

# Analyzing risk management in Mediterranean Countries: The Syrian perspective

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## 1. Introduction

During the last decades the world has been experiencing significant changes, such as a growing globalization, rapid climate changes, fast population growth, frequent political instabilities, economic and financial crises. Within this context, the agricultural sector is starting to play again the central role that has been neglected for many years. Developed and developing Countries are posing great attention to global challenges and a great effort for planning policies to ensure adequate access to food, to protect farmers from price volatility and market risks, to support the adoption of effective tools of risk management (De Castro et al., 2011; 2012a; 2012b) In particular, during the last decades, a growing literature is focused on strategies and policies to best manage the negative effects of volatile commodity markets volatility (*cfr.* Larson, et al., 2006 for a survey).

As far as risk management is concerned, the recent scientific debate underlined the importance of distinguishing po-

## Abstract

*Over the last years, Mediterranean Partner Countries (MPCs) have faced major political, institutional, economic and societal changes. As a matter of fact, the agricultural sector has been influenced by global trends and has become more and more exposed to world dynamics. The resulting exposure of MPCs' primary sectors to risks has attracted great attention to the existing risk management tools, as well as to the role of public interventions. Our paper deepens in the risk management status quo in Syria and explores the possibility of new policy interventions. The analysis has been carried out through a field activity that allowed to understand the issue based on experts' opinions. We performed a Delphi Method in selected Farming Systems in order to underline the key aspects of risk management in Syria: while providing empirical evidence of the main issues in risk management in Syria, the paper aims to put new feasible policy interventions under the spotlight.*

**Keywords:** Risk Management, Agricultural Policy, Syria, Farming Systems, Delphi.

## Résumé

Ces dernières années, les pays partenaires méditerranéens (PPM) ont connu d'importants changements politiques, institutionnels, économiques et sociétaux. Dans les faits, le secteur agricole a été influencé par l'évolution à l'échelle globale et a été exposé de plus en plus aux dynamiques mondiales. Par conséquent, vu les risques auxquels a été exposé le secteur primaire des PPM, une attention particulière a été accordée aux outils de gestion du risque disponibles actuellement et au rôle des interventions publiques. Dans le présent article, nous avons examiné l'état actuel de la gestion du risque en Syrie et exploré la possibilité de réaliser de nouvelles interventions politiques. L'analyse a été effectuée en menant une enquête sur le terrain avec des experts et elle a permis de mieux appréhender la question en considérant leurs opinions. Nous avons appliqué la méthode Delphi à des systèmes de culture sélectionnés afin de souligner les aspects fondamentaux de la gestion du risque en Syrie : d'une part, nous avons fourni des preuves empiriques des questions principales relatives à la gestion du risque en Syrie et d'autre part, nous avons attiré l'attention sur de nouvelles interventions politiques qui pourraient être envisagées.

**Mots-clés:** Gestion du risque, Politique agricole, Syrie, Systèmes de culture, Delphi.

licy and planning interventions from individual coping strategies. The former need to be implemented at national or regional scale, while the latter are farmer-specific and affected by households behavior. Several scholars distinguished risks according to the source of uncertainty (e.g. price, production, and income risks), the scale of occurrence (idiosyncratic and systemic risks) and the frequency of occurrence (rare natural disaster or more frequent risks). Moreover, great attention is paid to the efficiency of policy interventions as well as to the ability of households to self-insure from risks or to share risks within communities (e.g. Hazell, 1982; Antle, 1989), by adopting informal mechanisms (Fafchamps, 2003; Dercon, 2002, 2004) or formal mechanisms in in-

complete markets (Moschini and Hennessy, 2001).

As the spectrum of types and severity of risks in agriculture is broad, especially in developing countries, scientists have reached a consensus on the importance to study risk management strategies and policy interventions paying attention to several factors: farming systems, climate conditions, policies, and institutional settings (Larson et al., 2006).

