

Report Cover Page

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Title
Determination of effect of audits on pathway contamination rates for medium-risk stockfeed.
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Summary
<p>Background: DAFF is moving towards a risk-based approach to managing the biosecurity risk of various pathways. DAFF requires and issues an import permit for the importation of certain bulk products, for example, medium-risk plant-based stockfeed (PBS). An audit is undertaken of the importing company before an import permit can be permitted. The audits are of varying intensity, ranging from desk audits to site visits. In a risk-based intervention setting, the outcomes of audits might be useful for targeting border inspection efforts, and the results of border inspections could be used to guide audit frequency.</p> <p>Overview: The goal of this study was to determine what the effect is of border inspection outcomes upon audit outcomes and the effect of the outcomes of audits on border inspection results, for PBS. In other words, the goal was to ask whether there is a feedback loop between offshore and border risk mitigation strategies.</p> <p>The goal could not be achieved: the inspection outcomes could not be reliably linked to the audit data due to incomplete data capture at the border; the import permit number was commonly omitted or misrecorded. The project scope was changed to comprise an assessment of a proposed off-shore sampling regime (reported as Outcome 2).</p> <p>Outcomes:</p> <ol style="list-style-type: none"> 1. With the current data holdings, data capture policies, and offshore risk management strategies in place, connecting the outcomes of audits and border inspections in such a way that statistically reliable information can be obtained is a prohibitively cumbersome task (p. 12). 2. Certified, third-party offshore sampling of bulk-shipped PBS is safer and more efficient than the within-QAP bulk inspection (p. 22).

Recommendations:

1. That DAFF proceed with third-party offshore sampling of medium-risk stockfeed in place of the within-QAP bulk inspection for bulk in-ship hold PBS (p. 22).
2. If deemed successful after a trial period (say 2 years) such an offshore sampling protocol should be considered for use across other bulk in-ship hold commodities, such as fertilizer, or even for bulk containerized product such as fishmeal, fertilizer, or plant-based stockfeed. Import of bulk commodities could be made contingent on offshore sampling, regardless of onshore monitoring. (p. 22).
3. The pathway manager should discuss potential third-party governance schemes with the Australian Fumigation Accreditation Scheme (AFAS), within the Offshore Development Unit (p. 22).
4. DAFF should consider introducing onshore leakage surveillance of the pathway by sampling from trucks during vessel discharge. (p. 21).
5. DAFF should determine what are the impediments to the routine and reliable entry of import permit details for Entry Management staff (p. 10).
6. DAFF should examine the factors that influence the recording of quarantine entries in *container mode*, which is a significant impediment to strategic use of quarantine inspection data for risk-based management (p. 10).

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The effect of audits on pathway contamination rates for medium-risk stockfeed.

ACERA 1001B, Study J

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1

Executive Summary

We summarize the results of an operational risk analysis of stockfeed inspection data. This report is the final deliverable for ACERA project 1001B, Study J, *Risk-Return Case Studies*. The original intentions of the project were unable to be realized. The project was re-purposed as an assessment on a proposed sampling regime.

1.1 Background

DAFF is moving towards a risk-based approach to managing the biosecurity risk of various pathways. DAFF requires and issues an import permit for the importation of certain bulk products, for example, medium-risk plant-based stockfeed (PBS). An audit is undertaken of the importing company before an import permit can be permitted. The audits are of varying intensity, ranging from desk audits to site visits. In a risk-based intervention setting, the outcomes of audits might be useful for targeting border inspection efforts, and the results of border inspections could be used to guide audit frequency.

1.2 Overview

The goal of this study was to determine what the effect is of border inspection outcomes upon audit outcomes and the effect of the outcomes of audits on border inspection results, for PBS. In other words, the goal was to ask whether there is a feedback loop between offshore and border risk mitigation strategies.

The goal could not be achieved: the inspection outcomes could not be reliably linked to the audit data due to incomplete data capture at the border; the import permit number was commonly omitted or misrecorded. The project scope was changed to comprise an assessment of a proposed off-shore sampling regime (reported as Outcome 2).

