

**AN AGRO-ECONOMIC CHARACTERIZATION OF THE NIGER HOUSEHOLD:  
CASE OF TAHOUA**

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**Abstract**

Since the big drought of 1984, the department of Tahoua in the Republic of Niger is very vulnerable to structural and temporal disruptions. The food vulnerability is defined as “*the analysis of coping strategies and reactions faced with the structural or/and temporary shocks, if the coping strategies are not effective, the people are in a temporary or structural situation of food vulnerability*” (Andres and Lebailly, 2011a; Andres, 2012). The environment is much degraded by the wind and water erosion. Despite many opportunities to develop the rural sector, the region of Tahoua has a structural problem because the income is not very high and the major part of the population is poor. This paper analyzes the characteristics of households in function of the food system. The target is to classify the population in relation to the food agricultural systems. A global description is defined and characterized for the agricultural system. The paper is based on a survey realized during 2010 and 2011. The investigators have interviewed 420 heads of household. The results are analyzed by Excel and SPSS software. The statistical analysis is a comparison of averages and the descriptive statistics. The results show a difference between the north (pastoral) and the south (agricultural) of the region of Tahoua, especially, for the production of cowpea, the number of tropical livestock units, the number of fields. Furthermore, the systemic view is very important to identify the specific constraints and opportunities of each food system.

**Key words:** Characterization, agro-economy, Niger, Tahoua

**Introduction**

Located in the Center of the Republic of Niger, the region of Tahoua is limited by the Mali in the Northwest, the region of Agadez in the North and east, the region of Maradi in the east, the Nigeria in the South, and the region of Tillaberi and Dosso in the west (Comité Régional de Révision de la Stratégie de Réduction de la Pauvreté, 2006). This region is characterized by a sahelian climate. The population is mostly rural. Indeed, during the census of population in 2001, the rural population was representing 90%. The population is mainly composed of Haoussa (78.2%) and Touareg in the North (17.5%) (Republic of Niger, 2001). Currently, the population of Tahoua of the census of 2012 is equal to 3,327,260. The annual growth rate of the population is equal to 3.4% (Republic of Niger, 2013). The major sectors of activities are the agriculture and the livestock. Furthermore, the principal constraints are the weak precipitation, the wind and water erosion, and the weak fertility of soils (FAO, 2003). The characteristics of the rural and agricultural population are defined by the agricultural and livestock census realized in 2008. This census has determined that the farmers of Tahoua are estimated at 1,863,601 and the distribution of this population is six members per household. The farming population represents 75 percent of the population. The major practice of the heads of household is the agropastoralism (90% of the households).

Finally, the mixed crops are the most important crops and the follow lands decrease and represent 35,273 hectares i.e. 4.4%. The area of mixed crop is estimated at 619,119 hectares against 126,054 hectares for the monoculture (Ministère du développement agricole et des ressources animales, 2008a).

The target demonstrates the characterization of the households in function of the food agricultural system. The target is realized by an analysis of some variables: socioeconomic (active members, level of schooling, marital status, etc.); agronomic (principal production, tropical livestock unit, area, number of fields, etc.). The first part of the results describes the situation of the households per food agricultural system. The second part realizes a comparison between the food agricultural system and a classification of households in function of the variables identified.

#### Material and method

The results are obtained by an investigation of 420 heads of households distributed in the departments of Tahoua (Tchintarabaden, Abalak, Tahoua, Illéla, Keita, Bouza, Birnin Konni, and Madaoua). The sample is chosen in function of the population census in 2001. The database has been constituted by “enumeration areas” of the population census (Andres and Lebailly, 2013). The “enumeration areas” are defined as a “geographical area of 200 households on average” (INS, 2007 in Andres and Lebailly, 2013). These investigations aren't about the nomad households but on the non-nomads. The results are obtained with SPSS and EXCEL. The food system is characterized by the following variables: Tropical Livestock Unit, the average production of mil, sorghum, cowpea between 2007 and 2009, the number of storehouses, the capacity of the storehouses, the number of fields and the area. This food system will be also described in function of the socioeconomic parameters (marital status, age, and number of members per household, education). This data is distributed in function of the food agricultural systems per department.

The agrohydrometeorological center AGRHYMET has determined the food agricultural systems per each department of Tahoua (Madaoua, Birnin Konni, Bouza, Illela, Keita, Tahoua, and Tchintarabaden). Currently, the department of Tchintarabaden assembles two departments: Abalak and Tchintarabaden. The food agricultural systems are calculated in function of the production of each department and the livestock. The food agricultural system is food-producing system if the agricultural area of food-producing products (cereals) is greater than 70%. The mixed system is described by the area of cowpea (less than 20%), the area of rice (less than 35%) and the food-producing products (less than 70%). The pastoral system is located at the northward of the isohyet 300 mm (CILSS, 2000).

