced forage production, reduced lamb production (5-25%) (WBGU (German Advisory Council Global Change)-2007)



Climate change, according to the World Bank's Country Partnership Framework for Uzbekistan (World Bank, 2016), will result in higher temperatures, greater variability in precipitation, and increased frequency of extreme weather events.

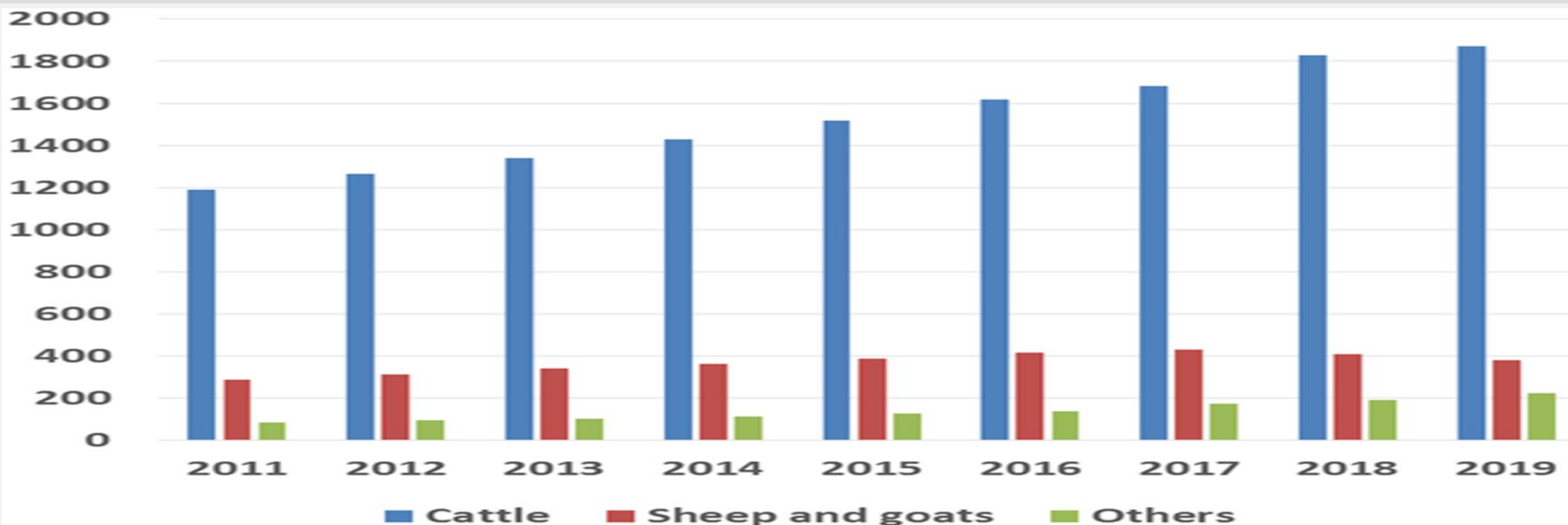


When CO<sub>2</sub> concentration is doubled: Amudarya (40%) and Syrdarya (28%) basin water loss (IPCC, 2004)

# Livestock Sector in Uzbekistan: Background

- The livestock sector contributes about 40 per cent of the **country's agricultural GDP**
- Most production comes from the **4.7 million small dehkan** farms
- Dehkan farmer's own/produce
  - 95 percent of cattle and
  - 83 percent of goats and sheep;
  - 95 percent of the total production of meat,
  - **96 percent of milk**
- Average cow milk yields within dehkan farms **rarely exceed 6 kg per day** with lactation periods of just 7 months.

