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COMPARING VIEWPOINTS ON AGRICULTURAL DEVELOPMENT

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INTRODUCTION

In developing countries, agriculture remains an important sector, contributing to both a large part of GDP and to rural employment. Some countries have launched ambitious policies to develop and sustain their agricultural sector. For instance, Morocco, the case study of our research is based on, developed a program in 2008, namely the Green Morocco Plan (GMP), defining two pillars of action. The first targets large-sized farms for the development of high added-value chains, with a modern and productivity-oriented agriculture. The second tends to ensure solidarity-based mechanisms to support small and medium-sized farms, of which the large majority of Moroccan farmers are comprised, with the objective of alleviating poverty through the increase of farmers' agricultural income. The former pillar is endowed with two to three times more funding than the latter (Marzin *et al.*, 2017). Main actions for the two pillars concern farmers' organizations, economic management of water resources, technical assistance, as well as the creation and modernization of distribution channels. In accordance with the GMP, the Moroccan government also adopted a new long-term water saving program (National Irrigation Water Saving Program), aiming at developing micro-irrigation.

The Mediterranean area faces several specific challenges, in addition to population increase and land fragmentation, these latter being common to most developing countries. Indeed, the Mediterranean region is foreseen to be a hotspot for the impacts of climate change, thus presenting a high vulnerability to global changes (Giorgi and Lionello, 2008). Vulnerability to climate variability and changes may be even more prominent for irrigated systems, which are common in the southern part of the Mediterranean Sea. First, irrigation has expanded in most countries of the Southern Mediterranean zone. In Morocco, for example, 13% of Utilized Agricultural Area (UAA) is equipped with irrigation (High Commission for Planning, 2007). Increasing water scarcity, due both to overexploited aquifers and climate changes, endangers the livelihoods of rural farmers in the Southern Mediterranean countries. In addition, market and processing conditions such as price volatility or storage ability of agricultural products (Lejars and Courilleau, 2014), which depend in turn on multiple factors such as farm type or localization, can accentuate the vulnerability of agriculture and certain social categories of farmers.

Encouraging both a sustainable development of the agricultural sector and lower resource use and impacts, depends, among others, on the availability of functional and accessible services to the greatest number of farmers, and in particular of agricultural advisory services (Dugué *et al.*, 2014). A salient issue affecting the effectiveness of advisory services is the (mis-)match between farmers' expectations (e.g., information, technical advices, innovation, etc.) and the real advices that can be provided (Dugué *et al.*, 2014). In addition, both advisory expectations, requests and

services can depend on the diversity of farming systems, including the agro-ecological situations, pedoclimatic conditions, farming systems, and/or access to resources (e.g., financial, water, labor, etc.) (Dugué *et al*., 2014). This requires, at first, that the diagnosis of the specific agricultural and farming situation, its advantages, limits, and possible evolutions, is shared between farmers and the representatives of advisory services.

The case study of Morocco, which is the focus of this study, is of particular interest with regards to advisory services. Indeed, the Moroccan state faced the necessity to reform its advisory service for agriculture, particularly to achieve the goals of the "Green Morocco Plan". In 2011, the state thus initiated a new strategy for its agricultural advisory system, based on three main principles: (1) a diversity of actors involved in the management, implementation and financing of agricultural advisory systems (e.g., including both private and public actors); (2) a scaling down of the advisory services, from national to local, in order to provide a service that could be individual, personalized, and (3) providing farmers with modern technologies for analyses (e.g., soil) and communication to favor the wide dissemination of information, and the possibility of "remote advice" (e.g., consultation of online professional information) (Dugué *et al.*, 2014).

