

Diversity of work organization patterns in Africa: the family farm in question

Hostiou Nathalie, INRAE, UMR Territoires

Dedieu Benoit, INRAE, UMR SELMET

Girard Pierre, CIRAD, UMR ART-Dev

Kuzo Jacques E.E, Université de Montpellier, Institut Agro Montpellier

Mercandalli Sara, CIRAD, UMR ART-Dev

Introduction

In sub-Saharan Africa (SSA), more than 450 million people by 2040 as working-age (UN-DESA, 2022)

More than 60% of the workforce engaged in activities linked to the agricultural sector

Creating decent employment will be decisive for a transition to a more sustainable development model for the region (Jayne et al., 2018; Losch, 2022)

Work duration and work organization as barriers to more attractive working conditions and decent employment in African family farms

- Diversity of agricultural activities with livestock and crops => diversity of tasks to be performed along the year
- Low level of mechanized and mainly manual work
- Workforce relying mainly of the family
- High work durations and competitions between crops and livestock

Several studies on the determinants of labour allocation on farms in Africa (Benali et al. 2018; Ruml and Qaim, 2021) but not relate them to the tasks performed and the type farming systems

Necessary to better understand working duration and work organization at the farm level which is the aim of this study

The QuaeWork method to collect data on work duration and work organization on farms

Use (after adaptations to the African context) of the QuaeWork method (Hostiou and Dedieu, 2012)

- to assess and characterize work organization (**who is doing what and duration**) on farms at yearly scale
- farmers' interviews



The QuaeWork method to collect data on work duration and work organization on farms

4 types of categories of workers : farm manager, other family members, permanent wage workers, temporary wage workers + gender (men, women)

2 categories of work :

- the routine work (RW) which consists in tasks to be done daily and that cannot be postponed (e.g. with animals = feeding, milking, shepherding, and with crops = irrigation, bird scaring), in hours per day



- the seasonal work (SW) which consists in tasks that can be concentrated and post-poned (e.g. ploughing, harvesting), in days per year



Data collection on family farms on 5 African rural countries

Countries (and research teams for data collection)	Name of the farming systems	Number of farms surveyed	
Burkina-Faso (ICRAF)	Cotton-cereal-legumes with livestock	32	64
	Cereal-legumes with livestock	32	
Madagascar (CIRAD / GSDM / FOFIFA)	Agropastoral MDG 1	41	120
	Agropastoral MDG 2	39	
	Tree crops	40	
Senegal (CIRAD / ISRA)	Large herders transhumance	15	77
	Large herders transhumance without crops	13	
	Small herders without transhumance	24	
	Small herders agriculture transhumance	25	
Tanzania (Sustainable Agriculture Tanzania)	Maize mixed less agroecology	30	77
	Maize mixed more agroecology	47	
Tunisia (CIRAD / ICARDA)	Gardening and fruits	30	100
	Agropastoral TN	30	
	Pastoralism	40	
TOTAL			438

14 farming systems

Livestock + cereals + legumes
Cotton or not

Rice, cassava, peanuts, garden crops, animals...
Types of association ; trees or not (association)

Cattle and/or sheep
Herd size (small/large), crops and not, transhumance or not

Maize, beans, rice, ..., garden crops (carrots, amaranths...), animals (poultry, goats, pigs...)
Agroecological practices (mulching, residues incorporation, manure,)

Sheep and/or goat
crops (cereals/orchards)
Gardening crops

Comparison of working times and work organization between farming systems

- I) **Analysis of the diversity of work durations and work organization between the 14 farming systems** (means, standard deviation, min, max using R and Excel)
- annual working durations (RWV and SW) on crops and livestock activities
 - work organization for RWV and SW among the 4 categories of workers (role of the family workforce)
 - gender contribution of work

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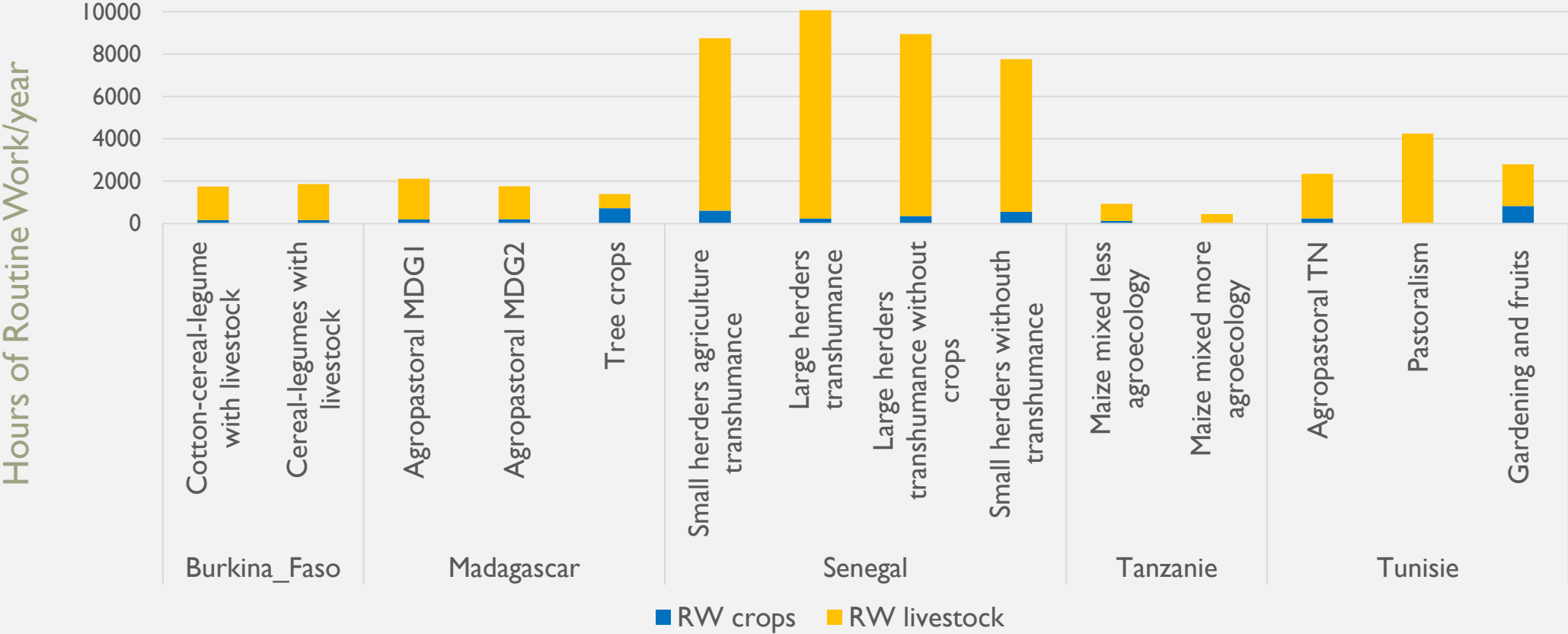
2) Comparative analysis within the 438 farms to identify patterns of work organization