1.3 Outcomes

1. With the current data holdings, data capture policies, and offshore risk management strategies in place, connecting the outcomes of audits and border inspections in such a way that statistically reliable information can be obtained is a prohibitively cumbersome task (p. 12).
2. Certified, third-party offshore sampling of bulk-shipped PBS is safer and more efficient than the within-QAP bulk inspection (p. 22).

1.4 Recommendations

The following recommendations arise from this report.

1. That DAFF proceed with third-party offshore sampling of medium-risk stockfeed in place of the within-QAP bulk inspection for bulk in-ship hold PBS (p. 22).
2. If deemed successful after a trial period (say 2 years) such an offshore sampling protocol should be considered for use across other bulk in-ship hold commodities, such as fertilizer, or even for bulk containerized product such as fishmeal, fertilizer, or plant-based stockfeed. Import of bulk commodities could be made contingent on offshore sampling, regardless of onshore monitoring. (p. 22).
3. The pathway manager should discuss potential third-party governance schemes with the Australian Fumigation Accreditation Scheme (AFAS) within the Offshore Development Unit (p. 22).
4. DAFF should consider introducing onshore leakage surveillance of the pathway by sampling from trucks during vessel discharge. (p. 21).
5. Given the current data holdings, data capture policies, and the offshore risk management strategies in place, there does not seem to be much potential benefit to risk-based management of formal connection between the outcomes of audits and border inspections. DAFF should determine what are the impediments to the routine and reliable entry of import permit details for Entry Management staff (p. 10).
6. DAFF should examine the factors that influence the recording of quarantine entries in container mode, which is a significant impediment to strategic use of quarantine inspection data for risk-based management (p. 10).

2

Introduction

DAFF is moving towards a risk-based approach to managing the biosecurity risk of various pathways. DAFF requires and issues an import permit for the importation of certain bulk products, for example, plant-based stockfeed (PBS). An audit is undertaken of the importing company before an import permit can be permitted. The audits are of varying intensity, ranging from desk audits to site visits.

In a risk-based intervention setting, the outcomes of audits might be useful for targeting border inspection efforts, and the results of border inspections could be used to guide audit frequency. This project was intended to focus on developing a data-analytical approach to assessing the potential benefit to audits of considering inspection history, and to border inspection of considering audit outcomes.

As will shortly be explained, given the current data holdings, data capture policies, and the offshore risk management strategies in place, there does not seem to be much potential benefit in these two exercises.

The project scope was altered to incorporate a review of a proposed offshore sampling regime for bulk ship holds of PBS.

The report is structured as follows. Chapter 2 provides background information on the PBS pathway, including the inspection regime and information about the biosecurity risk. Chapter 3 describes the steps undertaken to obtain the inspection data and prepare it for analysis. Chapter 4 provides relevant summary statistics from the available inspection data. Chapter 5 describes the existing and proposed inspection regimes. Finally, Chapter 6 reports the recommendations of the project.

2.1 PBS Import Conditions

We focus on PBS that is imported in bulk in ships' holds. A reasonably detailed description of the pathway intervention can be found in Chapter 5.

DAFF requires and issues an import permit for the importation of all PBS, including that imported bulk in ships holds, which is the subject of the current report. An audit is undertaken of the manufacturer and export pathway before an import permit can be granted. The audits are of varying intensity, ranging from desk audits to site visits. Site audits are mainly used for products transported in bulk or subject to only a basic level of processing, e.g., copra or soybean meal as opposed to for example a refined amino acid supplement. The purpose of desk audits is to perform a check of the documented suitability of the processes in meeting policy and import requirements, covering systems, infrastructure, and manufacturing process. The desk audits also determine the level of

potential biosecurity risk associated with the product, from which the assessing officer will determine if a site audit is required, or if a permit can be granted with conditions to appropriately manage the risk. If required, the site audits are performed to check on the claims made during the desk audits and also to assess the practical achievement of the required biosecurity outcomes. If the outcome of the site audit is unacceptable then DAFF will issue corrective actions that must be undertaken before an import permit will be issued. The corrective actions can be closed out by the facility providing suitable evidence to DAFF, however they may be subject to a second audit by either a third party or DAFF, depending on the number and nature of corrective actions issued.