This paper questions how agriculture is perceived by different local actors, namely administration members and farmers. Addressing this question can be performed using different methods and data, e.g., focusing more on direct information (e.g., interviews) or indirect ones (e.g., literature). As individual and collective visions, by definition, evolve through time, we chose to gather information and viewpoints directly with the core actors of the agricultural system. Analysing a collection of oral and qualitative arguments, i.e., *verbatims* requires a method to be able to classify, organize, and compare these arguments. A very common method is the SWOT analysis (Strengths, Weaknesses, Opportunities, and Threats). SWOT generally consists of a list of factors, which can be used to describe the current (corresponding to the SW section of the framework) and possibly future (OT) trends of both internal and external environments describing and/or influencing the studied system (Yavuz and Baycan, 2013). The SWOT analysis thus allows to conduct a situational evaluation (Wickramasinghe and Takano, 2009) to categorize key factors (Nazari *et al.*, 2018). To identify the main themes that SWOT arguments are based upon, the PESTLE approach is a useful tool. This framework has been used in the business and management sectors to monitor the macro-environmental factors that have an impact on the studied system environment (Yudha *et al.*, 2018). PESTLE considers Political, Economic, Social, Technological, Legal, and Environmental classes to categorize sets of factors and facilitate their analysis and comparison. Combining SWOT and PESTLE frameworks hence allows to build a deep insight and understanding on the current realities of a complex problem (Nazari *et al.*, 2018), where visions could differ either in terms of arguments, class, or categorization (e.g., an argument viewed as a strength for one type of actor could be considered as a weakness for another one).

The objective of this study is to compare/confront the visions of practitioners (i.e., farmers) and people responsible for local agricultural administrations (e.g., Regional and Provincial Boards for Agriculture), in order to qualitatively characterize the agricultural sector of a Moroccan agricultural region, namely the Saïss plain.

STUDY AREA

The Saïss plain covers 2,200 km^2, of which about 1,910 km^2 is dedicated to agriculture (Fofack *et al.*, 2015). Climate is of the semi-arid type, and irrigated agriculture has developed since the

1980's and has boomed since the 2000's, leading to a strong decrease in areas dedicated to rainfed crops, and subsequently to a large overexploitation of the aquifer (Ameur *et al.*, 2017a; Quarouch *et al.*, 2014). Irrigated crops (mainly potato, onions, plum and peach orchards, and vineyards) are cropped with a high use of chemical fertilizers and pesticides (Baccar *et al.*, 2018). In 2012, the irrigated area represented approximately 23% of the Saïss plain (Kuper *et al.*, 2016).

SURVEYS AND DATA ANALYSIS

We conducted two series of interviews and meetings with farmers or local administrations to build SWOT diagrams, summarizing their vision of the regional agricultural features. We then mobilized the PESTLE framework to highlight the main themes that were spotted by the two types of actors. The combined SWOT/PESTLE framework was hence used to investigate the current status of agricultural development in the Saïss plain, Morocco, based on the subjective points of view of the two types of actors' interviewees, i.e. two groups of farmers (two cooperatives), and four different local administrations responsible for agriculture.
Note that farmers' viewpoints were more focused on irrigated agriculture, as they all had access to irrigation, while local administration's viewpoints included both rainfed and irrigated agriculture. First, we interviewed individually local stakeholders to gather their viewpoints (in 2018), organized within the SWOT structure. Note that these interviews were performed individually for each structure (Table 1), but that more than one person participated in each interview. Individual SWOT diagrams were then merged and presented in a collective meeting comprising more diverse local stakeholders, for validation and completion. Second, we organized two collective farmers' meetings (in 2019), in which SWOT diagrams were completed by farmers to share their diagnosis with the research team.

Four local administrations responsible for agriculture (extension services) were asked to build a SWOT diagram: the Provincial Boards for Agriculture (DPA) of two provinces (1) El Hajeb and (2) Meknes; (3) the regional Agricultural Council ("Chambre d'Agriculture", CA); and (4) the National Board of advisory services in the agricultural sector (ONCA). These three types of extension services for agricultural development have different functions. While the Provincial Boards focus on subsidies' attribution, local statistics and provide technical assistance for agricultural projects financed by the GMP (e.g., for drip irrigation), the Agricultural Council and the National Board focus more on technical advices and rural development. The ONCA (National Board) was created in 2013 to fulfill the state ambitions of restructuring the advisory system, based on the objectives of the Green Morocco Plan. Its specific mission is to implement the actions of agricultural advice in the whole country (Dugué *et al*., 2014). It is structured with regional, provincial and local levels.