Despite a vast literature is investigating the peculiarities of risk management strategies in developing countries, the topic is still under-investigated in the Mediterranean Countries (Tudisca et al., 2012), and particularly for Syria, in which the lack of adequate risk management strategies and

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policy interventions call for *ad hoc* studies aimed to a comprehensive understanding for a better policy management.

The present paper is therefore aimed to analyze the current situation of risk management strategies and policies in Syrian agriculture focusing on relevant and representative Farming Systems (FS), in order to underline current and future challenges. The remainder of the article is as follows: next section is aimed to describe the current situation and the challenges in Syrian agricultural sector; paragraph 3 is dedicated to the methodological approach; section 4 and 5 are respectively aimed to present the results and provide policy and conclusive remarks.

## 2. Agricultural Risks in Mediterranean Countries

During the last decades the agricultural sector in most developing countries, and particularly in Mediterranean Partner Countries (MPCs), faced several changes. A major change is represented by the increasing integration of the global value chain, and in turn the exposure of the primary sector of developing countries to several new risks. In particular, the increasing specialization of farming activities, the larger dependency of farm households from the world markets, introduce the risk to import instability from abroad. Moreover, there is a tendency in MPCs rural societies in reducing diversification of activities, a traditional strategy to cope with risk. Within such a framework, most MPCs are experiencing difficulties in coping with risks due to a structural lack of institutions or market tools that could help individuals as well as the collectivity implementing risk management strategies.

As far as agriculture is concerned, it is worth to emphasize that it is typically a risky activity. Despite a large attention is often given to events carrying large loss threatening the survival of the farm household, making decisions in a risky environment is a reality either for small and large farms. According to the scientific literature, risks in farming activities may be classified according to their spatial dimension (e.g. they might have a systemic character if negative events, called crisis or natural disasters, hit at the same time many farmers in a territory), to their severity (e.g. the damages can be negligible or significant), to their frequency being rare or frequent events. Farm households can cope with risks linked to agricultural activities adopting strategies based on the use of mix of different risk management instruments, that can be broadly classified within five groups: avoiding, retaining, preventing, reducing and transferring. Each instrument bears either a direct cost or an opportunity cost. The use of some of these instruments is constrained by the existence and accessibility of their markets that, particularly in developing countries, can be missing or incomplete.

In order to deal with agricultural risks, households can adopt several strategies, either *ex ante* or *ex post*: the former are undertaken by people to prevent the negative effects of risky activities and includes, among others, the income smoothing, the income diversification; the latter are adopted to reduce the consequences of bad events and might include strategies such as smoothing consumption and self-insurance (Dercon, 2002).

## 3. Challenges in Syrian agricultural sector

The Syrian agriculture is exposed to several types of risks usually faced by developing countries. In particular, Syrian farmers need to deal with production, price and marketing, financial risks (Table 1).

The production risk is due to external factor such as adverse climate conditions (e.g. drought, heavy rainfall, frost,

Table 1 - *Main risks in Syrian agricultural sector.*

Type	Causes	Crops interested
<i>Production risk</i>	Adverse climate conditions, pests and diseases.	<i>Strategic crops:</i> wheat, barley, cotton, sugar beet, vegetables.
<i>Price and marketing risk</i>	Inputs prices changes, output price decreases, unsold harvest due to bad quality.	<i>Strategic crops:</i> wheat, barley, cotton, sugar beet, vegetables. <i>Livestock.</i>
Financial risk	Lack of liquidity.	<i>All crops.</i>
Institution risk	Changes in support policies, such as marketing and subsidy policies.	<i>Subsidized crops.</i>

Source: classification adapted from NAPC (2011).

storms, floods), pests infection and diseases which cause unexpected bad harvests. According to the report by the NAPC (2011), the most exposed crops to production risks are the strategic crops (e.g. wheat, barley, cotton and sugar beet) as well as vegetables, trees and animal production.

