



## Research Article

# The Performance of Supporting Laboratories to the Implementation of the Regulation of Minister of Agriculture No. 88 the Year 2011 through Agricultural Quarantine Agency Class I Semarang

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## ABSTRACT

The Indonesian government is obliged to ensure the public health of the people of Indonesia by the supervision of Fresh Food Originated from Plant (*Pangan Segar Asal Tumbuhan* [PSAT]) arriving from abroad. Therefore, the regulation of Minister of Agriculture Number 88 in 2011 was issued to regulate inspection requirement of PSAT. There are some challenges in the implementation of these regulations until 2015, such as the unavailability of accredited laboratories, the lack of communication between stakeholders, and limited human resource or utensil within testing laboratories. Most of the testing laboratories appointed by the government are not yet accredited. Only 60% are able to perform tests mandated listed in The Regulation of Minister of Agriculture No. 88 the Year 2011. On the other hand, private laboratories accredited by ISO/IEC 17025 showed higher capacity by being able to perform 77.8 to 100% of mandated tests. The implementation challenges were later addressed by the revision of the regulation and release of issue Regulation 04/2015 in ref. The Regulation of Minister of Agriculture 13/2016. These regulations acknowledge Food Safety System of the state of origin or their administration of the Testing Laboratory Registration. In other words, they put forward the implementation of supervision in the country of origin reducing Indonesia's reliability on providing high level of testing laboratories itself. The implementation of The Regulation of Minister of Agriculture 04/2015 in ref. the Regulation of Minister of Agriculture 13/2016 expected Quarantine Measures on the importation of PSAT to be more effective and efficient. Therefore, impact of the implementation of this new regulation would shorten delay periods for cargo containers in ports (dwelling time), reduce handling cost of containers, minimize laboratory testing fees, and reduce risk of rejection of imported products because of incompliance.

Keywords: communication; ISO/EIC 17025/2005; resources; testing laboratory

## INTRODUCTION

Due to the development of global trading, traffic of food produce and goods have become more open, enabling less boundaries between countries. This opens opportunities for many kind of goods to enter the country, including various food materials unsafe for consumption. Thus, in recent years, the issue of food safety appeared to be more global and has become a discussion topic in meetings between countries. This issue is underlined by the right of

every country to obtain adequate food that are nutritious and safe to be consumed by the people (Food and Agriculture Organization, 1992).

The issue of food safety has encouraged change of certain tasks of quarantine organizations in several countries, including Indonesia. Such changes have been carried out by adding more functions to existing organization to cover both quarantine and food safety (biosecurity), which led to a new term for quarantine and biosecurity in some countries such as Australia, New Zealand, Malaysia, Thailand, Vietnam,

and Indonesia. The world food safety system aims to improve health and protect people from chemical and biological waste to provide a better living for people (International Food Safety Authorities Network, 2010).

Regulations related to Fresh Food Originated from Plant (*Pangan Segar Asal Tumbuhan* [PSAT]) exist in the Food Act 2014, which includes three national programs. All of them require adequate information on product and food safety records that should be integrated and visited to be verified by the Ministry of Primary Industries (New Zealand Ministry for Primary Industries, 2015). By possessing this standard, information related to fresh grape exportation from Italy, for instance, starting from the mainstream to the downstream, the production to laboratory testing of food safety, should meet the CODEX requirements (New Zealand Ministry of Agriculture and Forestry, 2002).