The two groups of farmers, with whom we built the SWOT structure, were located in the rural municipality of Iqaddar, which is a part of El Hajeb Province (within agrarian reform cooperatives of Regraga and Eddakhla, undergoing a privatization process). They are two cooperatives of "medium-sized" farmers (i.e., average of 14 ha and 9 ha for the Regraga and Eddakhla, respectively). Regraga involves 36 farms, and Eddakhla 43 farms (data 2015). For the two cooperatives, the main source of irrigation is groundwater, mainly mobilized with shallow and low yielding wells (69% and 72% for Regraga and Eddakhla, respectively). Regarding the farming systems (data 2015), in the Regraga cooperative, UAA was dominated by rainfed cereals (mainly wheat), market gardening, and forage crops (32%, 24% and 18%, respectively). In the Eddakhla cooperative, the main agricultural uses were cereals (34%), forage crops (21%), market gardening and fallows (18% and 17%, respectively). Livestock production is important for the two cooperatives, justifying the large area dedicated to cereals and forage crops. Eddakhla was

created more recently than Regraga (1991 vs. 1972), the last presenting thus a higher parceling out, and more conflicts linked to successions, leading to more land transfers.

The results of the SWOT diagrams built by these two types of actors (local administrations in charge of agriculture / members of advisory boards in the one hand; farmers in the other) were then analyzed both in a quantitative and a more qualitative way. For the former, the analysis was based on the PESTLE framework to highlight the main themes identified by the two types of stakeholders regarding the four SWOT categories. The experts of the research team classified the SWOT factors across the six PESTLE classes (Political, Economic, Social, Technological, Legal, and Environmental). For the qualitative analysis, we illustrated the SWOT/PESTLE analysis with the main issues the actors expressed.

These analyses were performed to (1) compare viewpoints of two types of actors, and (2) identify whether different viewpoints co-existed among each type of actors.

PESTLE arguments

Members of the research team classified the different arguments mentioned by both farmers and local administrations within the PESTLE framework (Table 1). This classification highlighted that Environmental arguments presented the largest diversity (17 different arguments), followed by Technological arguments (3), and the less diverse argument being cited belonged the Legal class (Table 1; Figure 1). The Environmental class arguments included climate, soil, water and the diversity of crops and type of systems of the region. Arguments of all classes were cited by all interviewed actors, except Legal arguments which were cited only by two administrations. While arguments of Economic, Social, Technological and Environmental classes were found in all parts of the SWOT diagram, no Political threat was identified, and no Legal strength or weakness appeared during the interviews.

Table 1. Classification of cited SWOT arguments in the PESTLE classes for all stakeholders. In the column SWOT are indicated the SWOT categories mentioned according to the PESTLE classes (e.g., missing T means that no threat was mentioned).

PESTLE class	Class mentioned by	SWOT class	Arguments
Political	all interviewed	SOW	administrative procedures, agricultural development funds, agricultural policies, "big farmer", infrastructures, subsidies, agropolis*, strengthening ONCA and ONSSA, rural isolation
Economic	all interviewed	SWOT	ecotourism, financial resources, input prices, insurances, investment friendly zone, market access, marketing, "overproduction", production costs, product valuation
Social	all interviewed	SWOT	age of farmers, collective action, coordination between institutions, coordination between farmers, extension, fragmentation of land, labor, land tenure, professional organizations, succession, support/advice

Techno-logical	all interviewed	SWOT	direct sowing, efficacy of products, information, irrigation technics, know-how, mechanization, number of tractors, packaging, productivity related to technique, product quality, storage, valorization unit, yield/level of production
Legal	DPA El Hajeb, CA	OT	standards for export, labeled products (organic, terroir)
Environ-mental	all interviewed	SWOT	arboriculture, climate, climate change, dam (increase irrigated areas), diseases, diversified agriculture, frost, geographical location (close to big cities), livestock and forage resources, low area for livestock, one crop per year, onion country, rain, soil quality, suitable area for crop diversity, water, weeds development

* the Agropolis, located in Meknes (center of the Saïss area), is an industrial zone built to favor agricultural development, with the aim to strengthen the processing and marketing of agricultural products. Its construction was funded by the second pillar of the "Green Morocco Plan; ONCA: National Agricultural Advisory Board; ONSSA: National Office of Food safety.

