

WORLD PATENT MAP ANALYSIS OF MECHANIZATION TECHNOLOGIES RELATITNG TO RICE PRODUCTION

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ABSTRACT

This study focuses on worldwide patenting mechanization technologies of rice production in the past two decades, based on DWPI database and TI patent analysis software. The temporal examination shows that applications grew rapidly and the top applicants have only been active since 2009. The spatial distribution of the priority country's earliest-DWPI analysis points out the innovative, competitive, and perspective countries. The citations analysis exhibits the innovative technologies and the core ones. The IPC temporal analysis examines the top competitors' change of R&D trends.

Keywords: Worldwide patent analysis, Rice production, Patent map

INTRODUCTION

Patent data are used across scientific disciplines and for a range of purposes, such as assessing a country's innovation performance, evaluating competitors' mobility or tracking the emergence of new technologies[Rassenfosse et al.,2013]. How to improve rice production has been focused on for a long time. Agricultural Mechanization embraces the use of crop production [Rijk,1999]. The status of rice production and the main constraints limiting rice production in the world were analyzed to increase rice yield and production [Zhu et al.,2010]. Patent quality determinants are partly based on technology life cycle [Park and Heo, 2013]. The study is to analyze the characteristics of the worldwide patents in the field.

DATA AND METHODOLOGY

The analysis is based on the patent database Derwent World Patents Index (DWPI) a subscription database with full text patent and bibliographic data from territories worldwide, with augmented indexing, and patent analysis tool Thomson Innovation (TI) by Thomson Reuters. Selected collections are enhanced patent data DWPI and DPCI. Search strategy: Derwent abstract=(rice or oryza or sativa) AND IPC=(A01B or A01C or A01D or A01G13) between the years 1993-2013.

ANALYSIS AND RESULTS

There have been twice take-offs of patenting, and now is still under the maturation of the new technologies. Japan is the world top competitive country owning most competitive and core technologies, and dominates the patenting international market, then comes Korea, USA and EP. That 88.99% of innovations with priorities have USA priorities indicates the biggest world market is in USA. USA owns most world top competitive technologies, then France and Germany. China is ranked the second by application number, but with less competitiveness in international markets and a lower world market share. The top 1 competitive company KUBOTA KK experienced evolutions and changed its focus from rice planting and soil working technologies to harvesting technologies as shown in figure 1; the second one is ISEKI AGRICULT MACH which has experienced advancements and keeps focusing on each areas. YANMAR focuses on rice planting technologies and has experienced some evolutions, and now is in the second round of a new technologies emerging period, is also in the growth time of soil working technologies and the saturation period of harvesting technology.

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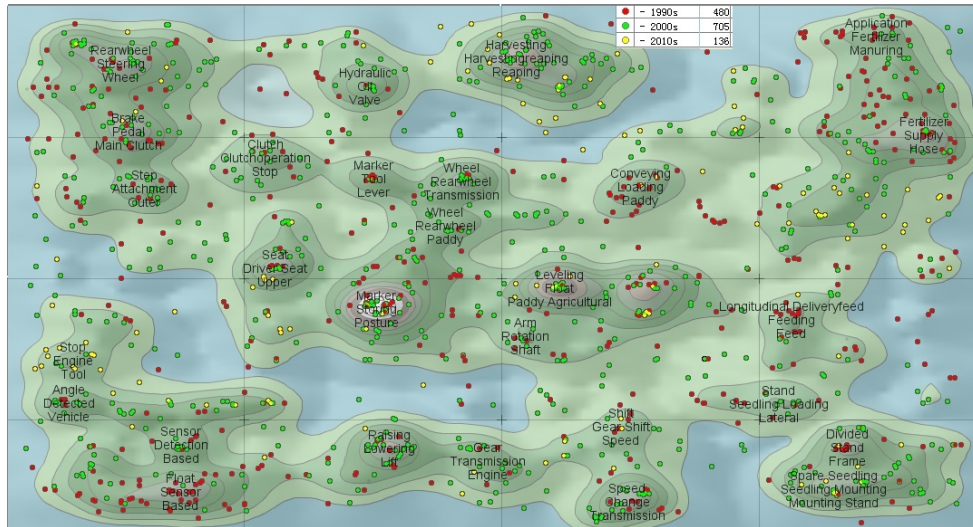


Fig. 1. Graphene patent landscape map (KUBOTA KK)