At the time of writing, import permits are issued and offshore audits are undertaken in Argentina, Brazil, Chile, China, India, Indonesia, Kiribati, Malaysia, Papua New Guinea, Philippines, Samoa, Solomon Islands, UK, USA, and Vanuatu, for the following products: soybean meal, copra meal, palm kernel expeller, sugar beet pulp pellets, Australian mill run and compound plant-based stock feeds. Australia does import more highly processed PBS from other countries, e.g. Germany and Denmark, however under policy, import permits for these products require a desk audit only. It is challenging to determine precisely the amounts of PBS imported from each country because as we shall see, PBS does not have a dedicated tariff or collection of tariffs. The definitive way to identify PBS in DAFF's system is by using the Import Permit number, but this is captured only unreliably.

Current permit conditions require a combination of one or more of the following items before import: phytosanitary certification for the consignment, a manufacturer's declaration, which provides pathway-specific assurances that the critical control points are being managed, and third-party certification of the export pathway and, for bulk vessels, vessel cleanliness. At the border, the following process is used: assessment of documentation, on-arrival inspection, testing if required, and release. Inspection can be verification, full or partial unpack; the appropriate type of inspection is determined during the audit.

3

Data Preparation

This chapter describes the steps undertaken to obtain the inspection data and prepare it for analysis. Our goal was to link border inspection outcomes to specific import permit numbers, so that the audit results that apply to the permit could be cross-referenced with (i) the inspections that followed, hence answering the question: could audit outcomes be used to predict border inspection results, and (ii) the inspections that preceded the audit, hence answering the question: could border inspection outcomes be used to predict audit results.

3.1 Extraction

Analysis of the plant-based stockfeed (PBS) pathway has been complicated by operational and information technology constraints. The primary challenge has been to extract from AIMS just those quarantine entries that correspond to PBS consignments. This is a challenge because there is no unique tariff code, or set of tariff codes, that clearly distinguishes PBS, because tariffs codes are constructed for economic purposes, not for biosecurity.

We began with a relatively modestly scoped dump from AIMS that captured all the tariff codes that were most likely to correspond with PBS. After cleaning, this database was too small, and importantly, omitted some entries that were known to the authors on the basis of being infamous quarantine fails in the stockfeed pathway.

We then tried an AIMS dataset that contained all the tariff codes that might contain PBS within October 2005 to October 2011. This dataset comprised

- 640,219 lines;
- 38,484 quarantine entries;
- 2293 importers with 2419 importer codes;
- 2431 suppliers with 2587 supplier codes;
- 53 tariff codes;
- 934 permit codes (stored in the Import Permit field); and
- 8084 goods descriptions.

We next tried to winnow this database down to the entries that were of interest, using several approaches

3.1.1 Filtering by Permit Doesn't Work

After considerable discussion, we tried the following strategy. The one unique characteristic for PBS consignments is that importers require a permit for importing from each supplier. Permits are granted by DAFF staff after an audit of the supplier, and typically last for two years. The entire collection of permits that has been granted by DAFF is available as a spreadsheet. We filtered this spreadsheet using the names of the DAFF staff who handled PBS permits for the last eight years. This provided a list of the permit numbers, importer names, and supplier names.

In theory, the permit number should be recorded against the AIMS quarantine entry. We tried to filter the AIMS entries to only those that had permit numbers that appeared in the permits database. Permit numbers typically comprise a 4-digit year followed by a 5-digit number, but sometimes seven digits preceded by IP. Also, import permits may appear in the Import Permit field (934 unique), the Permit Comment field (11191 unique). There is also a "permit comment 2" field that seems to largely mimic the permit comment field in content. We recommend that DAFF determine what are the impediments to the routine and reliable entry of import permit details for Entry Management staff.