As an archipelago country, Indonesia is at risk of unsafe fresh food entering from other countries. Thus, it is required to supervise entrance and exit doors to minimize risk of harmful fresh products (Sudarwanto, 2010). Agricultural Quarantine Agency, as one of the public service institutions under the Ministry of Agriculture, has the task of preventing the entry and spread of Plant Pest Organisms (*Organisme Pengganggu Tumbuhan* = OPT) from foreign countries. The agency is also given authority to supervise food safety, considering that the agricultural quarantine agency as one of the institutions included in custom element of C, I, Q (Customs, Immigration, and Quarantine) positioned at the entry-exit point across all areas in Indonesia. Technical Implementation Unit within the Agricultural Quarantine Agency (BARANTAN) had been given with additional tasks since 2008. Not only preventing quarantine pests (*OPT Karantina*) from entry and spread, the agency also involves in the supervision of biosafety, both for animals and vegetables. This is shown in The Regulation of Minister of Agriculture Number 22 the year 2008 on the Organization and Work System of Technical Executive Unit for Agricultural Quarantine (Minister of Agriculture, 2008). The legislation within the field of PSAT is The Regulation

of Minister of Agriculture No. 88/2011 on the food safety supervision to the entry and exit of Fresh Food Originated from Plant (PSAT). The regulation was then revised with The Regulation of Minister of Agriculture No. 04/2015. The revision was expected to answer the limitation of the previous regulation, especially testing competency of PSAT laboratories within BARANTAN.

Government Regulation No. 28/2004 followed up by the Regulation of Minister of Agriculture Number 27/The Regulation of Minister of Agriculture /PP.340/5/2009 along with Regulation of Minister of Agriculture Number 38/The Regulation of Minister of Agriculture/PP.340/8/2009 cover food safety supervision on the entry and exit of PSAT. Thus, the fresh produce that will enter and be distributed in Indonesia should be previously tested for chemical pollutant, including pesticide residue, mycotoxin, and/or heavy metal substance, not to exceed the maximum permitted limit.

Supervision of PSAT done by laboratory testing on samples taken from PSAT that enter Indonesia. Correct and unbiased sampling methods in the field is a factor that determines validity of data and conclusion of the analysis. Sampling methods that use required standard are important to validate results from laboratory testing. Thus, adequate sampling is required.

A sample is a part taken from a population and help indicates the quality of the overall source. Samples taken should represent the overall population of PSAT. Sampling from the population should be calculated as such that the number of the sample unit is adequate for reproducibility of other laboratories. Inadequate number of the samples makes testing of PSAT challenging.

The Agricultural Quarantine Agency (*Balai Karantina Pertanian* = BKP) Class I Semarang supervises approximately 500 PSAT importation every year. Therefore, a study on whether the Regulation of Minister of Agriculture No. 88 the year 2011 (in ref. No. 04 the year 2015) has been well implemented as a governmental effort to protect the food safety in BKP Class I Semarang will provide essential information that would improve the regulation and system.

## MATERIALS AND METHODS

This study was designed in a descriptive method with a qualitative approach. The descriptive method was used to solve the current problem by collecting information relevant to the study (Singarimbun & Efendi, 1989).

### Data Collecting Technique

Samples of PSAT entries were analyzed in the laboratory to identify whether the chemical pollutants exceeded the permitted limit to determine disapproval (*Pusat Informasi dan Keamanan Hayati Nabati Badan Karantina Pertanian*, 2010). Data that were collection and observed, included primary data collection consisting of PSAT entry, testing types and number of testing, testing laboratory, timing, and secondary data obtained from the data of PSAT type, laboratory testing type, and other data related to PSAT published by the institution as well as information on regulation related to PSAT.

## RESULTS AND DISCUSSION

BKP Class I Semarang, since 2009, has dealt with PSAT entry from Tanjung Emas Harbor. The entry of PSAT was divided into five categories: fruits, vegetables, cereals, beans, and crops plants. BKP Class I Semarang is not the entry point for fresh fruits and vegetables. However, there were reports of entry of dried fruit and vegetable. About 500 entries were recorded for items other than fresh fruit and vegetable products. During the last five years, the entry frequency of the dried vegetable, including chili from India, was the most frequent (597 times), followed by garlic (375 times) and onion spring (184 times) from China.