Meat production in all categories of farms in the Republic of Uzbekistan, thousand tonnes (2011-2019)




# Need for Building Climate Resilience in Livestock and Fodder Management

Livestock farming uses the largest amount of land in Uzbekistan, with over 50 percent of the land area used as desert and mountain pasture, as well as part of the irrigated land



Improved animal flocks can address climate change issues in the country



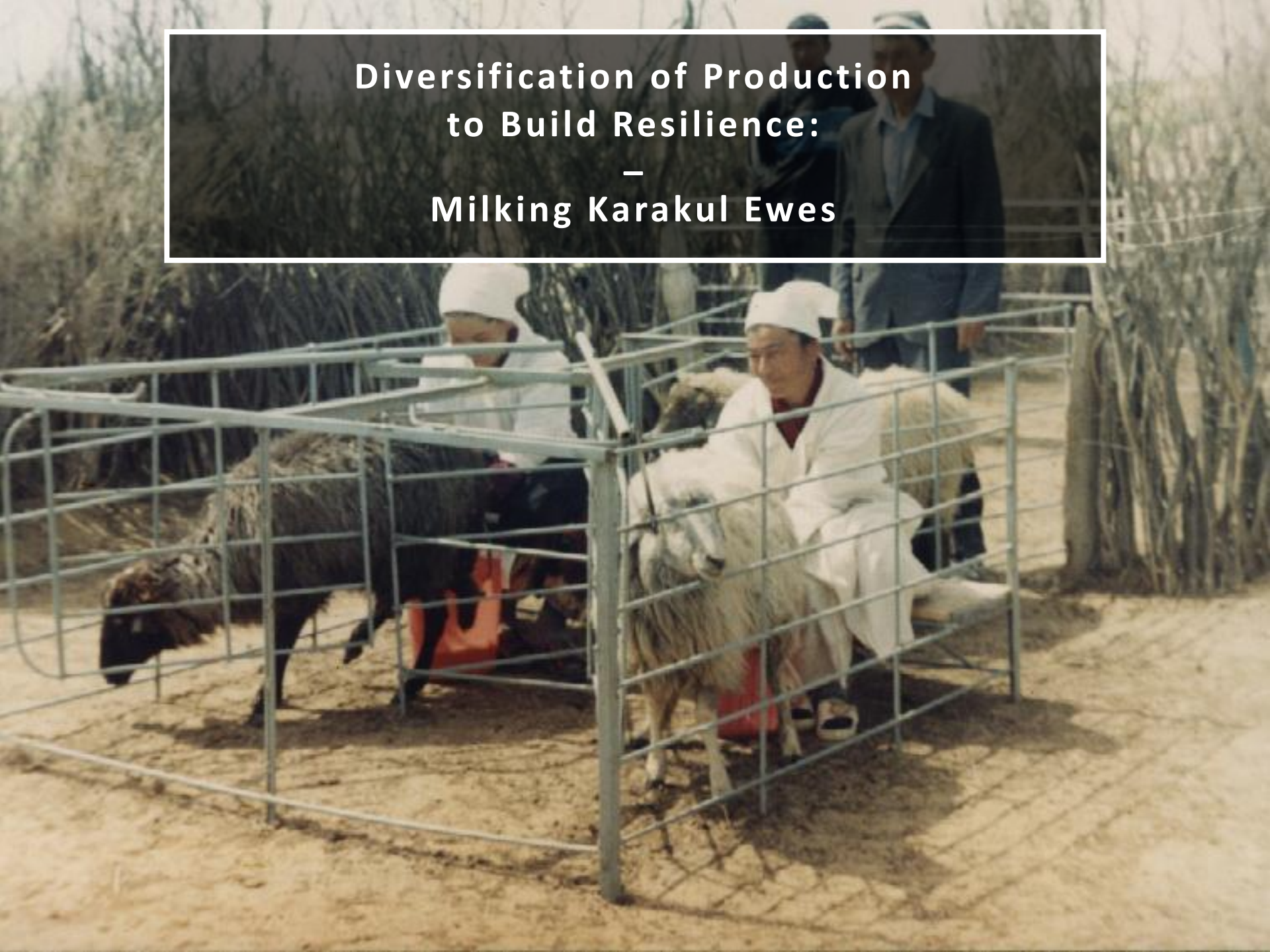
Important to introduce improved varieties of heat and drought tolerant forage crops/varieties/hybrids, best agronomic practices and crop rotation for coping with climate change