- A Principal Component Analysis + CAH
- FactoMiner R
 - Active variables: contribution of the four categories of workers to the routine work and seasonal work
 - Supplementary variables : cultivated area, herd size (TLU) and farming systems

Variable name	Variable description	Min	Mean	Max
RW decision makers (farmers)	Share of routine work done by decision makers (farmers)	0	0.49	1
RW other family members	Share of routine work done by other family members	0	0.33	1
RW permanent wage	Share of routine work done by permanent wage workers	0	0.06	1
RW temporary wage	Share of routine work done by temporary wage workers	0	0.01	0.73
SW decision makers (farmers)	Share of seasonal work done by decision makers (farmers)	0	0.40	1
SW other family members	Share of seasonal work done by other family members	0	0.19	1
SW permanent wage	Share of seasonal work done by permanent wage workers	0	0.005	0.6
SW temporary wage	Share of seasonal work done by temporary wage workers	0	0.18	1
Cultivated area	Area cultivated (ha)	0	2.9	74
Tropical Livestock Units	Number of Tropical Livestock Units	0	7.88	134

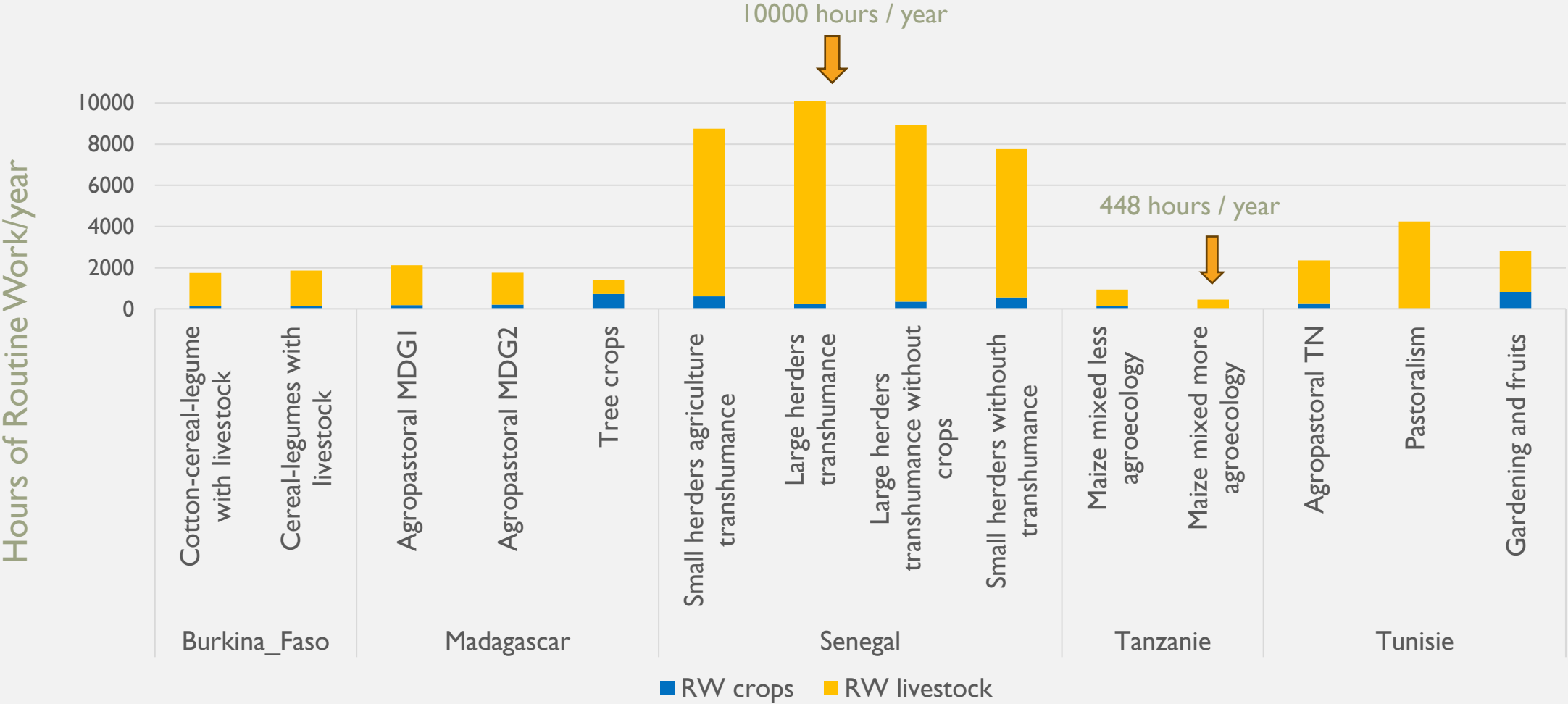
A diversity of work times according to the orientation of farming systems

More than 80% of routine work with animals (feeding, watering, shepherding, ...)
 Low routine work with crops (bird scaring, irrigation)



A diversity of work times according to the orientation of farming systems

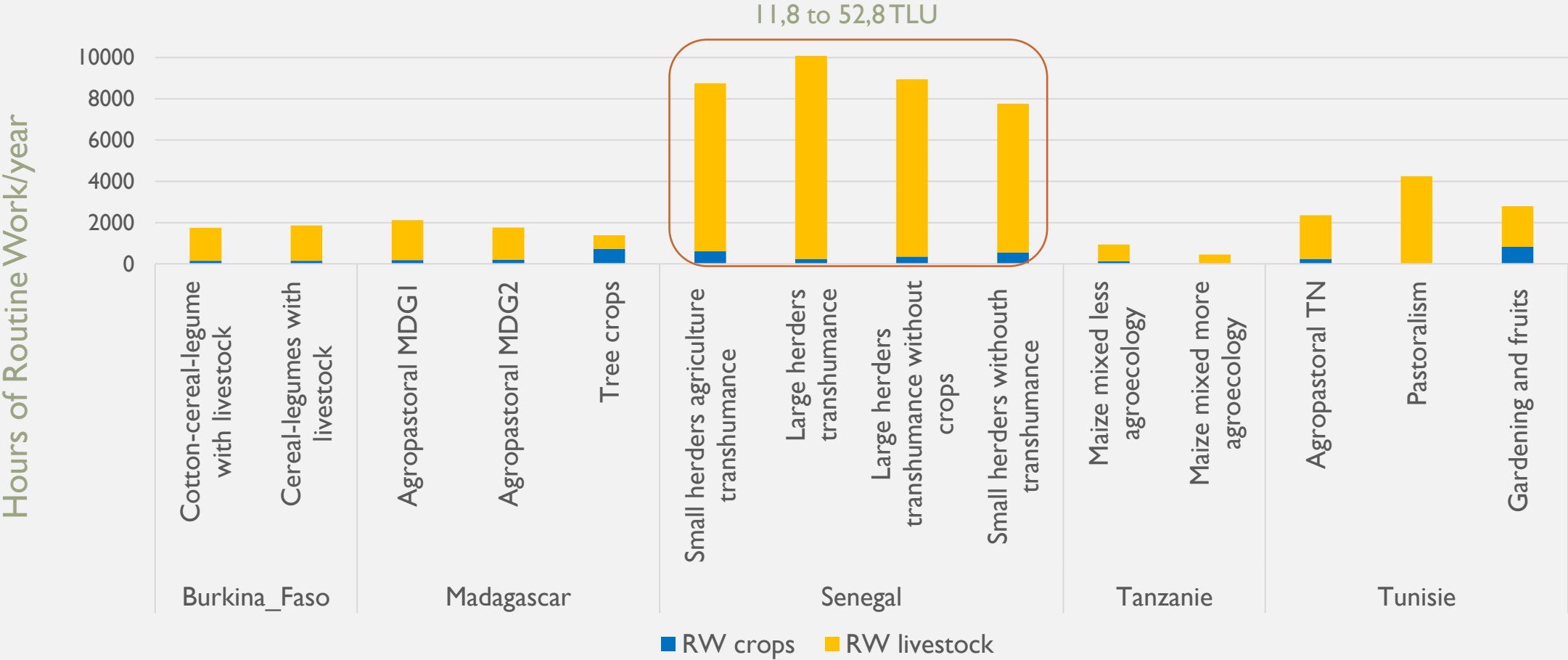
High variability of RW between farming systems