Peanut was the most frequent bean imported from India (491 times). Subsequently, it was followed by soybean from the USA (453 times) and peanut from China (192 times). The most frequently imported cereals, reaching 60 times, was wheat grain from Australia. Next was rice from Pakistan (40 times) and wheat from Canada (18 times). The three most frequent fruit came from United Arab Emirates (200 times), Tunisia (75 times), and Egypt (59 times). Other dried fruits entering Tanjung Emas Harbor included raisins from Greece (13 times) and Germany (2 times) (Figure 1).

Testing according to The Regulation of Minister of Agriculture 88/2009 for each type of commodity (Table 1) was carried out by third parties appointed by the Agricultural Quarantine Agency. The PSAT testing laboratories commonly used by the importer in BKP Class I Semarang were government owned laboratory. They were Agricultural Quarantine Standard Test Center (*Balai Besar Uji Standar Karantina Pertanian* [BBUSKP]), the Quality Testing Institution and Certification of Agricultural and Fresh Products (*Balai Pengujian Mutu dan Sertifikasi Produk Hewan* [BPMSPH]), as well as the National Drug and Food Testing Center (BPOM). Private laboratories appointed were PT Angler BioChemlab, Surabaya and PT Saraswanti Indo Genetech (SIG), Bogor. The five testing laboratories were accredited by ISO/IEC 17025-2005. The capability of PSAT testing procedures of each laboratory was then compared to ones mandated by The Regulation of Minister of Agriculture 88/2011 (Table 2).

Results showed that government-owned testing laboratories mandated to perform test could only test 20–80% of the overall pesticides regulated by The Regulation of Minister of Agriculture 88/2011 due to limited capacity and human resource. Private-owned testing laboratories accredited by ISO/IEC 17025/2005, could perform 77.8–89% of pesticides mandated by the Regulation of Minister of Agriculture 88/2011 (Table 2). Mycotoxin testing in two governmental laboratories used in this study could not be carried out; however, 90–100% private ones could perform them. This implies that some tests should not be done government-owned laboratory due to unpreparedness and they have not been accredited in accordance to ISO/IEC 17025/2005.

Since 2011, the frequency of the PSAT entry tended to decrease for all types of commodities. This is shown by entry frequency in the last five years of PSAT commodity in BBKP Surabaya (Lestari, 2016). However, the decreasing frequency did not occur in BKP Class I Semarang because the importation of PSAT via Tanjung Emas Harbor was already relatively small.

Policy implementation is an activity that is visible after given legal directions of a policy that includes efforts in managing *input* to produce output or *outcomes* for the people. The implementation step

