Role of phytosanitary policies in rice trade

K. S. Varaprasad, K. Anitha, S. K. Chakrabarty and R. K. Khetarpal

Rice is the staple food for about one-half of the world's population. The projected demand for rice is 515 million tonnes (mt) in the next 25 years, to feed the growing population of about 8.3 billion people. Rice is produced in a wide variety of ecosystems and the preferences of types vary to a great extent across the countries. Rice production and trade are greatly influenced by policies and political decisions of various governments. Some ecosystems are highly efficient in terms of rice production and productivity. Water as a resource, particularly with reference to rice production, is a matter of great concern across geopolitical boundaries. Access to rice as a food is greatly influenced not only by its production but also by the regulations imposed for trans-boundary movement. Trans-boundary movement is regulated based on principles laid down under the Sanitary and Phytosanitary (SPS) agreement of the World Trade Organization (WTO). While importing plants and plant products, every country has the right to protect its agriculture from associated exotic pests by enforcing legal phytosanitary policies.

Policy and trade

The international rice market accounts for only 15% out of the 420 mt global production[1]. There is scope to enhance rice trade from the present 15% of the total production to much higher levels in the next few years. Policy anomalies in the context of international rice trade and measures to enhance access to rice are discussed here.

The international rice market is characterized by government interventions in relation to trade barriers, producer support and subsidies. The Uruguay Round Agreement on Agriculture (URAA)[1], formulated in 1994, reduced trade barriers and enhanced global rice trade growth from 6% to 15%. The URAA established new disciplines on the use of SPS measures that could utilize to restrict trade based on health and safety concerns, and improve the process of settling trade disputes. These measures need to be applied in a consistent manner across countries and commodities and should not be used as an arbitrary barrier to trade. Mexico and Central America effectively banned Asian rice imports through SPS measures[2]. In November 1999, Costa Rica prevented the unloading of US rough rice based on non-compliance of phytosanitary requirements during the harvest period. Honduras, El-Salvador, Panama, the Dominican Republic and Mexico have applied phytosanitary measures restricting imports to protect domestic producers[2]. International Standards on Phytosanitary Measures have been developed by the International Plant Protection Convention (IPPC)[3] to provide guidelines for pest risk analysis (PRA) associated with imported plants and plant products, and to enable countries to justify their phytosanitary measures on a sound scientific basis, facilitating countries to import rice. However, specific PRA reports are yet to be developed mutually between exchanging countries using these standards.

Japan's use of certain phytosanitary restrictions on planting and handling of apples for export to the country against fire blight has been challenged in the WTO as having little or no scientific justification[4]. However, phytosanitary barriers shall have less significance for rice than for other commodities in view of the wide spread of rice pests. Certain restrictions on rice imports from Vietnam and Thailand are in force in several Latin American and Caribbean countries on phytosanitary grounds, which strongly influenced the patterns of flow into that region. Negotiations over the suspension of state trading on international markets (as well as in domestic markets) would be of special importance to rice. The private sector has played an increasing role in international rice trade since 1995 in India and some other countries (Indonesia, Malaysia, the Philippines, Vietnam, Myanmar, etc.) that mainly relies on state trading enterprises to import or export rice[1].

Science and policy

Import permit, phytosanitary certificate with additional declaration against quarantine pests (QPs) and mandatory treatment procedures are the basic requirements for trade in agricultural produce between any two countries. A compilation of phytosanitary requirements of rice grains for 13 countries (Bangladesh, Cambodia, China, India, Indonesia, Japan, Madagascar, Malaysia, Mauritius, the Philippines, Thailand, USA and Vietnam) revealed 95 QPs, viz. insects – 17, mites – 2, nematodes – 6, fungi – 18, bacteria – 8, viruses – 8 and weeds – 36 in phytosanitary regulations (Table 1). A pest of potential economic importance to an area endangered thereby and not yet present there, or present but not widely distributed and being officially controlled only qualifies to be a QP[3]. Investigations on the economic importance are needed before including fungal pathogens such as *Curvularia verruculosa*, *C. uncinata*, *Dichotomophthoropsis safeelauensis*, etc. in the QP category to prevent controversies in developing PRA for seed trade. Many South American countries, including Peru, Colombia and Ecuador, have phytosanitary regulations that effectively ban Asian imports of rice. This has allowed the US to be the prime source of rice to South America when production shortfalls occur[5]. Peru's decision to ban rice imports from Thailand was due to fear that rice could harbour the avian flu virus[6]. The Russian Federation banned rice imports from India and other countries since December 2006 due to the detection of poor quality grain and grain products, grain pest infestation and pesticide residues[7]. False smut (*Ustilaginoidea virens*) and kernel smut (*Neovossia horrida*) of rice with phytosanitary restric-

Table 1. Number of quarantine pests of rice reported by 13 different countries

Pest category	Number
Insects	17
Mites	2
Nematodes	6
Fungi	18
Bacteria	8
Viruses (including Mycoplasmas)	8
Weeds	36
Total	95

Table 2. Number of rice pests with quarantine pest status in different countries

Pest group	India	Turkey	Brazil	Cambodia
Insects	1	4	3	12
Mites	Nil	Nil	2	Nil
Nematodes	1	1	1	Nil
Fungi	Nil	Nil	7	1
Bacteria	4	2	3	Nil
Viruses	Nil	1	Nil	1
Weeds	Nil	Nil	27	6
Total	6	8	43	20

tions and trade implications are kept under regulatory priorities in USA[8].