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High variability of RW between farming systems

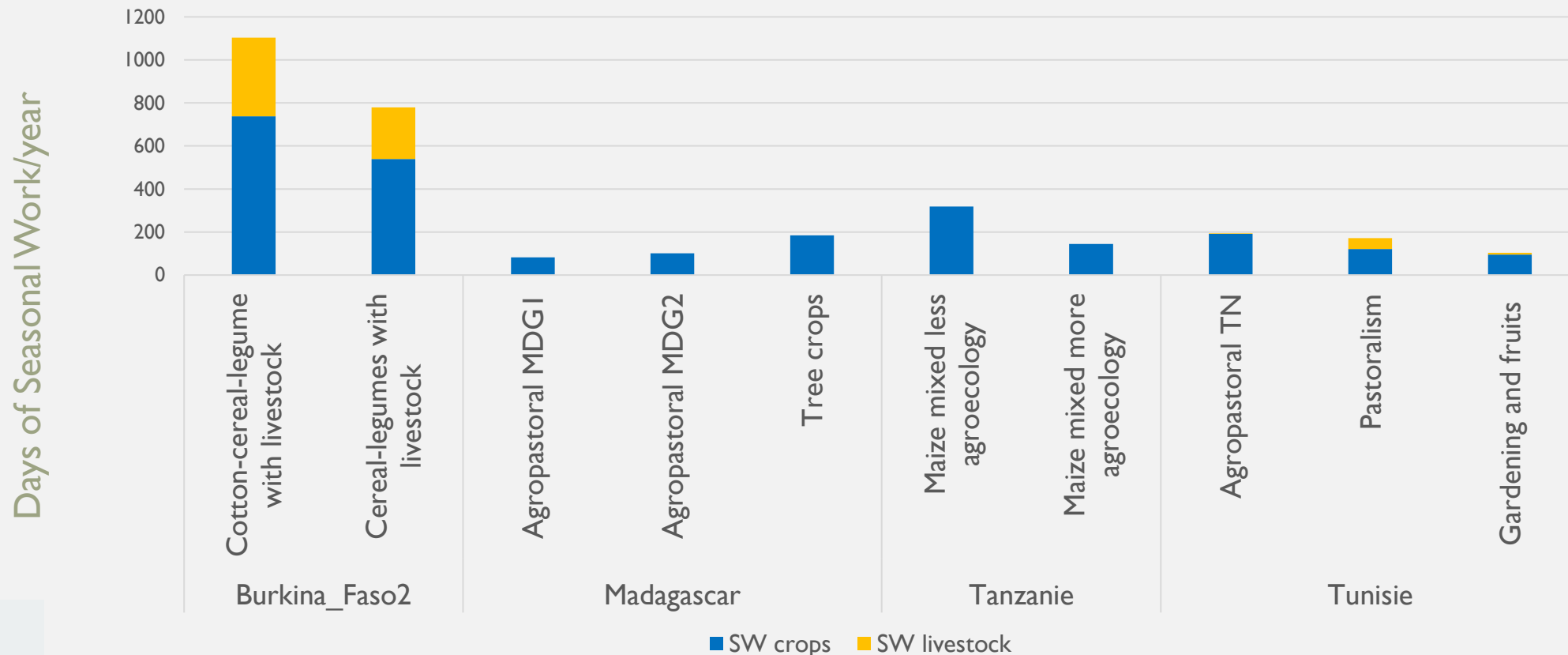
- Higher when more animals



A diversity of work times according to the orientation of farming systems

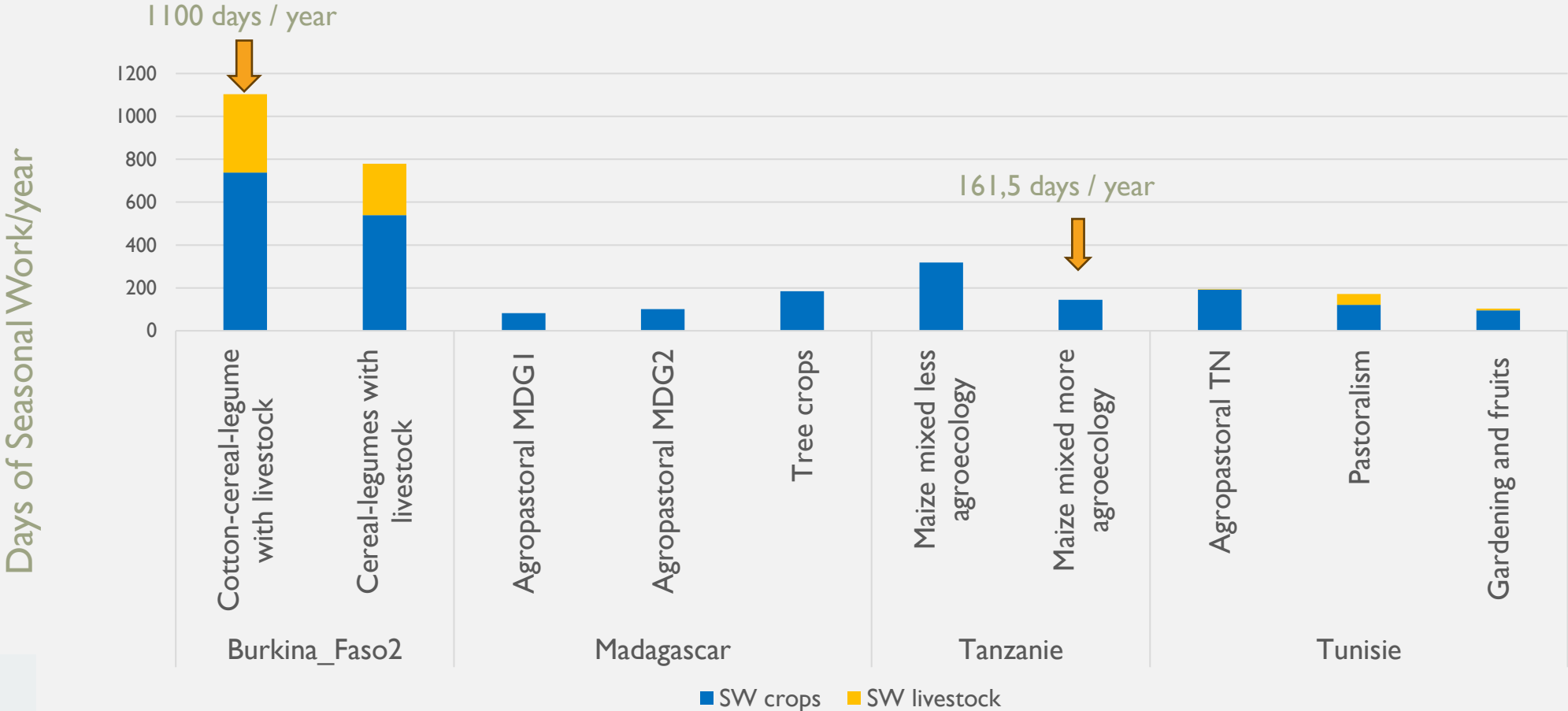
Seasonal work mainly with crops (land preparation, sowing, weeding, harvesting...)

