Food and Agriculture Organization of the United Nations

Red Palm Weevil Eradication Programme
GCP /RNE/012/MUL

ICARDA

Red Palm Weevil Eradication Project Steering Committee Meeting

Aswan, Egypt

Wed. 23rd and Thurs. 24th November 2022

Socioeconomic Impact Assessment of the Red Palm Weevil in NENA Countries (The Case of Egypt and Saudi Arabia): Ex-post Impact Assessment

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Background

- Palm trees play a significant roles in the economy, society, and environment of many communities in the NENA countries.
- In the world, more than 9.5 million tonnes of dates are produced annually. In total, around 200 million date palm trees are cultivated today, 76 percent of them in Arab countries.
- RPW has significant socio-economic impact on the date palm production sector and livelihoods of farmers in affect-ed areas (The combined cost of pest management, eradication and replacement of infested palms, and loss of ben-efits was around €90 million by 2013 for France, Italy and Spain).
- In NENA countries, RPW causes economic losses in the millions of dollars annually, whether through lost production or pest-control costs (Almost USD 8 million is lost each year through removal of severely-infested trees alone).-economic context of farmers, level of technology employed and level of enforcement of quarantine measures.

In Egypt, the RPW is now recorded in 25 governorates whith infestation ranging from 2% to 35%

In Egypt, the estimated total cost on RPW control per year is aboyt US$ 20 million (Abbas, 2018)

The annual loss in the Gulf Countries due to eradication of severely infested palms has been estimated to range from US$ 5.18 to 25.92 million at 1 and 5% infestation levels, respectively.

Rationale

- Despite these conceptual challenges, economic assessments of the impacts of RPW are needed to provide credible information to policy makers and to justify costs associated with management efforts.
- RPW is one of the world's major invasive pest species and is the single most destructive pest of some 40 palm species worldwide.
- Cost of pest management, eradication and replacement of infested palms, and loss of benefits are remarkable.
- Continuous challenges facing the successful management and containment of the spread of RPW (i.e. NENA countries and worldwide).
- The assessment of socio-economic and environmental impacts of control and eradication interventions should be at all levels of control and prevention.
- This assessment should be conducted through application of rigorous assessment methods to estimate the impact of RPW control or eradication and the associated costs and benefits for different farming systems and farm size.

Methodological framework

Data collection, Sampling design, and Selection of the respondents

- For scientific-validity of findings, the sampling frame will be in synergy with the sampling design established by the Arab Organisation for Agricultural development (AOAD) team who are engaged in conduction the ex-ant impact assessment study.
- The sampling frame is based on:
  1. The territorial distribution of date palms within each one of the two selected countries (i.e., KSA and Egypt).
  2. The associated incidence of RPW infestation (i.e., Governorate Selection/country) and on the variations in farming systems

The ex-post impact assessment study will target a total of 840 respondents identified during the ex-ante impact assessment study process (with 360 respondents in Egypt and 480 respondents in Saudi Arabia).

Quantitative economic assessment techniques

In the literature, several conceptual modelling frameworks have been proposed, and the choice of an approach depends largely on the objective of the model and the availability of data. In the literature, three techniques for quantitative economic assessment: Partial budgeting, partial equilibrium analysis and computable general equilibrium analysis:

Partial budgeting

- Is a method that addresses the additional costs and lost revenues that are incurred at the producer level when the RPW invades.
- This method takes into account the area attacked by the RPW, the loss per unit area, and the price of the product.
- It does not include relationships between production volume and prices, or interlinkages between markets.
- is the easiest and fastest to conduct.

Partial equilibrium analysis

- Take into account the price effects of changes in production volume in addition to those factors already taken into account by partial budgeting.

Computable general equilibrium analysis

- Address linkages to other agricultural markets, e.g. due to substitution of one product by another.
- Computable general equilibrium modelling techniques are the most comprehensive and complex tools to look at ef-fects of RPW on the whole economy.
- Is the most difficult and time consuming technique.

These techniques differ markedly in scope (the extent to which the impacts for the economy at wide are addressed), the data requirements, the level of expertise needed to conduct the analysis, and the time investment required to complete an analysis.

Hypothetical findings

What we can expect

- Significant impact of RPW on the date palm production sector and livelihoods of farmers in affected areas.
- High direct and indirect economic damage caused by RPW in the affected areas.
- Remarkable costs associated with managements efforts to eradicate, eliminate, or minimize the impact of RPW.
- The impact, efficiency, and effectiveness of applied control methods depends on the infestation level of the RPW.
- The economic efficiency and effectiveness of the applied control methods and their suitability depends on farming systems and farm size.
- There is a considerable impact of control methods on date production, productivity, supply, and all dates value chain.

What practical implications could emerge from this research

Ex-post assessment results will

- Inform stakeholders (palm growers, communities, development agencies and decision makers) in the region at large about the efficiency and the effectiveness of the introduced control methods and the feasibilities of other available al-ternative methods.
- Make a clear evidence of the impacts on date palm production and yield, date qualities, growers income, the national supply of dates and impact on trade.
- Prioritize the applied control/prevention methods in terms of interventions at farm level.
- Incentivizing adoption of control techniques to reduce the impact of RPW.
- Raising awareness towards better understanding of impact of RPW infestation and control/prevention measures at field, community, national and regional levels.

Originality / value

- The existing estimations costs remains a significant underestimate of the total economic value of affected palms by RPW (No concrete studies of the risk and economic impact of RPW on date palms).
- The expected findings will enhance the literature by providing empirical evidence of the impact assessment of RPW in the NENA region.
- Develop an understanding and assessment of the socio-economic impacts and damages of RPW on the livelihoods of the NENA date palm growers' community (i.e.; income, yield and productivity, and labour employment).

Acknowledgments

This work undertaken as part of the "Conducting socio-economic ex-post impact assessment of RPW in two countries in the NENA Region (Kingdom of Saudi Arabia and Egypt)."

Project funded by FAO (https://www.fao.org/home/en)

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