Good pasture rotation management can directly respond to climate change through improvement of pasture conditions



**Diversification of Production  
to Build Resilience:  
—  
Milking Karakul Ewes**



# Breeding Programs - Decentralized & Participatory Breeding Plans

## **Fat tailed sheep**

- Improved rams from research breeding station
- Joint selection by farmers and researchers
- Rams shared by community

## **Mohair goats**

- Selection of best bucks in village flocks
- Improved mating schemes
- Identification and recording
- Forming spinners' flocks

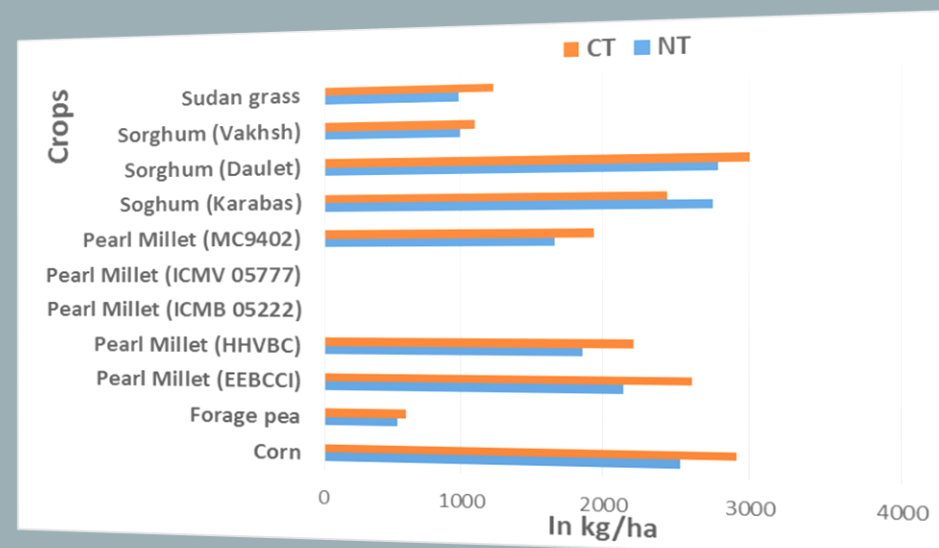
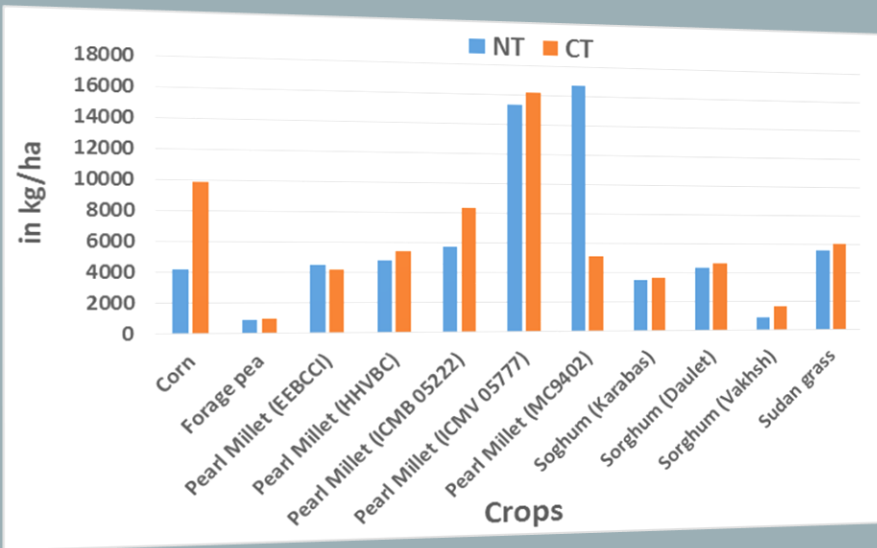