Low SW with livestock in Pastoralism systems in Tunisia and in both farming systems in Burkina-Faso (moving the animals, weaning the young animals)



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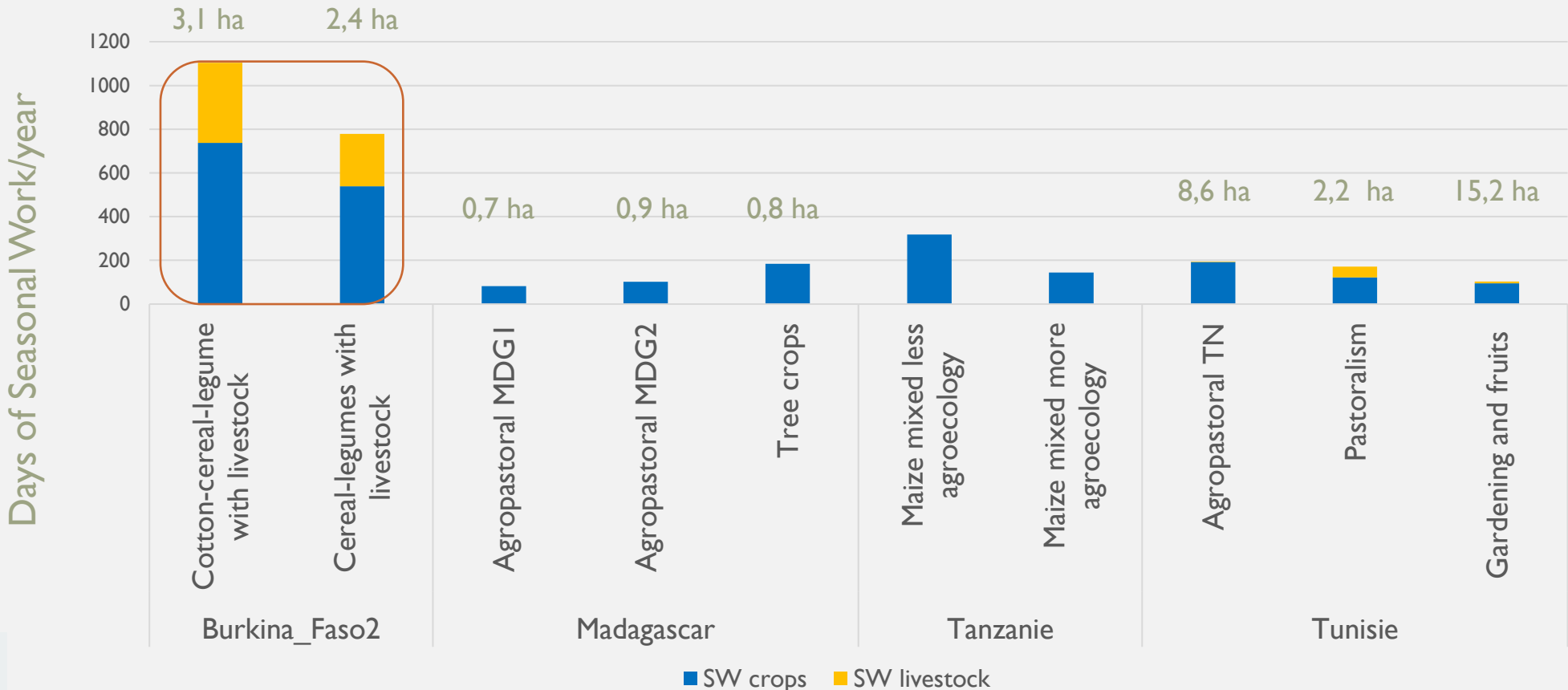
High variability of SW between farming systems



A diversity of work times according to the orientation of farming systems

High variability of SW between farming systems

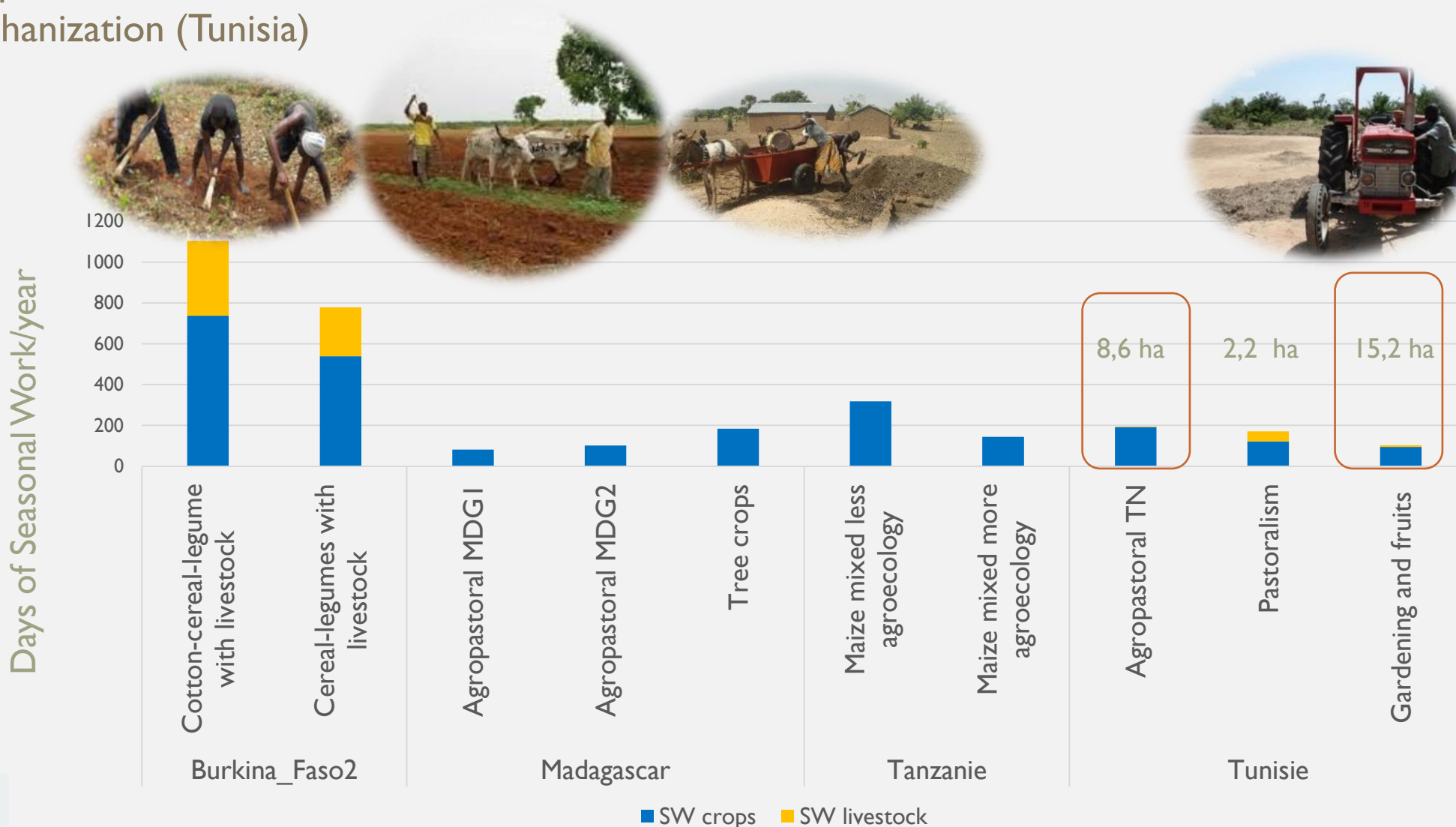
- Crops cultivated : cotton production (when performed manually)
- Crop areas