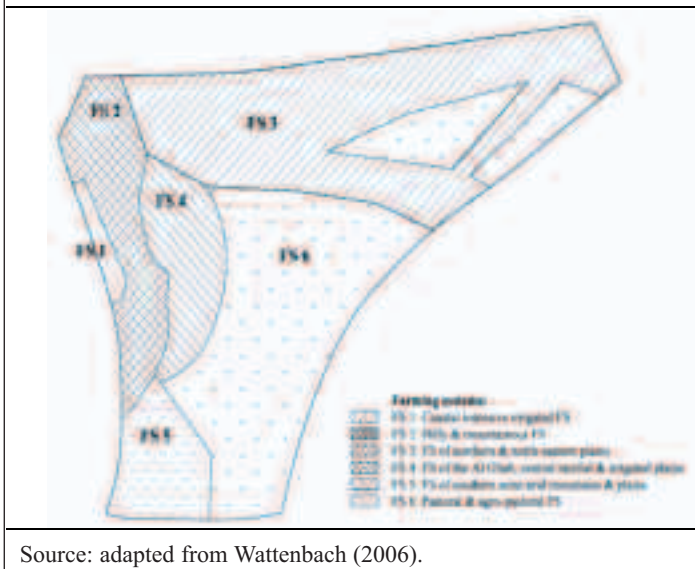
Strategic crops are also seriously affected by prices and marketing risks. The former are related to crops free marketed: in particular farmers face the risks of increasing inputs prices. The latter occur due to an unexpected decrease in products quality, and the consequent inability to sell the produce.

Financial risks include the difficulties in access to credit. As a consequence, farmers tend to access to informal credit - by selling the product in advance to prevent low prices, or by buying and storing inputs at convenient price.

Finally, the institutional risk is perceived as the risk of changing policies: as for many crops a large part of farmers income relies on subsidies and marketing policies, changes in agricultural policies would tend to affect farmers income and future decisions.

To the best of our knowledge, there has been little work to analyze the types of risks faced by Syrian farmers. A recent study conducted by the National Agricultural Policy Center (NAPC) describes the characteristics of the Farming Systems (Wattenbach, 2006): the study describes homogeneous zones for agricultural production, agro-ecological and socio-economic characteristics (Figure 1).

Figure 1 - Farming systems in the Syrian Arab Republic.



According to Wattenbach (2006), farmers located in different Farming Systems would face different types of risks. It is worth to provide a description of the main characteristics of FS 1, 2 and 3 before presenting the methodology and the results of our analysis.

The Farming System 1 is a coastal zone characterized by mild climate and favorable agro-ecologic conditions. It consists of numerous small-sized farms (1% of total Syrian farms), of limited size (on average 1.3 cultivated hectares). The FS presents relatively good infrastructure for input supply and market access which allow for market-oriented and high-profitable – fruits, open field and greenhouse vegetables. Rural households are weakly dependent on agriculture, whilst relevant sources of income are the public sector, and the processing industries. According to the NAPC perspective, the main risks faced by farmers in FS 1 are the climatic risks, despite they are relatively lower than in most other systems and limited to perishable crops<sup>1</sup>, the environmental risks, caused by a massive use of fertilizers and other chemicals, the price risks, associated to intensive cultivations of perishable crops. Furthermore, small householders face financial risks due to the lack of savings to compensate crop or price failures.

The farming system is of great interest as it shows, among the six Farming Systems, the greatest opening and adaptability to market opportunities.

As far as Farming System 2 is concerned, it covers the Syrian western mountains from Latakia and Rural Damascus to the northern hills in Idleb and Aleppo governorates and account for 6% of the area of Syria, 15% of its population and 28% of farm holders. The FS is affected by high annual rainfall and presents large extents of perennials and forests. The economy of small farms (less than 2 hectares

<sup>1</sup> In particular, frost, pests and storms are the most common risks.

on average) is based mainly on tree crops, and livestock: agriculture is not the primary source of income. The main crops are olives, apples, cherries and tobacco. The latter is under a strict control of agricultural plans and largely influenced by the processing industry.