# Improved & Resilient Tillage Practices

Effect of tillage on dry matter yield of forage crops

Effect of tillage method on grain yield of forage crops



<b>I.s.d.</b>	<b>2770.9</b>
<b>cv%</b>	<b>91.3</b>
<b>TILLAGE.CROPS</b>	<b>0.031</b>

<b>I.s.d.</b>	<b>247.8</b>
<b>cv%</b>	<b>32.0</b>
<b>TILLAGE.CROPS</b>	<b>&lt;.001</b>





# Growing Vetch

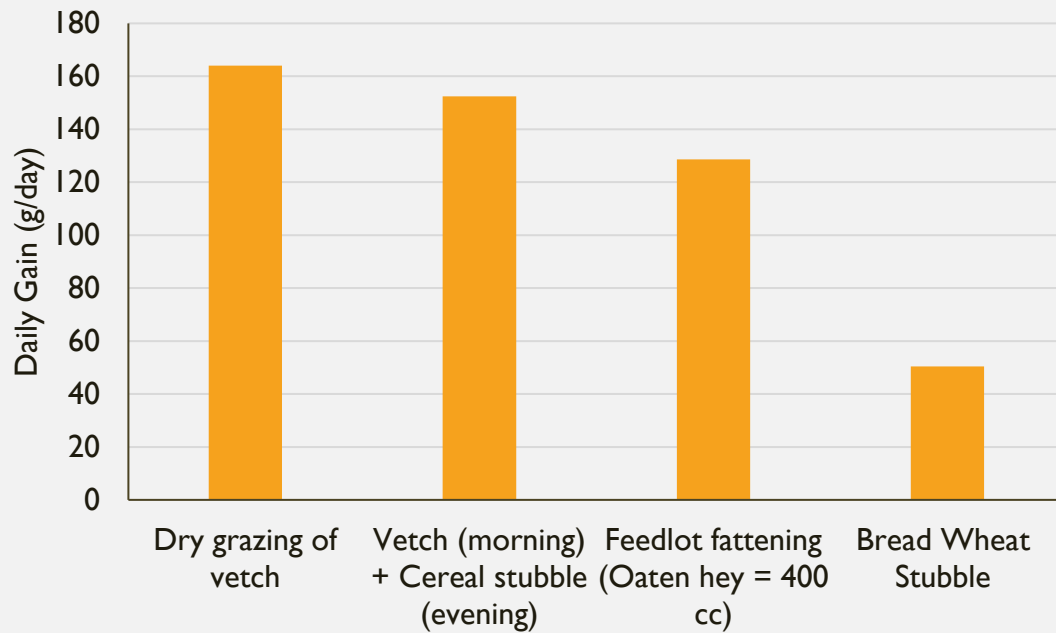
Benefit Cost Ratio

15.2

15.1

2.1

1.4



Drought tolerant forage legumes such as vetch offer many options to cereal-livestock farmers:

- can be grazed while green in spring
- can be cut as hay and used to bridge the fallow feeding gap
- can be left to reach maturity in the field and grazed during the summer as an alternative to cereal stubbles



A profitable option to spare stubble, increase carrying capacity and productivity over mechanical fallow

# Alley Cropping

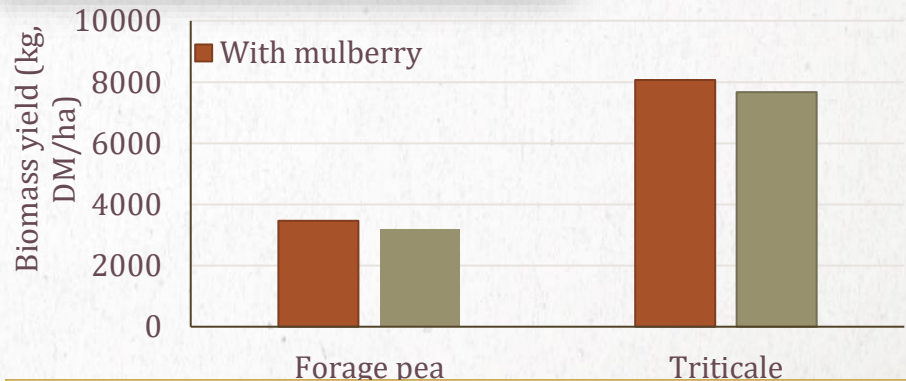
Reduces pressure on stubble and helps meet the sheep nutrient requirements