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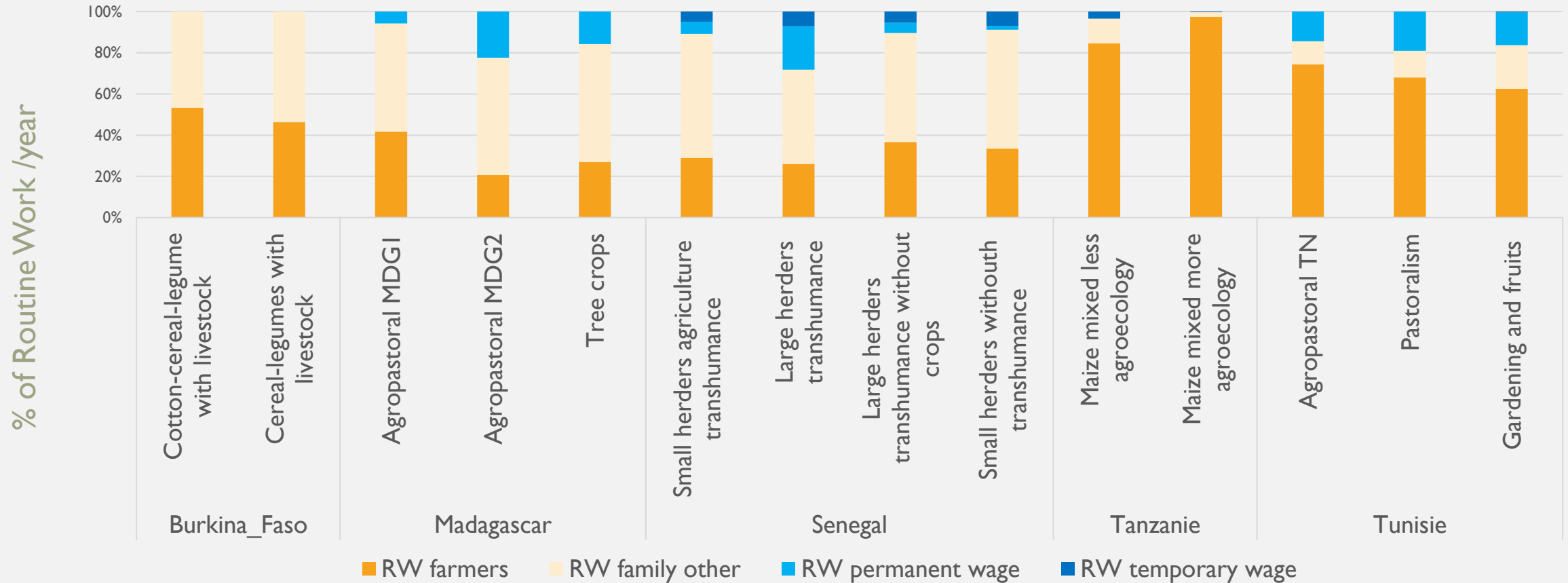
High variability of SW between farming systems

- Crops cultivated : cotton production
- Crop areas
- Mechanization (Tunisia)



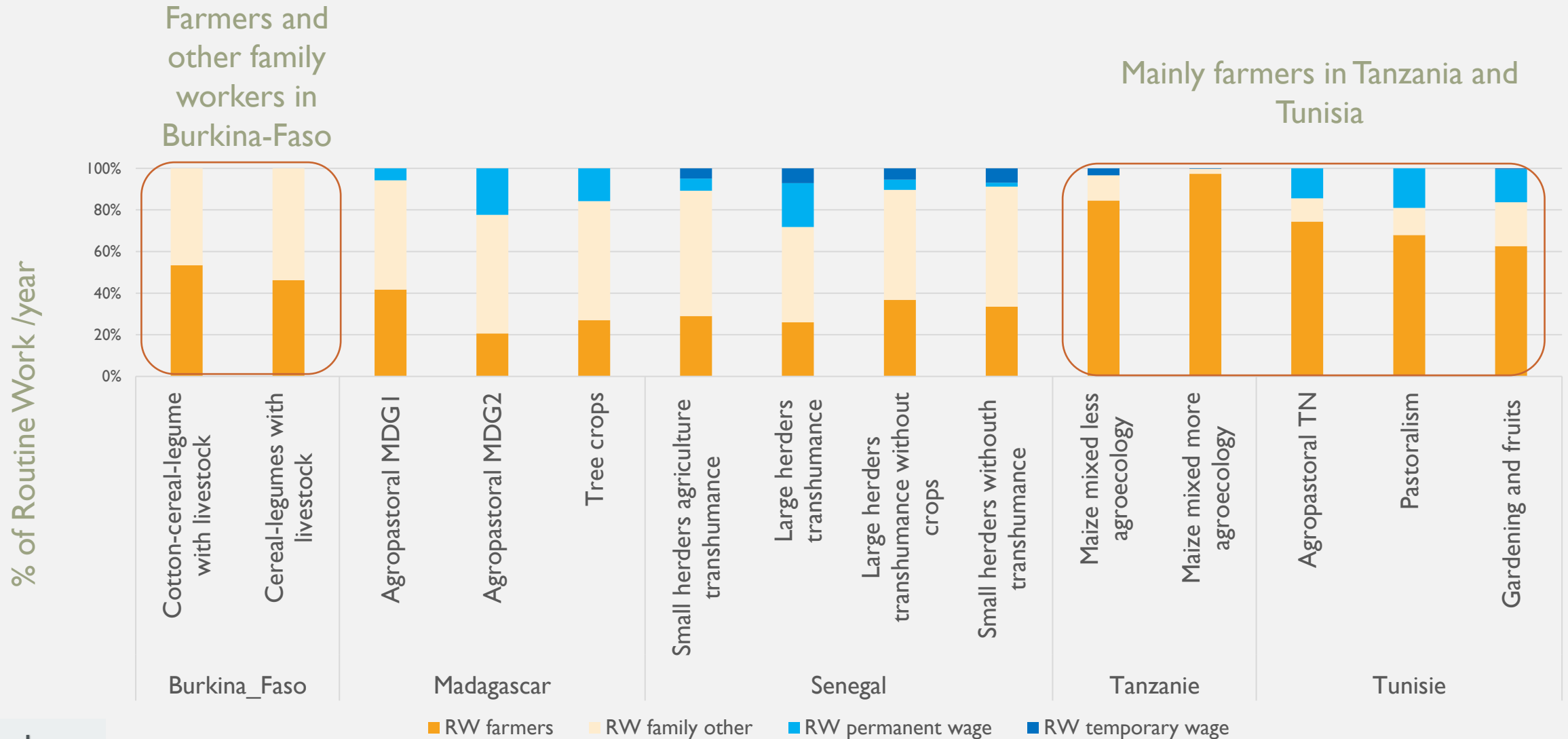
Routine work mainly performed by family workers