During the last decades, the farming system has been interested by a significant decline of land dedicated to livestock, or cherry and apple cultivation, while the cultivation of olive has been growing more and more. In addition, the share of householders employed outside agriculture has rapidly increased due to the improvements in the education systems and to social changes. The FS has been also interested by a constant migration of labor forces to neighboring Farming Systems.

The existing agricultural policy influenced severely the economy of the FS: firstly, the policy of support to the cultivation of cotton in neighboring systems pushed the migration flows; secondly, the policies supported by public investment in rural education exacerbated the phenomenon of land abandonment; thirdly, the policy of expanding olive areas at national level has been accused as the main responsible for the olive price decline and the crises in the whole sector. As far as the latter issue is concerned, there is a consensus on the necessity to support export-oriented policies with interventions to improve the quality of olive oil by reinforcing the storage, processing and quality control facilities.

The Northern and North-eastern Plains Farming System, or Farming System 3, is the largest for size (it accounts for 4.7 Million hectares), and covers one quarter of the national area, include one third of agricultural holders and half of cultivated lands. The importance of FS 3 relies on its high dependence on strategic crops, such as wheat, cotton and barley, which account, respectively, for 49%, 6% and 18% of the total area. The farms are of relatively large size and poorly market-oriented: householders are characterized by a low level of education compared to the national average. The policy interventions are limited to the wheat, sugar beet and cotton sectors.

A peculiar risk of FS 3 is the limited access and availability of water: the raising demand for water and the restrictions to the extraction due to international treaties are serious limitations to the expansion of agriculture. As a consequence, there is a large policy effort to improve water use efficiency (e.g. policy instruments encourage the development of drip irrigation equipment to overcome existing mechanical problems related to the salinity of irrigation). The FS3 is highly exposed to policy change risk, due to its high dependence on the (usually excess) cultivation of wheat and cotton.

#### 4. Methodological approach

The methodological approach adopted has been the Delphi Survey, a method for consensus-building by using questionnaires delivered in multiple iterations in order to collect data from a panel of selected subjects (Hsu and Sandford,

2007). It might be adopted to achieve numerous goals, such as to orient policymakers towards the best policy over a set of alternative programs, to explore the latter in order to gain different judgments, to reach consensus among experts, to compare experts' judgments on key topics, to educate the respondent on different and interrelated policy aspects. The Delphi method is extensively adopted as a tool for policy evaluation (Ouabouch *et al.*, 2011) identification of priorities and development of conceptual frameworks (Okoli and Pawlowski, 2004).

The survey was implemented to understand key aspects of agriculture risks management in Syria. The Delphi Method has been carried out to deepen the topic and to describe the *status quo* of risk management in Syria. The survey was conducted in subsequent steps, by interviewing several experts from key sectors – bankers, traders, wholesalers, insurers, policy makers have participated in our survey – as well as consumers and farmers. The latter category include also farmers' leaders, members of farmer association and members of peasant union.

As described above, Syrian Farming Systems are agro-climatic zones that might differ by numerous characteristics: conducting two distinct Delphi Methods for Farming Systems 1 and 2 and for Farming System 3 seemed a useful way to precede. As far as the former, it has been implemented in the Latakia Governorate, more precisely in Latakia Center and Jableh, while the latter has taken place in the Aleppo Governorate, particularly in the districts of Al-Bab and Sfereh. The selection of respondents included fifty experts for each Delphi Method.

The Delphi method has been carried out from June to September 2011, by means of successively more refined questionnaires to understand the risk management policies and strategies implemented in Syrian agriculture. As preliminary step, we administered an explorative questionnaire intended to open up on the subject and discover as wide a range of perspectives as possible. In particular, the preliminary questionnaire has been aimed to gain a deeper insight in the relevant aspects: types of risks, spatial and temporal dimensions of risks, private strategies and policies to manage and cope with risks, policy suggestions. The subsequent rounds have been aimed to consolidate experts' opinions and reach consensus on key issues in risk management policies and strategies in Syrian agriculture. The questionnaires have been structured in different sections: types of existing risks; risk management and coping strategies; remarks on risk management strategies and policy interventions.