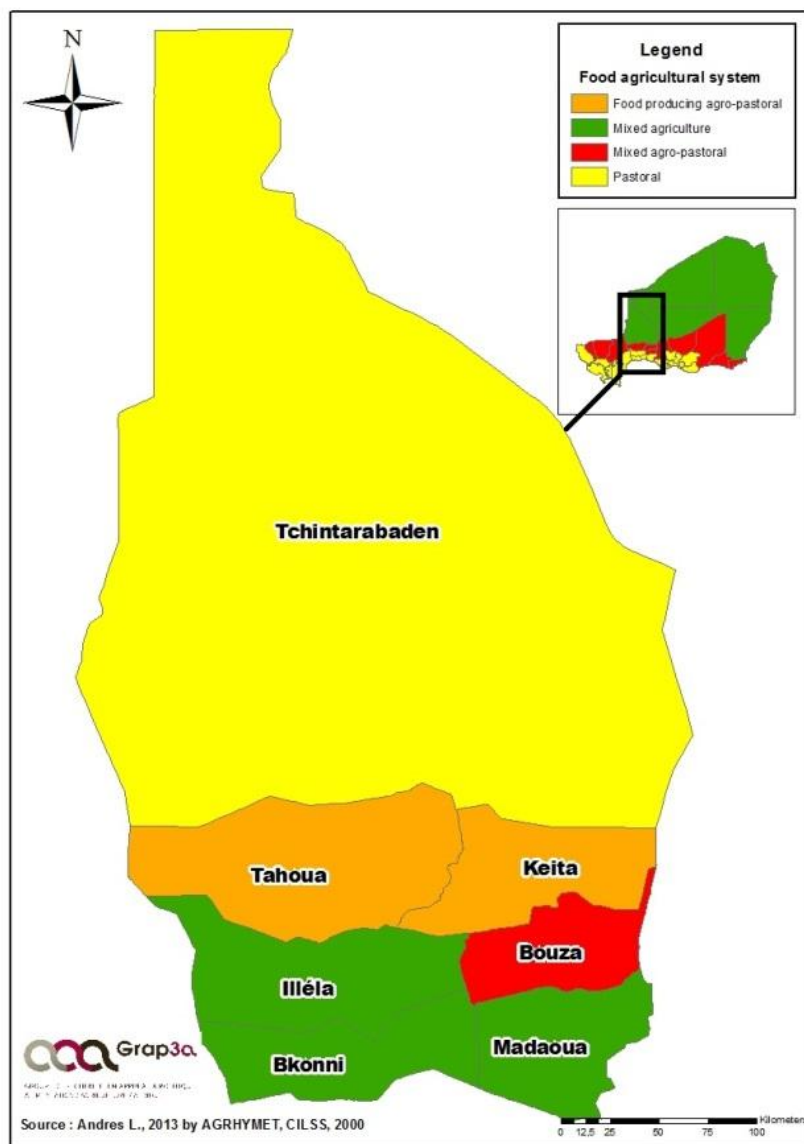


Figure 6: The food agricultural system of the departments of Tahoua

Finally, we have realized a comparison of averages between the four systems. The comparison of averages is realized with the following variables: the area, the number of fields, the TLU, capacity of storehouse, number of storehouse, and average of millet, sorghum and cowpea production. The eight variables are compared in function of the four food systems about Tahoua. The equality of mean is realized if there is a normal distribution (Shapiro-Wilk test) and homogeneity of variance. The tests reject the hypothesis of normality and equality of variance. We have realized a non-parametric test with the Krustal-Wallis test.