In all farming systems, routine carried out mainly by family workers



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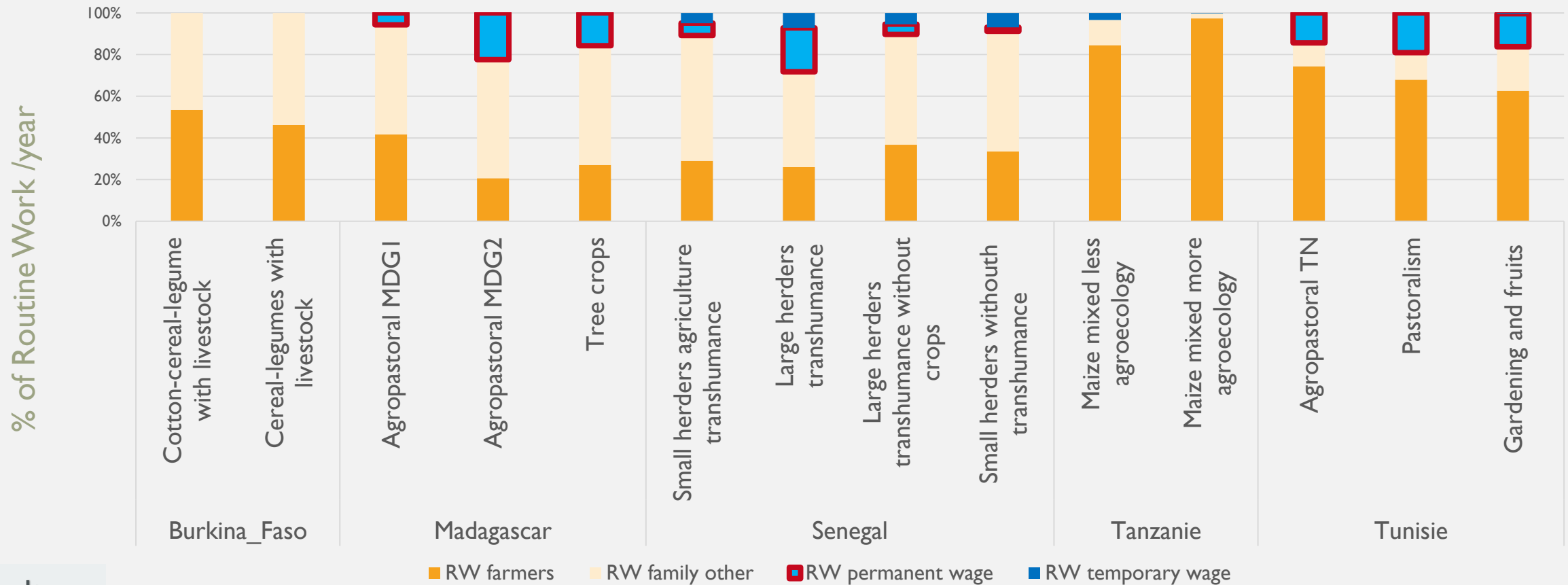
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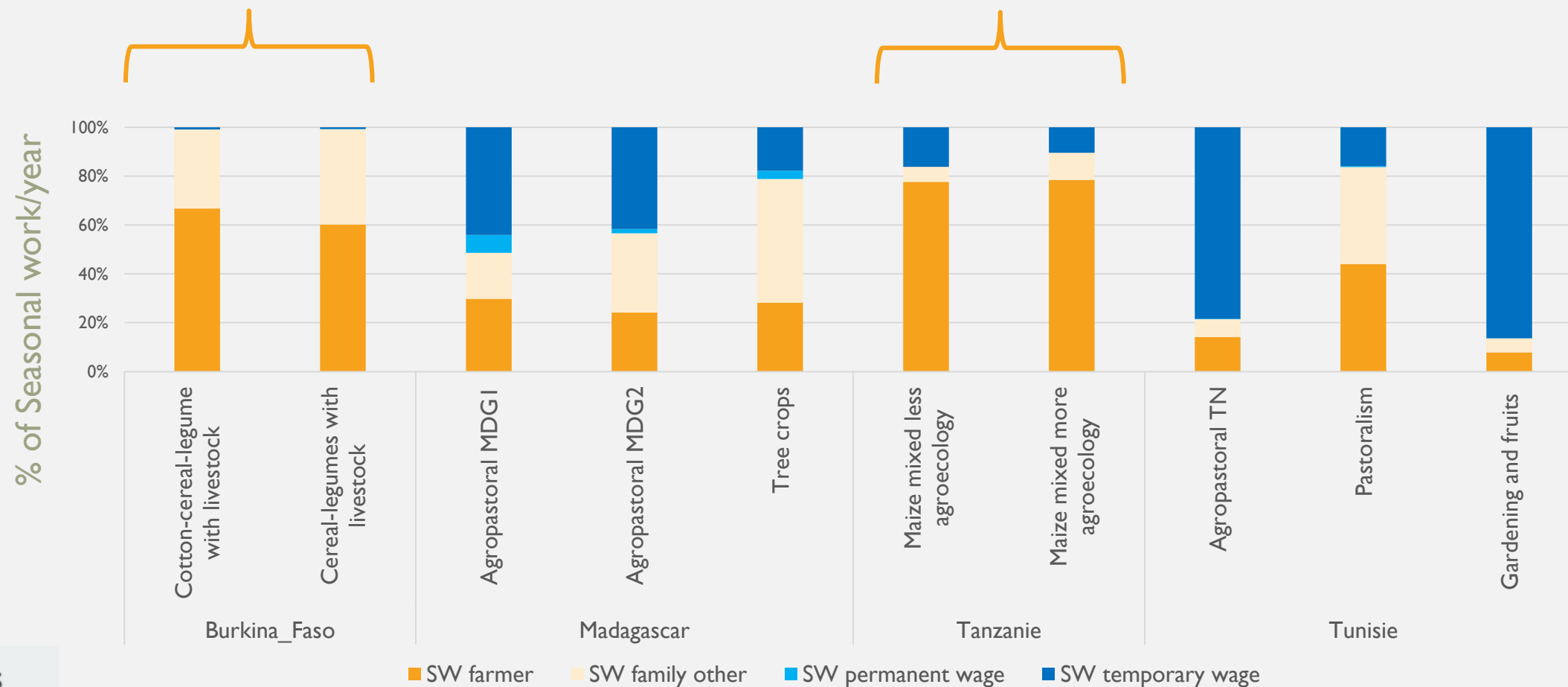
Contribution of permanent wage workers in some farming systems : more use of wage workers when low number of family workers