## 5. Results

### 5.1. Farming systems 1 and 2

Our analysis shed some lights on the characteristics of risk management in Syria. Firstly, it is worth to recall that wheat, vegetables and cotton are the most common crops in Farming system 3, for which price and market risks are the main risks faced by farmers. The experts argue that the lack

of marketing culture and facilities are underlying problems. Production and yield risks – particularly frost, pest and diseases, and storm – are secondary problems, while policy change risks and financial risks are perceived as negligible risks. Moreover, according to experts, the influence of international dynamics on income and expenditure are rather limited, therefore they assert that local economies are not affected by international dynamics.

The crop and income diversification are the most relevant ex-ante strategies for risk-coping in Syria. Moreover, farmers tend to cultivate specialized crops – such as crops resistant to pest or drought – and to adopt specific agronomic techniques in order to cope ex-ante with risks. On the contrary, income skewing, precautionary savings and production/marketing contracts, that is the most sophisticated strategies, are barely adopted and, indeed, seem to be considered not important. Among the feasible ex-post strategies for risk-coping, recurring to formal credit is the most relevant in Syria, followed by the occupation of members of family outside of the agricultural sector. On the contrary, experts assert that asset liquidation and informal credit consumption smoothing, safety nets, support programs and welfare policies are not relevant strategies.

As far as exposure to risks is concerned, a vast majority of experts argue that fruits are the most exposed specialty crops to price risks. In particular citrus, apricots, apples, peaches are largely exposed mainly due to their perishability and the lack of storage facilities. During the last decades, the introduction of new species and varieties in FS 1 helped to reduce price risks, showing a feasible and efficient way to cope with price risks (Wattenbach, 2006). Olive oil, an important cultivated crop in the Farming Systems under consideration, is the least exposed specialty crop to price risks: this is not surprising as olive oil can be easily stored for years. Farmers cope with price risks by selling their produce to distant markets, or by contracting the sale before harvesting. Moreover, as marketing cost account for a significant portion of realized price, marketers tend to reduce the quality of transportation facilities such as the containers- to avoid losses due to unsold produce. Differently, farmers cope with olive oil production and yield risks by adopting agronomical techniques aimed to stabilize yields reducing inter-seasonal fluctuations. Finally, farmers cope with policy changes risks by reducing inputs usage, in particular using reduced quantities of waters and fertilizers.

According to experts farmers who do not have savings accounts usually save money in alternative ways - *e.g.* buying houses, land, cars. Some experts argue that savings through bank account is limited by the necessity of (sufficient) liquidity to manage and improve farm infrastructures.

Agricultural cooperative banks are the main institutions to access formal credit, while receiving personal loans from non-agricultural sectors is the most common way to access informal credit. As argued by a vast majority of experts, informal credit is likely to be costly, thus farmers are keener

to access formal credit. However, there are several limitations in the formal market: firstly, it is poorly managed; secondly, the lack of collaterals due to excessive land fragmentation limit the access to credit; thirdly, the complexity of procedures is a further friction in markets for formal credit. As to informal credit, experts argue its main limitation is due to excessively high interest.

As known, there is a fund for insuring cattle at the agricultural chamber but it seems that farmers rarely stipulate contracts to insure their cattle. In general, there is a necessity to deepen the analysis on formal and informal credit markets and insurance markets.

## 5.2. Farming system 3

According to experts opinion, citrus, olive, apples and tomatoes are the most common crops in Farming system 3, in which the price and market risks are considered the main risks faced by farmers most probably due to marketing problems. The main production and yield risks are drought, frost, pest and diseases. A vast majority of experts argue that vegetables – in particular tomatoes, onion, garlic and cucumbers - are the most exposed specialty crops to price risks. Among vegetables, potato and eggplant seem the least exposed to price risks. Moreover, cereals, olive oil and dried fruits are the least exposed specialty crops.