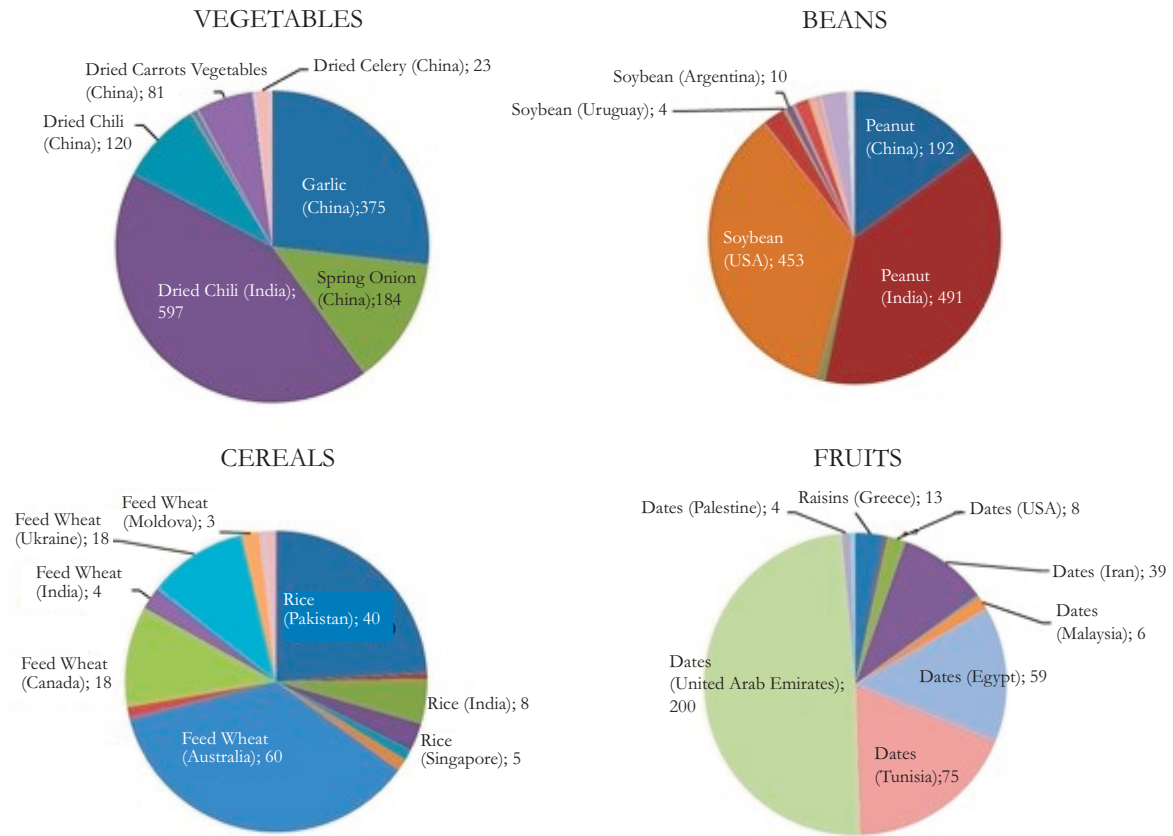


Figure 1. The entry frequency of vegetable carrier media tested for Fresh Food Originated from Plant (*Pangan Segar Asal Tumbuhan* = PSAT) requirement by BKP Class 1 Semarang year 2015

of the policy can be identified and distinguished from ones in the policy making. The policy making is a process with *bottom-up* logic, meaning that the policy process is started by aspiration, request or support from the people. Meanwhile, the policy implementation uses *top-down* logic, that means it is a derivative meaning of the policy alternatives, which are abstract or macro to being concrete action or micro (Wibawa, 1994).

Implementation of The Regulation of Minister of Agriculture No. 88/2011 on the supervision of PSAT in BKP Class 1 Semarang faced several problems such as the unpreparedness of testing laboratories, long bureaucracy, and weak supervision system. Results of the analysis on data of PSAT commodities showed that ten types of PSAT commodities with highest frequency came from recognized countries by the Indonesian government (BARANTAN). However, there are unrecognized countries such as China, United Arab Emirates (UAE), Canada, Pakistan, and India. Recognized countries, such as USA and Australia, makes supervision easier in entry point.

The PSAT commodity from unrecognized country are mandated to be tested according The Regulation of Minister of Agriculture No. 88/2011. The appointed and accredited laboratory could fulfill only half of the test mandated by the regulation indicating that there were lack of competences in the testing laboratory.

Suharsono (2008) explained a policy implementation theory named the *George C. Edward Theory*. It states that policy implementation is influenced by four variables: communications between implementer (government) and the targeted group (importer and testing laboratory), resources, good implementer disposition, and bureaucracy structure. Data of PSAT supervision by BKP Class I Semarang showed there was weakness in resource aspect (testing laboratory). Testing laboratory preparedness were unequal to the regulation's requirement, such as the laboratories were not accredited by ISO/IEC 17025/2005. Some government and private laboratories were appointed and authorized for testing, but had unequal testing capacity, testing methods, and testing scopes that were accredited. Some private labora-

Table 1. Different types of testing of the Fresh Food Originated from Plant (*Pangan Segar Asal Tumbuhan* [PSAT]) requirements entered through Agricultural Quarantine Agency Class I Semarang in 2015