Few temporary wage workers



Variability of the categories of workers for the seasonal work

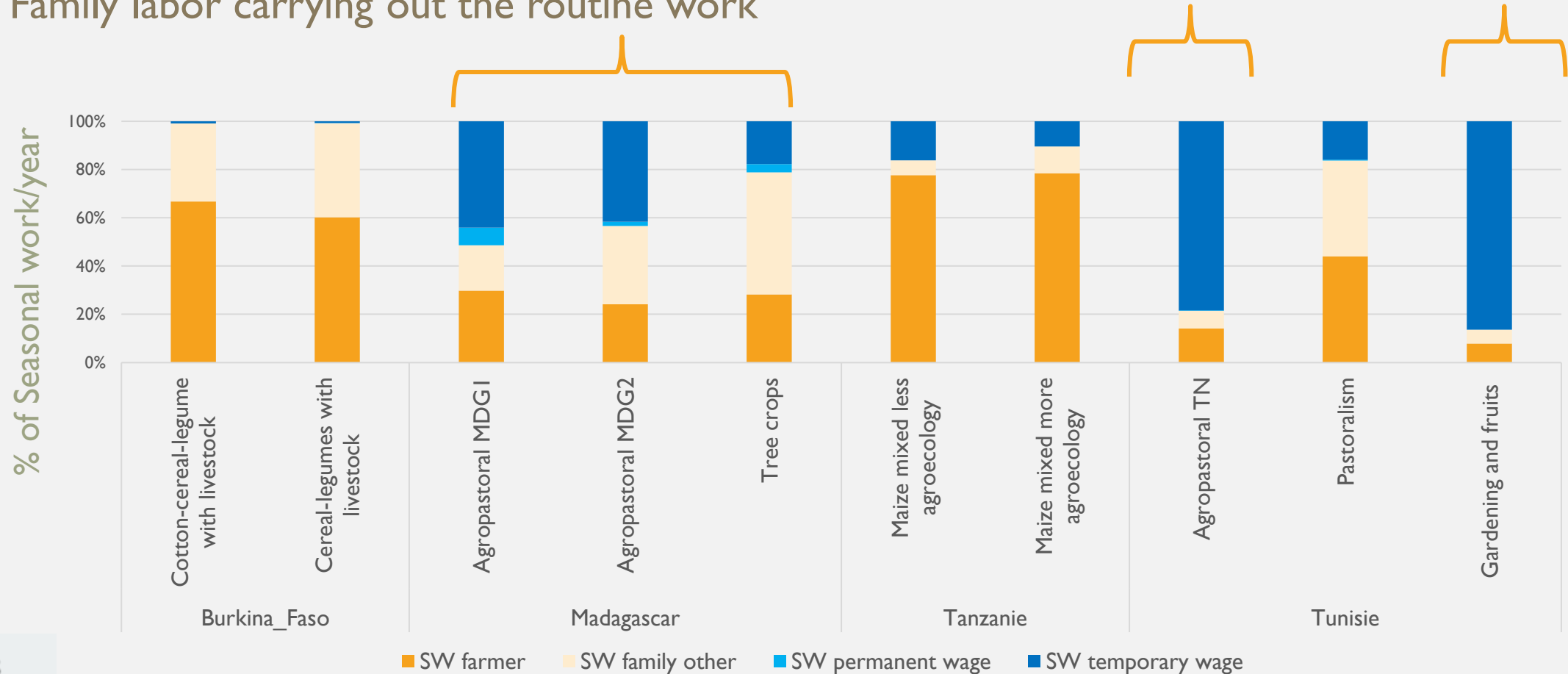
In farming systems in Burkina-Faso and Tanzania, seasonal work done by family (farmers and family workers)



Variability of the categories of workers for the seasonal work

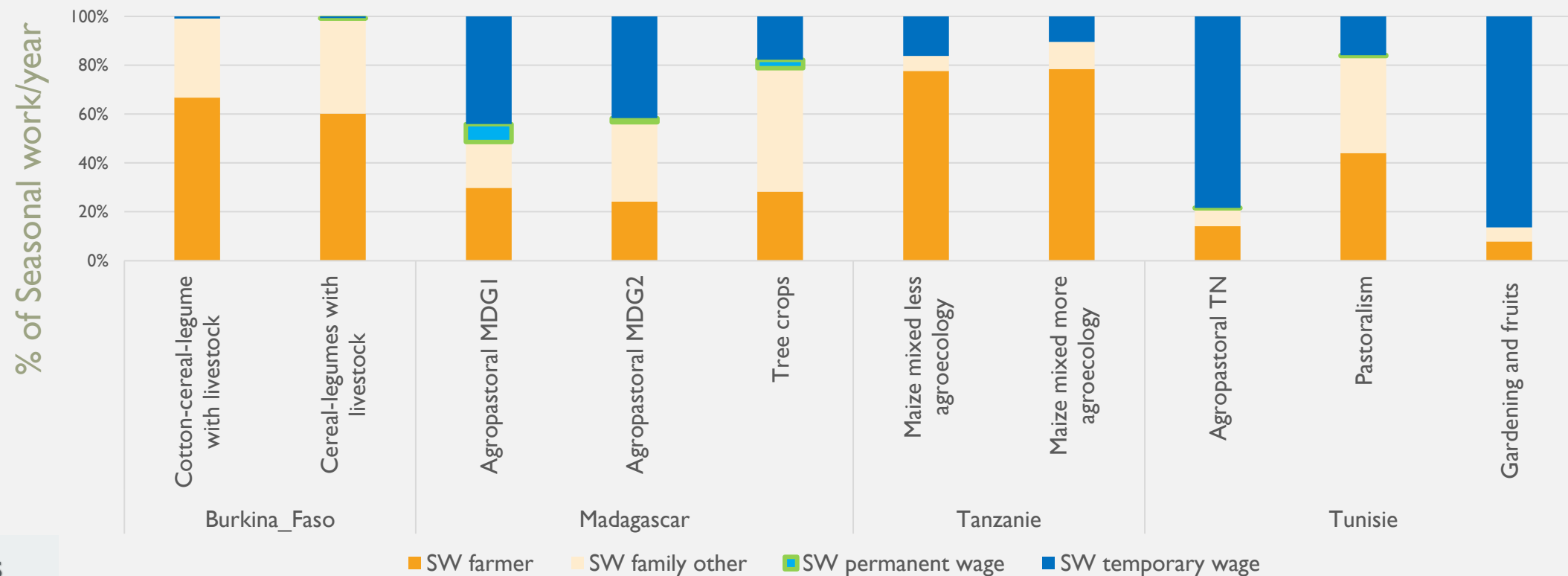
High contribution of temporary wage workers in « Gardening and Fruits » and « Agropastoral » systems in Tunisia and in all farming systems in Madagascar