The main strategies for risk-coping are crop and income sources diversification, at the detriment of more complex strategies (*e.g.* income skewing, specialization, precautionary savings and production/marketing contracts). In particular, many experts argue that the diversification is attractive for its perceived effectiveness. Indeed, they also assert that farmers have weak knowledge of alternative strategies, and mostly benefit from the government policies. As far as ex-post strategies is concerned, the informal credit seems the most preferred, followed by consumption smoothing: experts claim that farmers prefer those strategies for their simplicity and for the absence of alternatives. Among the secondary strategies, recurring to formal credit and occupying householders in jobs out of the agriculture sector are the most preferred. Finally strategies such as safety nets, support programs and welfare policies are rather negligible. According to the Delphi Method, farmers cope with price risks selling the products in distant markets, selling the products before harvesting or changing the containers to less quality in order to reduce the marketing cost. Alternative strategies include changing crops or seeds and reducing the cultivated hectares. Moreover, farmers are skeptical to adopt advanced agronomical techniques to improve or stabilize yields.

The policy change risks seem less important, as many crops receive a low support from the government, and the crucial issue is likely to be the high volatility of input prices. In order to cope with policy changes risks, farmers tend to reduce the inputs, to borrow inputs, and most important, they plant low-inputs crops. The latter strategies is not only the most adopted, but also the most effective one. Finally, farmers cope with idiosyncratic (or unsystematic) risks,

such as illness and death, through the social help from family members (*e.g.* by distributing the land to several family members).

Similarly to FS 1 and 2, agricultural cooperative banks are the main institution to access formal credit, and receiving personal loans from wholesalers, friends or neighbors is a commonly adopted way to access informal credit. Finally, The Delphi Method highlighted the necessity to deepen the analysis on formal and informal credit markets and insurance markets: the potential of those risk management strategies.

## 6. Conclusive remarks

Risk management in agricultural sector is of great interest both for policy-makers and for farmers. We deepen in the current status of policies and strategies adopted in Syria to cope with the main risks. The analysis has been conducted by interviewing a set of experts and informed farmers to reach consensus on the challenges the government and the farmers are called to face.

By collecting information on different Farming Systems, we underlined the key aspects of risk management in Syria. Firstly, our analysis underlines that a major problem of Syrian agriculture is the lack of facilities for marketing. In particular, as stressed by expert's opinions, farmers face severe difficulties during the marketing operations, especially for perishable products. The lack of adequate infrastructures, and efficient markets challenge the crossing of supply and demand sides. As mentioned, such a problem is exacerbated for perishable products: as it is well-known, perishable products (*e.g.* fresh vegetables) might incur in large losses for spoilage during the transportation reflected in lower final prices and income losses for farmers. Moreover, the higher the perishability, the higher the sensitiveness of the produce to market crises (Santeramo, 2012). Therefore, the contingent situation of lack of marketing and storage facilities, in view of the importance of vegetables in Syrian agriculture, call for policy interventions in order to help farmers to cope with price and production risks and stabilize their incomes (Capitanio et al., 2011; Enjolras et al., 2012; Capitanio and Adinolfi, 2009). Secondly, experts argue that the lack of liquidity, as well as the low degree of access to formal and informal credit are major problems. In agreement with Cafiero et al. (2007), we believe that promoting the constitution of precautionary saving account – by means of direct or indirect incentives – to increase the ability of self insuring against frequent risks should be a priority in the policy interventions agenda.

