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Driving initiatives for future improvements of specialty agricultural crops



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ABSTRACT

Today the global world is faced to address and meet the key challenges of agricultural development reliant on research and innovation actions. One of these actions is especially linked to the socio-economic requirements, foundational resources and rights of farmers to support agricultural production and outputs. As an agricultural output, some agricultural crops are proposed to satisfy as specialty agricultural crops according to the local and regional needs to enable improvements for all parties to provide good income, promotes equity, growth better livelihood and agricultural employment. These crops have some specific features and become increasingly important to have influenced on regional, national and multi-state agricultural research, development and extension initiatives. And also, they have leading effects on (i) food security, (ii) livelihood security and (iii) agricultural and rural development to make integration with the criteria such as economically significance, interests and feasibility of parties. Although the Agriculture Modality Paper, for agricultural issues released by The Chairman of the World Trade Organization (WTO) Negotiations on Agriculture, covers some criteria helping to define these crops, exactly there have been no globally common standards for identification them. However, it is questioned that how develop the specialty agricultural crops beyond identification of them. In this paper, firstly, it is aimed to address the key needs for future improvements of specialty agricultural crops. This mainly for designation of a framework for these crops covering all components in respond to this question integrated with agricultural innovation units and agricultural development sustainability within the innovation including their attributes and dimensions. Further, this schema focused on the prerequisites framework within the key priorities and the initiatives of innovation based specialty agricultural growth to make integration with ongoing agricultural policy and practice around the world. In follows, it is described the innovation units to improve production efficiency for specialty agricultural crops. Finally, it is represented the attributes and dimensions of sustainability with innovation through the specialty agricultural crop development. Integrated all these stages would provide a basis and methodology for sustainable specialty agricultural crops development strategies, growing under state guarantee in several world countries, following the drivers of agricultural innovation. And also it is expected to contribute to create an opportunity for farmers/organizations to produce such crops by accelerating the rate of innovation adoption within well-established priorities in agricultural rights. So, it is enabled to have an ability to cope with the effects of global agricultural challenges and emerging opportunities.

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1. Introduction

In the global world, one of the key priorities for development of agricultural cropping and management systems is; (1) provides raising income (2) promotes equity and (3) support to sustainable use of farmlands and natural resources beyond the increasing more

food and production (Bernal, 2005). Recall that, currently, the agricultural lands cover 36% of the total areas of the world (Xiao et al., 2014). Within this broad concept, agricultural crops and cropping is crucial for the social, economic and environmental growth of most countries in the developing world (WB, 2012). On the other hand, agricultural development in developing countries faces challenges and constraints related to food security, livelihood security and rural development. Such a dynamic context requires to continually innovating the facilities and actions for agricultural outputs and management systems if it is to contribute to socio-economic and environmental development (Kilelu et al., 2013). Moving from

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this, it is arguably sounded that over the next 40 years agricultural outputs, facilities and actions would have to increase agricultural production by an estimated 70% at least (Dogliotti et al., 2014a). In some parts of the world, agricultural outputs are described as a basic component of the social and economic dynamics (Delmotte et al., 2013). Especially providing wide spread of staple agricultural crops could have a significant role in the availability of agricultural crops production for a growing population (Abebe et al., 2013). In view of this, agricultural outputs and cropping productivity growth are essential for, mainly food security (WB, 2013) raising or improving incomes, especially in countries where the agriculture is main sector on large share of the economy and employment (FAO, 2013a). Thus for the next to responded the question is how much agricultural crops production should be extended towards future to meet the needs of growing population (Alexandratos and Bruinsma, 2012). In order to address these needs agricultural policies and strategies would be essential for more increases in agricultural productivity and efficiency (OECD, 2013) integrated with future applications, opportunities and directions within the sustainability and innovations through the new agricultural concepts and paradigms such as specialty agricultural crops approach.

It is noted that specialty agricultural crops have some features that seem likely to have influenced the agricultural research intensities (Alston and Pardey, 2008). Given the development period of the agricultural sector and market in today world, many of the agricultural crops are proposed to satisfy as specialty because of their visible effects on food security, agricultural employment (livelihood security) and rural development to the great majority and priority of the population (Cainglet and Stemmler, 2005). Developing countries should improve a common understanding for identification of specialty agricultural crops to both its socio-economic, agricultural and environmental development. Actually for developing countries it is hard to self-designate a growing number of specialty agricultural crops, so basic criteria for identification of specialty agricultural crops are inevitable (FAO, 2007). Defining specialty agricultural crops can be a challenging task as there is no consensus on a universal definition (Liang and Lim, 2011). If one is to perform any investigation in the field of specialty agricultural crops the term must first be defined through the boundary of what is or is not a specialty. Specialty agricultural crops are considered as products outside the main-stream possessing specific qualities, which differentiate them from standard crops (Wycherley et al., 2008). Further, it is rely principally on three basic criteria that must all be satisfied as specialty agricultural crops to be developed. First, the crop must be “economically significant”; second, there must be “producer interest”; and third, offering the product must be “feasible” (Ligon, 2011).