The overall SWOT/PESTLE diagram showed the dominancy of the classes Environmental, Economic and Social (the two last being almost equivalent) (Figure 1A). However, downscaling to each SWOT compartment gives a rather different picture (Figure 1B). Environmental arguments largely dominated (>50% of the number of arguments) in both Strength (abundant water and very good soil quality being the two most cited) and Threat (climate change/variability and diseases being the most cited) arguments. Environmental arguments were still very important in the Opportunity frame (31% of all arguments, with the climate enabling diversification, and the future dams) and not really considered as a Weakness (although decreasing water quantity and soil quality were mentioned) (Figure 1B). No Legal nor Economic argument were considered as strengths, and Social arguments dominated the Weakness frame (e.g., lack of collective action, of cooperation, difficulty to find extra-workers). Technological arguments were seen more as a Strength (e.g., "know-how", increasing number of tractors) and Opportunity (direct sowing technics, possibility to improve irrigation technics) (Figure 1B).

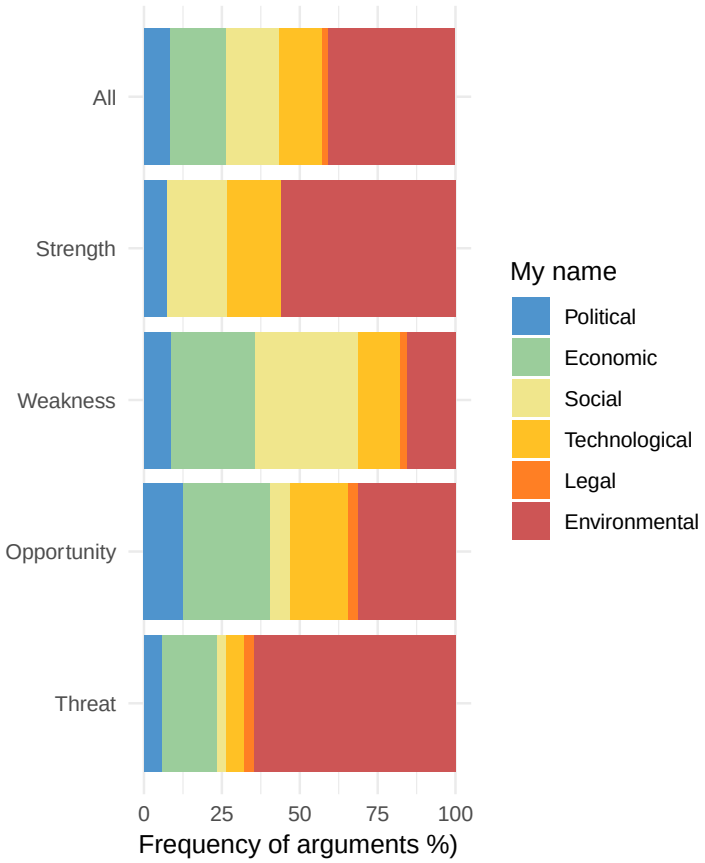

Figure 1. Distribution of PESTLE classes of for all SWOT arguments of the two types of actors (at the top) interviewed and according to each SWOT class.

COMPARISON BETWEEN THE TWO ACTORS' TYPES

Overall, the farmers' cooperatives had a more negative vision of agriculture than the local administrations, with more than 60% of arguments related to weaknesses and threats, and very few opportunities were identified (Table 2). While local administrations listed slightly more weaknesses than strengths, they identified more opportunities than threats.

Similarly, the PESTLE distribution profiles differed between the two types of actors. Legal arguments (Table 1) were cited only by local administrations' representatives, Environmental arguments were more cited by farmers' cooperatives than by local administrations (65.5% vs. 26.8%), and Technological and Social arguments were cited mainly by local administrations (Table 2). Finally, Economic arguments were (surprisingly) cited more by local administrations than by farmers' cooperatives (Table 2).