## Major benefits of alley cropping

- Provides fodder in times of scarcity
- Provides rich and diverse diet for livestock
- Improves soil fertility and reduces soil erosion
- Reduces evapotranspiration

## Main Challenges

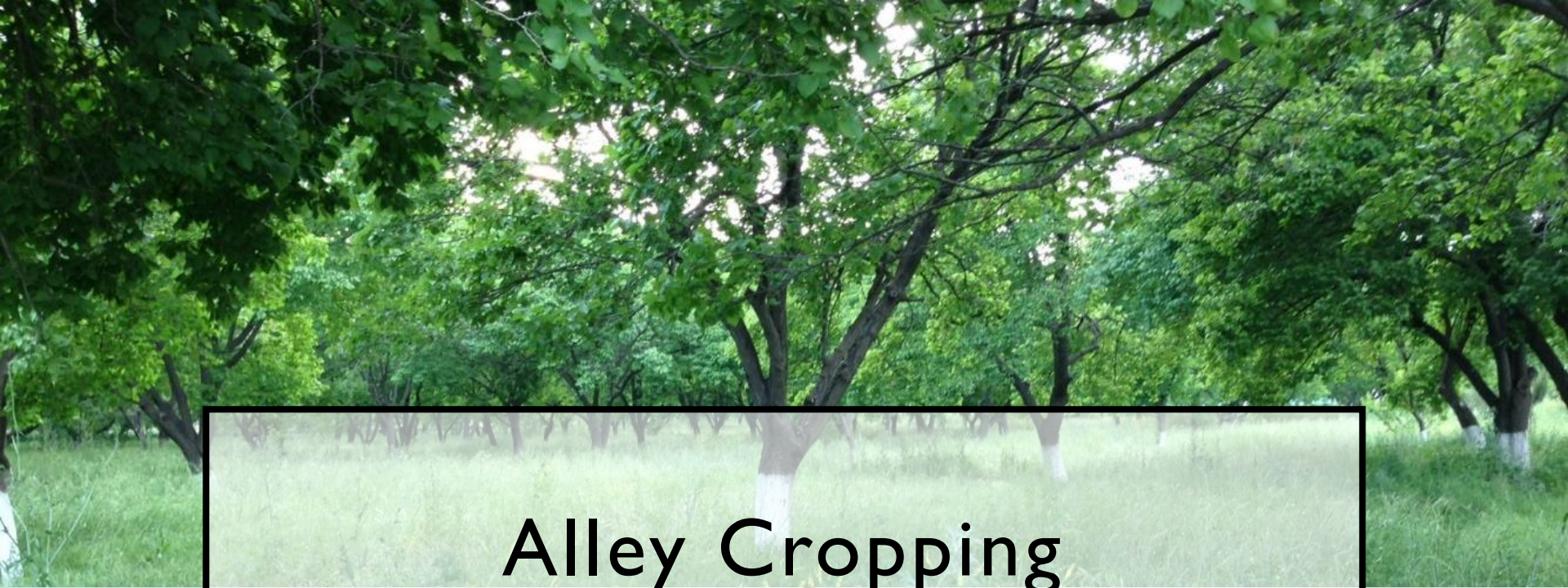
- Availability of healthy seedlings at public nurseries
- Shrub/tree seedlings require protection from grazing in the establishment year
- During first summer, irrigation may be needed
- Weed management



No reduction in crop yield occurred during the establishment year of the shrubs/trees. Once established, the extra forage production and agro-ecological benefits of shrubs will be expected.