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## References

- Antle, J.M. (1989). Nonstructural Risk Attitude Estimate. *Journal of Agricultural Economics* 71(3): 774–84
- Cafiero C., Capitanio F., Cioffi A., Coppola A. (2007). Risk and Crisis Management in the Reformed European Agricultural Policy. *Canadian Journal of Agricultural Economics*, Vol. 55(4), 419-441.
- Capitanio, F. Adinolfi, F. (2009). “The relationship between agricultural insurance and environmental externalities from agricultural input use: a literature review and methodological approach”. *New Medit Journal*, 3: 41-48.
- Capitanio, F., Bielza M.D.C., Cafiero, C., Adinolfi, F. (2011). “Does market competitiveness significantly affect public intervention in agricultural insurance: the case in Italy”. *Applied Economics*, 43(27): 4149-4159.
- De Castro P., Adinolfi F., Capitanio F., Di Falco S. (2011), “Building a new Framework for the Common Agricultural Policy: A Responsibility Towards the Overall Community”, *Eurochoices*, 10(1), 32-36.
- De Castro, P., Adinolfi, F., Capitanio, F., Di Pasquale J. (2012a). “The future of European agricultural policy. Some reflections in the light of the proposals put forward by the EU Commission”. *New Medit Journal*, 2: 4-10.
- De Castro, P., Adinolfi F., Capitanio F., Di Falco, S., Di Mambro A. (2012b). *The Politics of Land and Food Scarcity*. Routledge - Earthscan, October 2012.
- Dercon, S. (2002). Income Risk, Coping Strategies, and Safety Nets. *World Bank Research Observer* 17(2): 141–66.
- Dercon, S. (2004). *Insurance against poverty*. Oxford University Press 2004.
- Enjolras G., Capitanio F., Adinolfi F., “The demand for crop insurance. Combined approaches for France and Italy”, *Agricultural Economics Review*, Vol. 13(1), pp. 5-15, 2012.
- Fafchamps, M. (2003). *Rural Poverty, Risk and Development*. Edward Elgar Publishing.
- Hazell, P. (1982). Application of Risk Preference Estimates in Firm-Household and Agricultural Sector Models. *American Journal of Agricultural Economics* 64(2): 384-90.
- Hsu, Chia-Chien & Sandford, Brian A. (2007). The Delphi Technique: Making Sense of Consensus. *Practical Assessment Research & Evaluation*, 12(10). Available online: <http://pareonline.net/getvn.asp?v=12&n=10>
- Moschini, G., and D. Hennessy. (2001). Uncertainty, Risk Aversion and Risk Management for Agricultural Producers. In *Handbook of Agricultural Economics*, vol. 1A, Agricultural Production, ed. B. Gardner and G. Rausser. Amsterdam: Elsevier Science.
- NAPC (2011). *The State of Food and Agriculture (Sofas)*. National Agricultural Policy centre (NAPC), Damascus, unpublished periodical report.
- Nehme N. (2007) Agricultural Risk Management In A Market Oriented Economy: The Challenges for Syrian Agricultural Policy. NAPC. Proceedings No. 23.
- Larson D. F., Anderson J. R., Varangis P. (2004). Policies on managing risk in agricultural markets. *The World Bank Research Observer*, Vol 19(2), 199-230.
- Okoli C., Pawlowski S. D. (2004) The Delphi method as a research tool: an example, design considerations and applications. *Information & Management*. 42, 15-29.
- Ouabouch, J. M., Garci Alvarez-Coque, J. M., Anido, J. (2011). L’avenir de l’Organisation Commune de Marché des fruits et légumes: existe t-il un consentement entre les spécialistes? *New Medit*, Vol. 10 (4), 1-11.
- Santeramo F. G. (2012). Price transmission in the European tomatoes and cauliflowers sectors. *Agribus: an international Journal (forthcoming)*
- Tudisca S., Sgroi F., Testa R., “Competitiveness and sustainability of extreme viticulture in Pantelleria Island” *New Medit*, Mediterranean Journal of Economics, Agricultural and Environment. Vol 10, n. 4, pp. 57-64.
- Wattenbach, H. (2006). Farming Systems of the Syrian Arab Republic. NAPC. Available online: [http://fao.org/world/syria/gcpita/pubs/policystudies/farming\\_system\\_tec\\_report/farming\\_system\\_tec\\_report\\_en\\_1-44.pdf](http://fao.org/world/syria/gcpita/pubs/policystudies/farming_system_tec_report/farming_system_tec_report_en_1-44.pdf)