Table 2. Distribution of SWOT and PESTLE class for the two types of actors.

	SWOT class				PESTLE class					
Actors	S (%)	W (%)	O (%)	T (%)	P (%)	Eco (%)	S (%)	T (%)	L (%)	Env (%)
Farmers	23.6	29.1	14.5	32.7	9.1	14.5	5.5	5.5	0	65.5

Administra-tions	28.9	29.9	24.7	16.5	8.2	19.6	23.7	18.6	3.1	26.8

S: Strengths; W: Weaknesses; O: Opportunities; Th: Threats; P: Political; Eco: Economic; So: Social; T: Technological; L: Legal; Env: Environmental.

Combining SWOT/PESTLE allowed more insight into the preceding results. Only administrations' representatives identified Economic opportunities, such as ecotourism, new markets (e.g., Africa for onions) or attractiveness for investors. On the opposite, farmers' cooperatives cited many more Environmental weaknesses than the local administrations' representatives: impossibility of growing more than one crop each year, decreasing soil quality, lack of financial resources, and the "water issue" (quantity of water), also identified by one administration (DPA Meknes). Political arguments differed between the two types of actors, with threats (e.g., the "big farmer", rural enclosing) only cited by farmers' cooperatives vs. strengths (subsidies for agricultural development, presence of infrastructures) cited only by local administrations' representatives (Figure 2). This last argument thus appeared as oppositely perceived by the two types of stakeholders.

For the Social arguments, threats were identified only by farmers' cooperatives (lack of good advisory service), and strengths only by administrations (good qualification of workers, food advisory system). Again, this argument opposed the two types of actors. The Social arguments were overall much more developed by local administrations' representatives (Figure 2). Finally, only the representatives of local administrations identified Technological weaknesses (Figure 2), such as a low production level due to a low technicity of farmers and a lack of mechanization.

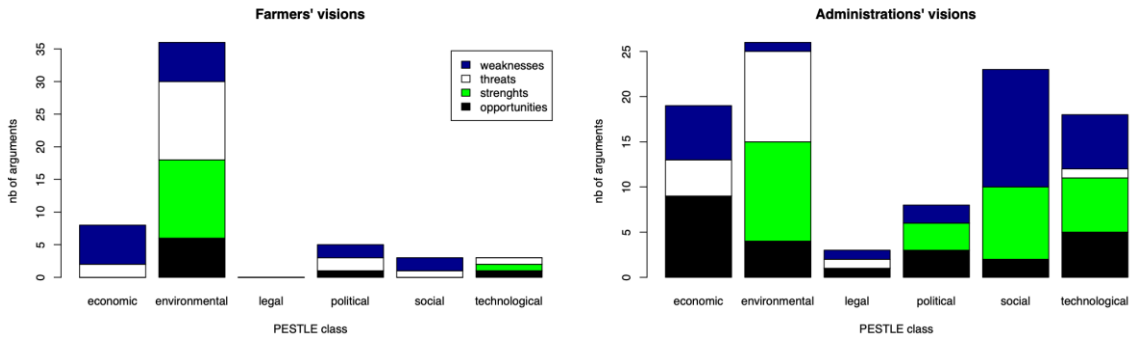

Figure 2. SWOT/PESTLE analysis according to the two types of actors

VARIABILITY OF VIEWPOINTS WITHIN TWO ACTORS' TYPES

The distribution of Strengths, Weaknesses, Opportunities and Threats concerning local agricultural development (specific to irrigated areas and crops) differed between the two cooperatives of farmers (Table 3). The cooperative of Eddakhla highlighted a more pessimistic view of agriculture, with weaknesses and threats representing about 2/3 of the arguments (30.4% and 34.4%, respectively). Both farmers' cooperatives identified several threats, but those of Regraga also foresaw several opportunities (18.8% of all arguments, Table 3). The threats identified by the two farmers' cooperatives related mainly to the Environment class, and concerned the climate issue (i.e., droughts, lower rainfall frequency, climate change, frost), development of pests and diseases, and the overexploitation of deep-water aquifers. While the Regraga members also identified Economic threats (overproduction of onion, commercialization

issue), members of the Eddakhla cooperative identified Political (the "big" farmer, and rural enclosing), Social (lack of advisory system) and Technological threats (lack of efficiency of chemical products). Similarly, opportunities identified by the farmers' cooperatives related to Environmental arguments, mainly regarding the climate (rainfall abundance) which allows a diversity of crops, especially grape and fruit trees. Members of the Regraga cooperative also identified one Political and one Technological opportunity, related to subsidies and technical improvement for irrigation (drip system).