No.	Commodity	Pollutant				
		Pesticide Residue	Heavy Metal	Microbe	Prohibited Chemical Substance	Mycotoxin
1	2	3	4	5	6	7
1.	a. Black Currant	2	1	2	1	-
	b. Red Currant	1	1	2	1	-
2.	Raisins	1	-	-	1	-
3.	Dates					-
	a. Dates	1	1	-	1	-
	b. Dates (dried or sweetened)	1	-	-	1	-
4.	Garlic	3	2	-	-	-
5.	a. Chili	4	2	-	-	-
	b. Dried Chili	36	2	-	-	-
6.	Onion spring	8	2	2	-	-
7.	Beans except broad beans and soybeans	5	2	-	-	-
8.	Potato	41	1	-	-	-
9.	Cabbage					-
	a. Cabbage	24	2	2	-	-
	b. Savoy cabbage	2	2	2	-	-
10.	Young lima beans/young beans	1	2	-	-	-
11.	Celery	8	1	2	-	-
12.	Carrot	15	2	2	-	-
13.	Barley	23	-	1	-	1
14.	Rice					
	a. Rice	5	-	1	-	-
	b. Brown rice	7	-	-	-	-
	c. Rice (hulled)	4	1	-	-	-
15.	Wheat	29	1	1	-	1
16.	Corn	18	2	1	-	-
17.	Soybean (dried)	19	2	-	-	-
18.	Peanut	14	-	-	-	1

tories showed reliable performance due to almost all of their testing parameters were accredited with one-day service assurance. This caused change of dependency to non-government testing laboratories. The appointment of testing laboratory by importer raised unhealthy business competitions due to customer struggle and bias in the implementation of The Regulation of Minister of Agriculture No. 88/2011.

Long bureaucracy structure of PSAT supervision also played a role in the ineffectiveness of implementation of non-government owned laboratories. This implementation for commodity importers will raise a problem of bureaucracy extension. This consequently raises ineffective implementation of the regulation. According to Hill and Hupe (2002), with-

out effective implementation, the policy maker's decision will not succeed. The measurement of implementation success according to Ripley and Franklin (1986) is based on three aspects: the compliance factor to the bureaucracy above it or those in the level as arranged by the legislation, routine smoothness and no problems occurrence as well as implementation and impact (benefit) expected from all of directed programs.

Implementation of PSAT supervision by BKP Class I Semarang faced obstacles not only because lack of routine smoothness from distant locations but also weak supervision by government (BKP Class I Semarang) performances because no institutional connections and control mechanisms. Weak supervision implies the implementation of the

Table 2. Laboratory competency (%) in testing various parameters mandated by the Fresh Food Originated from Plant (*Pangan Segar Asal Tumbuhan* [PSAT]) requirements via Agricultural Quarantine Agency Class I Semarang

Parameter	Laboratory				
	A	B	C	D	E
1. Pesticide Residue	77.8	89	20	80	20
2. Heavy metal	100	100	100	100	100
3. Mycotoxin	90	100	0	100	0
4. Microbiology	100	100	100	100	100
5. Physical Pollutant	100	100	100	100	100

- Competency (%) indicates the number of tests that could be performed by laboratory according to The Regulation of Minister of Agriculture No. 88 Year 2011.
- A: Laboratory of PT Angler BioChemlab, Surabaya; B: Laboratory of PT Saraswanti Indo Genetech (SIG), Bogor; C: Laboratory of the Agricultural Quarantine Standard Test Center (*Balai Besar Uji Standar Karantina Pertanian* [BBUSKP], Jakarta; D: Laboratory of the Quality Testing Institution and Certification of Agricultural and Fresh Products (*Balai Pengujian Mutu dan Serifikasi Produk Hewan* [BPMSPH]), Jakarta; E: Laboratory of the National Drug and Food Testing Center (*Badan Pengawas Obat dan Makanan* [BPOM]), Jakarta.

Regulation of Minister of Agriculture No. 88/2011 may not be effectively providing guarantee of food safety.