**Key method to provide green fodder for livestock and is more resilient to future climate change scenarios in Uzbekistan**





# Alley Cropping





# Rangeland Management: Facilitating Mobility

- Mobile flock formed from small flocks



- Facilitation of rotation between summer and winter ranges



# Rangeland Rehabilitation and Improvement of Hayfield

## Improvement of productivity of hayfields in natural ranges

- Nitrogen application in hayfields
- Seeding of sainfoin

## Improvement of productivity of natural rangeland

- Reseeding with native rangeland species (Kochia, Haloxylon) and (Kochia and saltwort)







# Seed Isles and Strep Planting can Improve Pasture Condition

In the long term the seed isles will increase number of plant species, decrease pasture degradation and build climate resilience in fodder management

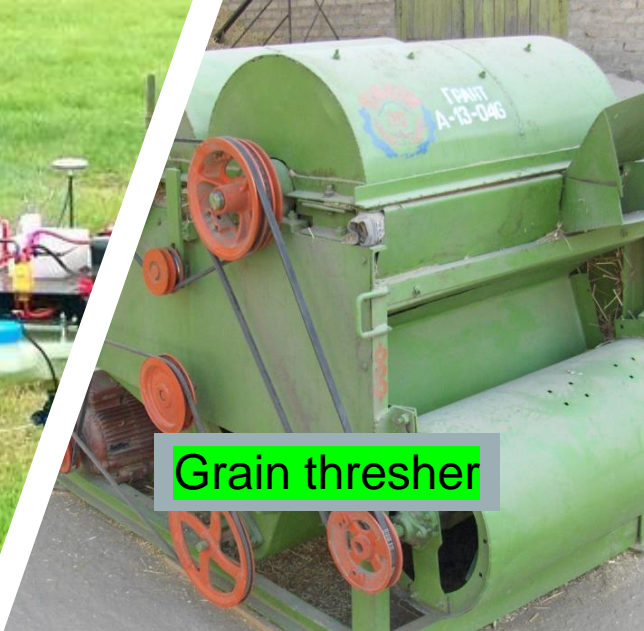




Small corn harvester

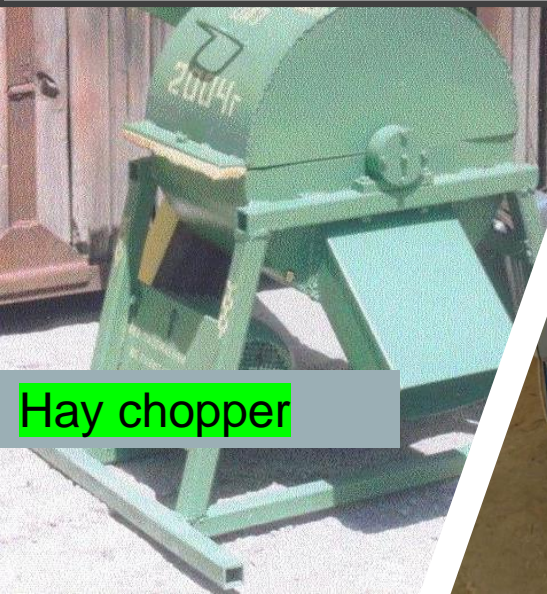


Drones



Grain thresher

# New Equipment for Fodder Crops



Hay chopper



Fodder grain chopper



Fodder thresher

# Recommendations

- Support improved pasture rotation and rehabilitation practices as well as fodder production to enhance agricultural output through local production of agricultural equipment including smart agricultural machines, agricultural drones etc.
- Necessary to cooperate with research institutions (scientists of research institutes on livestock, mechanization and pasture & fodder management)
- Develop agricultural mechanization strategy in the country taking into account climate change scenarios



# Recommendations

Increase financial flows and investments in livestock production and fodder management in order to address climate change challenges in the country



Introduce a comprehensive, nationwide policy for climate-change adaptation



Implement forage crop diversification techniques that increase fodder production, improve food security and nutrition, increase incomes, and contribute to adaptation to climate change, thereby improving the livelihoods of the beneficiaries