This hence led to different representations in the distributions of Political, Economic, Social, Technological, Legal and Environmental classes between the two farmers' cooperatives. However, the arguments of type "Environmental" dominated for both cooperatives, followed by Political arguments for the Eddakhla cooperative, and Economic arguments for the Regraga cooperative (Table 3). Surprisingly not dominating, Economic arguments were perceived by Eddakhla members as weaknesses (commercialization issue, lack of funding, high cost production) only, and both as weaknesses and threats by Regraga members (lack of funding, soil quality for the weaknesses, and commercialization issues and overproduction for the threats).

The visions of local administrations' representative were more equally distributed between Strengths, Weaknesses, Opportunities and Threats (Table 3). The ONCA administration displayed the most different distribution, by identifying more weaknesses than strengths (Table 3). Consistently with farmers' cooperatives, all local administrations perceived more threats than opportunities in the near future. Threats were also mainly Environmental (climate, resource overexploitation, diseases), Economic (increasing price of inputs, no insurance system, overproduction and difficulty of opening new markets), with one Legal (standards) and one Technological (difficulty to stock perishable products) argument. The opportunities foreseen by local administrations were more numerous and diverse, especially for the Chamber of Agriculture (all PESTLE classes), and less for ONCA (only Economic and Technological arguments). One noticeable opportunity concerned the possibility of attracting new investors, identified by all local administration but the DPA of Meknes.

Regarding the Pestle classes, Legal arguments were identified only by two out of four local administrations (Table 3). These concerned labelling and standards. The other classes gathered arguments consistent between the different stakeholders. Social arguments were listed by the four local administrations. The DPA of El Hajeb was the only one to identify Social opportunities, e.g., land to mobilize, advisory structures. The four administrations identified Social strengths, related to qualified workers, advisory structures, and the presence of research institutes and young farmers. Social weaknesses were also identified by three out of four local administrations (all except the DPA of Meknes). They were the most numerous (57% of arguments of the Social class), and related to the lack of farmers' organization/coordination, the bad organization of interprofessional structures, the lack of specialized workers, the issue of succession (parceling out of land), and the too low supervision rate.

Table 3. Distribution of SWOT and PESTLE class for the arguments mentioned by the two groups of farmers and the four local administrations

	SWOT class				PESTLE class					
Actors	S (%)	W (%)	O (%)	Th (%)	P (%)	Eco (%)	So (%)	T (%)	L (%)	Env (%)

Coop. Eddakhla	26.1	30.4	8.7	34.8	17.4	13	8.7	8.7	0	52.2
Coop. Regraga	21.9	28.1	18.8	31.2	3.1	15.6	3.1	3.1	0	75
CA	28.6	22.9	28.6	20	8.6	17.1	22.9	14.3	2.9	34.3
DPA El Hajeb	28.6	28.6	28.6	14.3	9.5	14.3	28.6	14.3	9.5	23.8
DPA Meknes	28.6	21.4	28.6	21.4	7.1	28.6	14.3	21.4	0	28.6
ONCA	29.6	44.4	14.8	11.1	7.4	22.2	25.9	25.9	0	18.5

Coop.: cooperative; S: Strengths; W: Weaknesses; O: Opportunities; Th: Threats; P: Political; Eco: Economic; So: Social; T: Technological; L: Legal; Env: Environmental