In view of this, each of developing countries should have new initiatives for future assessments and researches to development of its specialty agricultural crops with innovation driven policies beyond identification of them (ICTSD, 2005). The key impacts of innovation for identification of specialty agricultural crops are basically; (1) to enable improvements for the rights of farmers, also called specialty agricultural growers, to a better livelihood, employment and good income (Bartel, 2005) and (2) to enable to support research and extension through the socio-economic development for specialty agricultural crop farmers and organizations to encourage them and (3) to enable to support security of tenure to provide sustainable use of all specialty agricultural crop-lands (Cainglet and Stemmler, 2005). To do so, it should be focused on development of the standards and determination of the criteria for identification and improvements of specialty agricultural crops integrated with innovation oriented agricultural development reforms (Bartel, 2005). Additionally, it is required to build sustainable agricultural systems and to make agricultural policies to sup-

port food security, agricultural employment and rural development towards future improvements of specialty agricultural crops (FAO, 2005). An important question is how to enable the key improvements for development of the specialty agricultural crops in future global world beyond identification of them. Some selection criteria, proposed in The Chairman of the WTO Negotiations on Agriculture, especially based on both the modality agreed by WTO member countries in the July 2004 Framework document and extended within the Hong Kong Ministerial declaration (Ford et al., 2007) and Agriculture Modality Paper, taken place in 2006 by WTO (Taşdoğan, 2010). According to this frameworks current criteria for identification of specialty agricultural crops are as follows; (1) production of the product in total agricultural production (rural development), (2) consumption of the product in total apparent agricultural consumption (food security) and (3) employment of the product in the total agricultural labor force or in total agriculture employment (livelihood security) (FAO, 2003; Ford et al., 2007). Return the responding to the question posed on the beginning of this paragraph, in 2008 the US Department of Agriculture launched the Specialty Crop Research Initiative to promote innovative research and development, especially the crop science technologies integrated with the innovations and new technologies for specialty agricultural crops sustainability (Singh et al., 2009). There is no doubt that agricultural sustainability requires ongoing innovation at all level related in agricultural facilities, actions and practices (Vanclay et al., 2013). The sustainability is provided by innovations for improving agricultural output strategies, agricultural production policies and farmer actions linked to the directly or indirectly socio-economic and environmental dynamics (König et al., 2012). The innovation perspective provides an analytical framework to study technological change in agriculture as a process of actions and interactions among a diverse set of actors engaged in generating, exchanging and using knowledge (Hermans et al., 2013). Further it provides to support an understanding of how new agricultural activities are improved and widespread use of and how these processes can be well-adapted and well-regulated (Hermans et al., 2013). To response all demand driven needs of current global agricultural sector and market around the world it is strongly essential to adapt to innovation driven agricultural practices, policies, applications, actions and the other tools within the sustainability. Driving initiatives for future improvements of specialty agricultural crops provides insights into especially management of (i) cultivation process (ii) building farming and cropping systems (iii) production to consumption process (iv) domains and attributes through the rural development, food security and livelihood security for local/regional integrated agricultural innovation and sustainability.

2. Specialty agricultural crops over the global world

Agricultural markets, out of production, have growing effects on driving the improvements of the related agricultural crops. And they are signaling demand for differentiated agricultural outputs the parties such as farmers, traders, commodities and enterprises have some priorities for enabling high value crops options including differentiated agricultural crop products to increase their incomes (Niederhauser et al., 2008). To measure and support high value agricultural crops and their markets, growing recognition of concerns and interests are initiated through the adoption of specialty agricultural crops. Thus, based on The Food, Conservation and Energy Act of 2008, section 101 of the Specialty Crops Competitiveness Act of 2004 (7 U.S.C. 1621 note), and amended under section 10010 of the Agricultural Act of 2014, Public Law 113-79 (the Farm Bill), the specialty crops include and are defined as “fruits and vegetables, tree nuts, dried fruits, horticulture, and nursery crops (including floriculture)” (Ruiz-Altisent et al., 2010; Nair and

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