These implementation weaknesses caused the government to revise PSAT supervision regulation by publishing the Regulation of Minister of Agriculture Number 04/2016 and renewed it with the Regulation of Minister of Agriculture Number 13/2016. Both regulations are expected to correct the weakness of the previous regulation, especially in the aspect of laboratory testing. The Regulation of Minister of Agriculture 04/2015 and The Regulation of Minister of Agriculture 13/2016 are effective in 2022. They contain different paradigm from the Regulation of Minister of Agriculture No. 88/2011. The Regulation of Minister of Agriculture 04/2015 and the Regulation of Minister of Agriculture 13/2016 emphasized more on the recognition of the Food Safety System of the Origin Country or Registration. These are expected to cope with the problems of unqualified laboratories applied by the government and to shorten the bureaucracy chain on PSAT in field supervision. PSAT importation from countries with food safety system recognition or from countries with accredited, registered, and completed laboratories with *Prior Notice* and *Certificate of Analysis (CoA)* are unnecessary for laboratory testing except for laboratory monitoring.

Other advantages of implementing the Regulation of Minister of Agriculture 04/2015 and The Regulation of Minister of Agriculture 13/2016 included the on-site quarantine supervision testing (*Tempat Pemeriksaan Karantina* [TPK]). Faster process

will shorten the container dwelling time in the harbor. Nanda (2016) stated that shortened *dwelling time* increased the harbor's volume, income, and competitiveness. Shorter dwelling time will also decrease cost handling container in harbors, cost paid by the importer for laboratory testing, and rejection risk due to unqualified imported PSAT.

The weakness of the initial implementation of the Regulation of Minister of Agriculture 04/2015 included some *Prior Notice* which are improperly determined in the Regulation of Minister of Agriculture 04/2015 either in the aspect of format, publishing time, publishing place and parties with competency to publish it. *Certificate of Analysis (CoA)* accompanying the PSAT importation included the testing parameter which is not in accordance to the attachment of the Regulation of Minister of Agriculture 04/2015 and published by the unregistered laboratory. The impact of the implementation of the Regulation of Minister of Agriculture 04/2015 is limitation of developing countries business partner which prevent them from exporting their PSAT to Indonesia due to no food safety system and registered testing laboratory. On the other hand, these also bring obstacle to countries with recognition and registered laboratories. However, certain types of PSAT are excluded because the laboratory capability for certain tests have not been recognized. The Regulation of Minister of Agriculture 04/2015 has not facilitated PSAT importation through transit countries, and countries experiencing decrease volume or change of transportation modes.

Implementation of the Regulation of Minister of Agriculture 13/2016 is expected to accommodate the problem in implementation of the Regulation of Minister of Agriculture 04/2015. Countries with no registered laboratories may request testing to accredited laboratories in the nearest neighboring country. PSAT importations with *CoA* from the registered laboratory but with incomplete testing scope, are temporary given with opportunity to complete testing in the appointed laboratory in accordance to The Regulation of Minister of Agriculture 04/2015. However, problems arised in the field because this regulation has only appointed the government laboratory that are not capable to conduct testing of all parameters required. In addition, not all testing procedures have been standardized based on ISO/IEC 17025/2005. Implementation of the Regulation of Minister of Agriculture 13/2016 in the field also causes multiple interpretation and different implementation. Practical guidelines of the Regulation of Minister of Agriculture 13/2016 are expected to secure the proper implementation by quarantine officers.

## CONCLUSION

Supervision of PSAT in BKP Class I Semarang faced some obstacles such as unreadiness of government owned laboratories, complex bureaucracy and weak supervision. Such obstacles made the implementation of the Regulation of Minister of Agriculture No. 88/2011 in BKP Class I Semarang ineffective in providing high-quality food for. The publishing of Regulation of Minister of Agriculture 44/2015 and Regulation of Minister of Agriculture 13/2016 is expected to improve the effectiveness of the implementation of regulation.

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