DISCUSSION AND CONCLUSIONS

DIVERGING PERCEPTIONS OF AGRICULTURAL DEVELOPMENT

The analyses of the SWOT comparison highlighted a higher homogeneity between the visions of local administrations, despite their different roles, than between the two groups of farmers, from two neighboring cooperatives but with divergent perceptions. The main differences between the two farmers' cooperatives could be linked to their history and perception of the future. For instance, the group for which the strengths were less numerous (Regraga) is the oldest one (creation in 1972 vs. 1991 for Eddakhla), in which land conflicts exist, due to succession issues and land fragmentation leading to more land transfer operations. This oldest cooperative was also foreseeing more opportunities, which could be linked to the presence of younger farmers, with more aspirations than the older members of the Eddakhla cooperative. Since the individual land distribution in 1991, these latter members have not had the time to capitalize and individualize their production process, thus remaining trapped in sharecropping processes in order to finance their agricultural activities. These inter-generational specificities have already been identified in this region through a role-playing game developed by Ameur *et al.* (2015). In this study, undertaken in the same area, the authors highlighted that older farmers adopted a "defensive strategy" and were more risk-averse than younger farmers (generally the cooperative's next generation), who look forward to developing a more entrepreneurial agriculture, and explore different futures (Ameur *et al.*, 2015). Regarding the potential opportunities, while the highest presence of investors in the Regraga cooperative could be seen as an opportunity foreseen by these farmers, it was not cited. By grabbing their resources, the "big farmers" have been perceived as a threat by the other cooperatives, in opposition to the view of all local administrations' representatives. For these, they are seen as an opportunity, as they are supposed to achieve the agricultural prowess of the Green Morocco Plan. This may be linked to the dualistic representation of Moroccan agriculture. Even though the Green Morocco Plan is also supposed to support small-scale and subsidence-oriented farming, this dual representation was blamed by farmers, tagging large-sized farms as a threat. The Green Morocco Plan, following the land reform cooperatives, attracted new actors looking for easy profits, among which private urban investors (Petit *et al.*, 2018). Although Petit *et al.* (2018) qualified these as

"dilettante farmers [and] not entrepreneurs", their projects have been strongly subsidized. This could explain the farmers vs. administrations viewpoints.

DISCREPANCY AROUND THE ADVISORY SYSTEM

Another main difference between farmers and administrative institutions concerned the advisory system, seen both as a Strength and a Weakness by the institutions (existing training system, but a low number of advisers), while one group of farmers mentioned a complete absence of the advisory sector. This discrepancy is of major importance, as a strong advisory system is an important element for agricultural systems to develop, innovate, and increase their sustainability and resilience (Dugué *et al.*, 2014; Dugué *et al.*, 2015), and to help strengthen farmers' individual and collective capabilities (Baccar *et al.*, 2018). This discrepancy could be linked to the quantitative aspect identified by the local administrations: farmers may not recognize the existence and legitimacy of the (public) advisory system if they do not have access to it. Another reason could be linked to the potential confusion between a public and private advisory system. In the 1980's and 1990's, the disengagement of the Moroccan State led private operators (e.g., suppliers of inputs and agricultural equipment, agro-business structures, etc.) to integrate the agricultural advisory system, especially regarding technical advice (Dugué *et al.*, 2014). This led, in some areas (e.g., non-irrigated), to more regular contacts between farmers and these private advisors as compared to public advisors. More recently, the Green Morocco Plan planned to further integrate this private advisory sector within its policy, by e.g., financing their interventions (as this would be, for the State, more economically efficient) (Dugué *et al.*, 2014). However, part of these interventions could still have to be paid by farmers, thus limiting the scope and impacts of the private advisory sector to the wealthier farmers. Moreover, according to Dugué *et al.* (2015) most family farmers consider that advices have to be free, and would thus be reluctant to fund it themselves. This access to the advisory system could increase the socioeconomic differentiation between farms, already currently very large, and linked to the access to groundwater, land, and more recently to financial capital (Ameur *et al.*, 2017a). This however remains a hypothesis, as the distinction between private and public was made by the local administrations: "public supervision is limited"; while this specification did not appear in the farmers' discourses.

INDIVIDUAL OR COLLECTIVE?