### Results and discussion

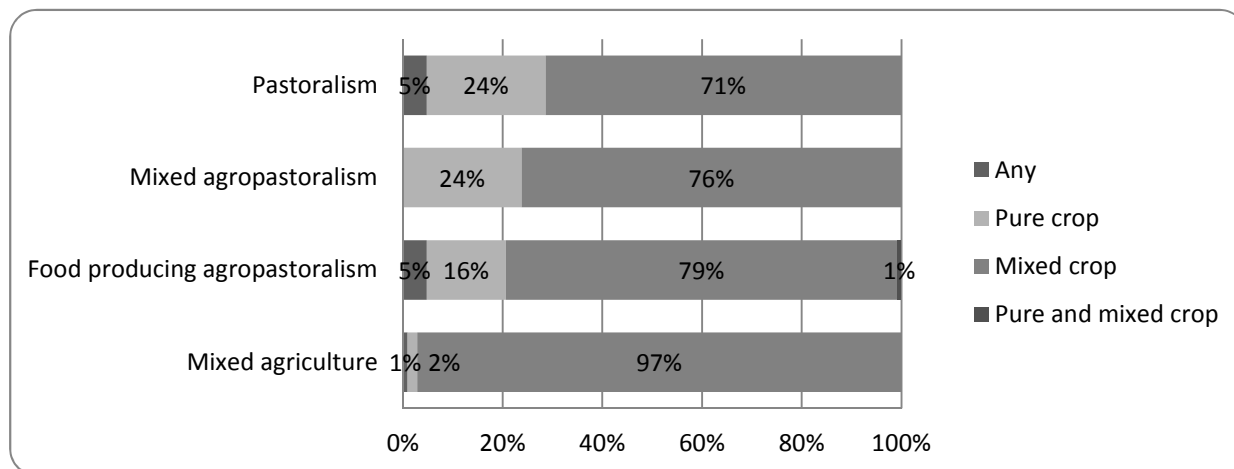
The average of the age of the head of household is 51 years old but the heads of household located in the pastoral system have an age (46) lower than the rest of the other systems. The number of member per household varies between 8 for the mixed agropastoral system and 10 for the mixed agricultural system. A majority of the heads of household are male and for the pastoral system, the heads of households are only male. The Agropastoral food producing system presents the higher rate of the female heads of household, this percentage is equal to 19% (Table 1).

**Table 2: The characteristics of the heads of households per food system**

Food agricultural system	Age of heads of households	Number of members	Percentage of the gender of the heads of households	
			Male	Female
Mixed agriculture	53	10	88%	12%
Food producing agropastoralism	53	9	81%	19%
Mixed agropastoralism	50	8	83%	17%
Pastoralism	46	9	100%	0%

The marital status is mainly polygamous and monogamous. Indeed, the percentage of monogamous and polygamous is upper than 80 percent in each system. But the monogamous represents the largest part of this percentage. Finally, the level of education isn't different between the systems. But there is a difference of ten percent between the illiterate heads of households in pastoral (45%) and agricultural system (54%). Furthermore, many people haven't accessed the primary or secondary school and even less for the college.

The principal crop of the households in the region of Tahoua is the mixed crop but the agropastoral and pastoral system show a slight difference with agricultural systems. Indeed, the percentage of households practicing the pure crop is higher than the percentage of pastoral and agropastoral systems (Figure 2). Furthermore, the principal association is the millet-cowpea and the millet-sorghum-cowpea. This association is confirmed by the agricultural and livestock census (Ministère du développement agricole et des ressources animales, 2008a). The association of millet-sorghum-cowpea in the agricultural mixed system is more used in comparison with the associations of the other systems (millet-cowpea). The other systems present a high percentage for the association of millet and cowpea.

**Figure 7: The distribution of type of crop in each food system**

The Figure 3 shows the result of this test. The result demonstrates a difference between the four food systems. The differences are established between the number of storehouses; the capacity of storehouses, the number of TLU, the number of fields and the average of cowpea production. The equalities of average are proved between the area, the production of millet and sorghum (Figure 3).

Test Statistics<sup>a,b</sup>

	Average of millet production	Average of sorghum production	Average of cowpea production	Area	Number of fields	Storehouse capacity	Number of storehouse	Number of UBT
Chi-Square	4,429	6,057	28,389	3,837	49,452	10,405	18,078	17,849
df	3	3	3	3	3	3	3	3
Asymp. Sig.	,219	,109	,000	,280	,000	,015	,000	,000

a. Kruskal Wallis Test

b. Grouping Variable: Système agroécologique

**Figure 8: Results of the non-parametric Kruskal Wallis Test.**

## Conclusion

Finally, the paper has demonstrated the difference between four systems present in the region of Tahoua. The heads of household are characterized by an average age of 51 years and there are on average 10 members per household. A majority of the heads is married and illiteracy is a big characteristic of the head of households in Tahoua. The capacity of production and storage is very different in function of the specificity of the system. For example, the production of cowpea decreases in function of a south-north gradient and the TLU increases in function of the same gradient (south-north). The systemic view is very important to identify the specific constraints and opportunities of each food system.

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