The eight rice viruses (*Rice black streak dwarf virus*, *Rice gall dwarf virus*, *Rice dwarf virus*, *Rice orange leaf virus*, *Rice stripe virus*, *Rice transitory yellowing virus*, *Rice Waika virus* and *Rice Hoja blanka virus*) that are included as QPs by many countries are not seedborne[9]. Hence, they do not qualify to be QPs in the context of seed movement and trade. Many countries list out the total QPs of different crops of their countries as pest-wise but not crop-wise[10]. This opens up alternate pathways for pests having wide host range. For example, *Sitophilus granarius* is a QP of India for rice and wheat[11], while it is not listed as QP in other crops such as barley, oat, sorghum, etc.

The EXCERPT program of Purdue University, USA offers a computerized database of phytosanitary requirements for most countries to which the US exports agricultural products[12]. Based on information collected from 13 countries, it is observed that 35 pests of different categories were reported as QPs by a single country, Brazil. Among these, 27 belong to weed species (Table 2). Similarly, among the 20 rice pests listed under QP category by Cambodia, 12 insect species and six weeds are included, although weeds and insect pests are detectable and can be eliminated from the seed through mechanical separation and/or fumigation during quarantine processing. Some QPs can be managed by imposing an eradication treatment, e.g. white tip nematode of rice, *Aphelenchoides besseyi*[13]. The QP lists should be confined to pests that are truly seedborne, have economic potential, and are difficult to detect and eradicate. Association of an organism with seed does not necessarily be considered as a pest/QP .

Potential trading countries shall focus to develop a module of acceptable protocols for listing QPs, detection methods, treatment procedures, pre- and post-export examination schedules and certification methods. Quick and reliable access to such modules and QP categorization based on purpose of exchange (consumption/industrial/research), will facilitate PRA development for specific countries. A mechanism for regular exchange of scientific expertise and key decision makers in the government across the potential trading countries shall also contribute in enhancing rice seed trade. Phytosanitary regulations shall focus on filtering the movement of pests without blocking trade/exchange of seeds for global food security. Pests, which are unnecessarily regulated, regulations limiting seed exports/imports, inappropriate sampling procedures at entry points and lack of clear information on country pest lists are identified as major constraints for harmonization of phytosanitary regulations. Harmonization and transparency are crucial in the distribution databases and quarantine regulations. Each country should have an authentic database that can provide information on pest status of that country to facilitate conduct of PRA.

We conclude that several countries use unscientific legal phytosanitary policies as a barrier to their short-term economic advantage. The Government of India is negotiating with countries such as Brazil to overcome unscientific phytosanitary barriers. Peru is also reviewing its decision on the ban of Thai rice imports to form a free trade area between Thailand and Peru[6]. Similar initiatives from other rice-producing countries using science to facilitate safe trade may lead to access to affordable rice as food, facilitating transboundary movement.

Some QPs do not have scientific justification for transboundary movement of seeds. The examples are rice viruses (not seedborne) and *Sitophilus granarius* (wide host range). Mycotoxin and pesticide residue based restrictions are applicable to grain and often not for seed. Hence, globally acceptable criteria need to be established considering pathways (seedborne/soilborne/others), host range (wide host range/single host), availability of standardized elimination methods and tolerance level to be followed for determining the list of QPs against a specific country.

1. FAO Corporate document repository, Report, April 2006; http://www.fao.org
2. Childs, N. W. and Hoffman, L., Economic Research Service, USDA, November 1999, pp. 27–32. (http://www.ers.usda.gov/Briefing/wto/PDF/Steve.pdf)
3. International Plant Protection Convention, 2007; http://www.ippc.int/IPP/
4. Report, 2006; http://www.ers.usda.gov/Briefing/Japan/issuesandanalysis
5. Anon., 1998; http://usda.mannlib.cornell.edu/usda/ers/WRS//1990s/1998/WRS-11-10-1998
6. Anon., 2004; http://www.bilaterals.org/article.php3?id_article=847
7. Vassilieva, Y. and Darby, K., GAIN report no. RS 6066, 2006; http://www.fas.usda.gov/gainfiles/200612/146249713.pdf
8. Anon., 2003; http://www.ipmcenters.org
9. Hibino, H., *Annu. Rev. Phytopathol.*, 1996, **34**, 249–274.
10. http://www.biosecurity.govt.nz/files/exports/plants/standards/taiwan.pdf
11. Plant Quarantine Order, Government of India, 2003; www.plantquarantineindia.org
12. USDA, 2007; http://www.gipsa.usda.gov/GIPSA/
13. Prasad, J. S. and Varaprasad, K. S., *Fundament. Appl. Nematol.*, 1992, **15**, 305–308.

K. S. Varaprasad, K. Anitha and S. K. Chakrabarty are in the National Bureau of Plant Genetic Resources, Regional Station, Rajendranagar, Hyderabad 500 030, India; R. K. Khetarpal is in the Plant Quarantine Division, National Bureau of Plant Genetic Resources, New Delhi 110 012, India.*
**e-mail: nbpgrhyd@yahoo.com*