Overall, the social arguments were overall much more developed by the local administrations' representatives as compared to farmers' cooperatives. One main argument developed by both types of actors concerned the collective level, identified as a major weakness (40% of all weaknesses identified globally). These arguments were related to the lack of collective action and organizations of farmers (cooperative functioning, community work, collective crop planning), of professional and inter-professional organizations, but also between the local institutions. Lack of collective actions could hamper the development of agriculture, and even endanger it. For instance, regarding the groundwater depletion and the necessity to install drills to attain confined aquifers (to replace now useless shallower structures), collective funding could be an option to face the impossibility for each individual family farmer to fund this operation. However, the distrust of collective action observed locally prevents such investments, which could moreover be subsided under some conditions (Dugué *et al.*, 2015). Similarly, collective work could allow resource-constrained farmers to increase their production. Although this was observed for some farms in the Saïss region (for the resources: agricultural material, collective work, and knowledge sharing) (Baccar *et al.*, 2018), it is declining (Dugué *et al.*, 2014). Similarly, a collective crop plan could help to face water depletion though a better control of water consumption (Ameur *et al.*,

2018). This lack, and decreasing, will for collective action is due to the history of agricultural land in Morocco, the de-collectivization process being still recent in some areas (e.g., 1991) and imposed cropping patterns remained even after, although land was attributed to individuals (Ameur *et al.*, 2017b). This led to a strong wish of farmers for their autonomy, which involved an individualization process, while, at the opposite, collective work was linked to "a painful state-imposed past" (Ameur *et al.*, 2017b). This independence is both from the state and from fellow assignees, who were enrolled in the collective actions of cooperatives (Petit *et al.*, 2018). However, one can also note a generational gap for this individual vs. collective issue; with young farmers involving themselves more in collective thinking (Ameur *et al.*, 2015).

ENVIRONMENTAL CONCERNS

Finally, one main result of our study concerned the "environmental" vision of the different actors interviewed. First, environmental issues were more significant for farmers' cooperatives than for the local administrations' representatives. Second, these issues were not identified at the same time scale: weaknesses for farmers vs. threats for farmers and administration (e.g., climate change; water scarcity). It is interesting, for instance, that climate change was cited only by two out of four local administrations; while climate variability was cited by only one. These were two main focuses of farmers, cited numerous times during the workshops. This is also true for another environmental issue, i.e., pests, diseases and weeds. These differences could be explained by the time- and space- scales of the two different types of actors involved in this study. While farmers, part of this changing environment, who suffer from depleting groundwater and from the "casino game" type of markets, are continuously expected to pay to update their adaptive strategies (e.g., more capital for deeper drilling), local administrations have a broader vision in space, which is also irregular in time. These differences in time and space observations could be linked to reduced contacts between these administrations and farmers, apart from the subsidizing system (by definition discontinuous in time). Overall, these environmental concerns focus on the productive resources, and their uncertain future, especially with regards to water availability. This could be linked to the phenomenon of exclusion of farmers observed for the irrigated system (Ameur *et al.*, 2017a): as water tables decline, farmers need to invest money that smaller farmers do not have, leading to their marginalization.

CONCLUSIONS

Our study aimed at building SWOT frameworks with two different types of actors, farmers/practitioners and responsibles for local agricultural administrations, represented by two and four groups, respectively. Analyzing those results according to the PESTLE concept, our results highlight discrepancies between visions on different points: the environmental concerns, the role and importance of the advisory system, and the opportunity or danger represented by investors. One common point concerned the lack of current collective action and vision, partly explained by the agrarian history. Surprisingly, the economic issues were more cited by the administrations' representatives than by the farmers' cooperatives. These results highlight different ranking of concerns (both in the SWOT and PESTLE frameworks). This could hamper the efficiency of the agricultural sector to develop and favor the alleviation of poverty, while facing the challenge of limiting rural exodus. To complete this diagnosis study, it would now be interesting to share our results in an enlarged arena of actors, in order to (1) acknowledge/update these results, and (2) elicit and analyze the reasons of the identified differences. This shared diagnosis would then be a first step towards designing more sustainable and resilient agricultural systems for the Saïss region.

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