- Labor intensive crops (market gardening)
- Large crops areas (Tunisia)
- Family labor carrying out the routine work



Variability of the categories of workers for the seasonal work

Very low contribution of permanent wage workers

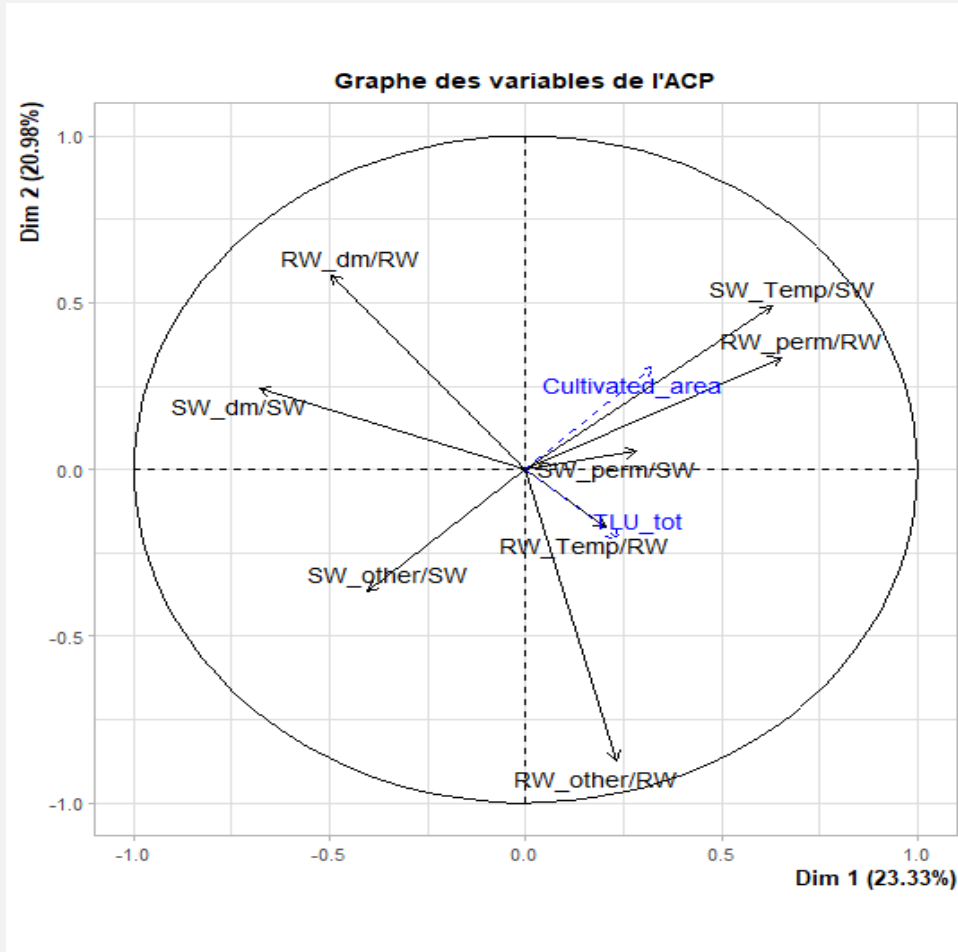


A high contribution of women to the work

In farming systems women (family and wage) contribute to the work



Three patterns of work organization



- **Axis 1:** - family workers for the SW ; + temporary wage workers for SW
- **Axis 2:** - others family workers for the RW ; + farmers for the RW

Three patterns of work organization

Pattern I “Seasonal and routine work mainly carried out by farmers”

- high proportions of routine work and seasonal work compared to the respective totals carried out by farmers
- prevalent in pastoralist system and agropastoral system (Tunisia) and in all farming systems of Tanzania

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Pattern II “Routine work mainly carried out by family workers in proportion of total routine work”

- farms with high number of tropical cattle livestock units (4.9 TLU on average)
- observed in crop-livestock farming systems in Burkina Faso (“cereal-legume with livestock”), and in Senegal (farms where small herders are not engaged in agriculture or transhumance, and farms where small herders practice both agriculture and transhumance)

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Pattern III “Routine work carried out by family and permanent wage workers and seasonal work mainly carried out by temporary wage workers”

- farms with high cultivated areas, reaching up to 7.88 hectares
- Found on various farms carrying out varied activities on two farming systems in Tunisia (“Gardening and fruit” and “Agropastoral”) as well as in Madagascar (“Agropastoral MDG 2”)
- Not lie only in the size of the cultivated area, because we observe both large mechanized farms in Tunisia and small non-mechanized farms in Madagascar

Discussion and conclusion

Work duration and organization: a huge diversity explained by farming systems and farms size

Diversity and variability of working times and work organization patterns on family farms

Identification of factors explaining those differences among farms

- Type of production systems :
higher RW on farms with production systems relying on livestock
higher SW in farming systems in Burkina-Faso indicating that cotton cultivation demands substantial work, especially during the specific periods of planting, harvesting and processing
- Farms size :
Larger herds +/- higher RW and mainly done by the family workforce
Relation not so obvious between nb of hectares and SW
- Level of mechanization

Discussion and conclusion

The family farm in question

Family workers fully engaged in agricultural work, particularly in routine work

Family farmers have to hire workers, especially temporary workers for seasonal tasks on crops due to scarcity of family labour and/or high workload due to large cultivated areas or absence of mechanization

Confirmation of the importance of the contributions of women, particularly among temporary workers

Advantages of hiring of temporary workers for managing seasonal work, but challenges such as working conditions (wages, drudgery, etc.)

Discussion and conclusion

Implications and perspectives

Exploration of concrete improvement solutions to favor more liveable work on farms (simplification of technical processes, new work organizations (collective, contractors), use of small mechanization for the most labour-intensive tasks and peak periods) => impacts for the different categories of workers important to consider

Imperative to persevere in efforts aimed at developing in-depth methodologies for analyzing work within farms combining :

- an evaluation of working time and of work organization as permitted by QuaeWork method
- an analysis of working conditions / job satisfactions / aspirations (Oya, 2016)

=> To support liveable, decent and attractive job in farming

Merci

Nathalie HOSTIOU, INRAE, UMR Territoires
nathalie.hostiou@inrae.fr

Dedieu Benoit, INRAE, UMR SELMET
Girard Pierre, CIRAD, UMR ART-Dev
Kuzo Jacques E.E, Université de Montpellier, Institut Agro Montpellier
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