This filtering was impossible without considerable manual work because the format of the permit recording was highly variable; for example, often several import permits are recorded against the same quarantine entry (presumably because the entry contains numerous lines) and sometimes in a truncated format. Examples follow.

```
IP10013015
IP09016710, IP09016716
IP09003084 AND IP09000460
IP10018184-IP10018187
IP11000654,656,658,659
IP11000654,656,658,659,IP11001746
IP11000659,58,56,54,1100746
IP11006531,6533-6535
IP10012265,12288,12261,12263
IP10012265/12263/12288/12261
IP09008926 REPLACED BY IP09013144
```

Some of these combinations would be relatively easy to sort out using text-manipulation tools, but others, particularly the truncated records, would take much more work.

The other significant problem would be in determining exactly which lines the permits correspond to. We remark that many quarantine entries are recorded in *container mode*, as opposed to *line mode*. Container mode means that the same information is recorded against all the lines in the entry, including intervention information like direction, direction category, direction comments, standard comments, field comments, and so on. It was introduced to the entry management system to facilitate data entry for quarantine entries that have many identical lines.

The recording of quarantine entries in container mode is probably the most significant impediment to strategic use of quarantine inspection data for risk-based management. We recommend that DAFF determines the impediments to the use of line mode for data capture.

Finally, we tried to use a filter that was based on a straight match of the permit numbers from the AIMS entry against the permit numbers as recorded in the DAFF permit database. This filtering left far too few AIMS entries.

3.1.2 Filtering by Supplier and Importer Doesn't Work

We next tried to identify the relevant consignments using the combinations of supplier and importer that appeared in individual permit applications. We reasoned that it was likely, although not guaranteed, that any consignments between such a matched pair during the period for which an PBS import permit was in place would be for PBS.

The problem with this solution was in matching up the importer and the supplier from the permit database. The permit database includes the importer and supplier names as free text entries, but not the importer or supplier codes. We tried to infer importer and supplier codes for importer and supplier names respectively, using AIMS as a source. This was problematic because a number of supplier names corresponded to more than one code, indeed one name had seven codes. A similar pattern occurred with importer names.

A further problem is that only 137 out of 512 suppliers in the permit database could be found in AIMS. Similarly, only 136 out of 321 importers in the permit database could be found in AIMS. These results raise the unsettling possibility that either the importer and supplier names do not match well over the two databases, or a large number of licenses are being sought for no reason.

At this point we abandoned our efforts to develop a database of suitable records. Progress already made on data preparation is detailed below.

3.2 Identifying Failure

The amalgamated AIMS/Incidents dataset provides two ways of identifying failure: the AIMS direction, and whether or not the record appears in Incidents. Table 3.1 shows the overlap between the failure outcomes for the current interpretation of the AIMS direction and Incidents. A quarantine failure was recorded for any consignments for which the direction results included "Inspection NOT OK".

NB: Incidents records are typically entered at the aims entry level; AIMS records are entered at the direction level.

Table 3.1: Cross-tabulation of Incidents-defined fails against AIMS-defined fails.

AIMS	Incidents		Total
	Pass	Fail	
Pass	50750	243	50993
Fail	4922	692	5614
Total	55672	935	56607

We see that 4922 records are defined as fails in AIMS but not in Incidents, and 243 are fails in Incidents but not in AIMS. Possible explanations for the discrepancies are:

1. Fails that are due to other causes than the detection of a pest will appear in AIMS but not in Incidents.
2. Pest interceptions for which the treatment is inappropriately coded will appear in Incidents but not in AIMS.

3.3 Discussion

The information technology systems that DAFF uses to manage import and audit information are *transactional*, meaning that they focus on immediate processing and decision-making. Such systems are not designed to manage data in a way that makes the data readily available for post-hoc analysis. For example, even though all imports of PBS must have a current import permit identified, the task of reliably identifying the imports that occurred under a particular permit number is extremely difficult.

4

Analysis

This chapter provides a statistical overview of the border inspection data. We emphasize that we cannot guarantee that all of the data summarized here are in the scope of the study, for the reasons outlined in the previous chapter.

The full dataset comprises 56607 consignments with record creation dates ranging from October 2005 to October 2011, and comprises entries from 114 countries, 2587 suppliers, and 2419 importers.

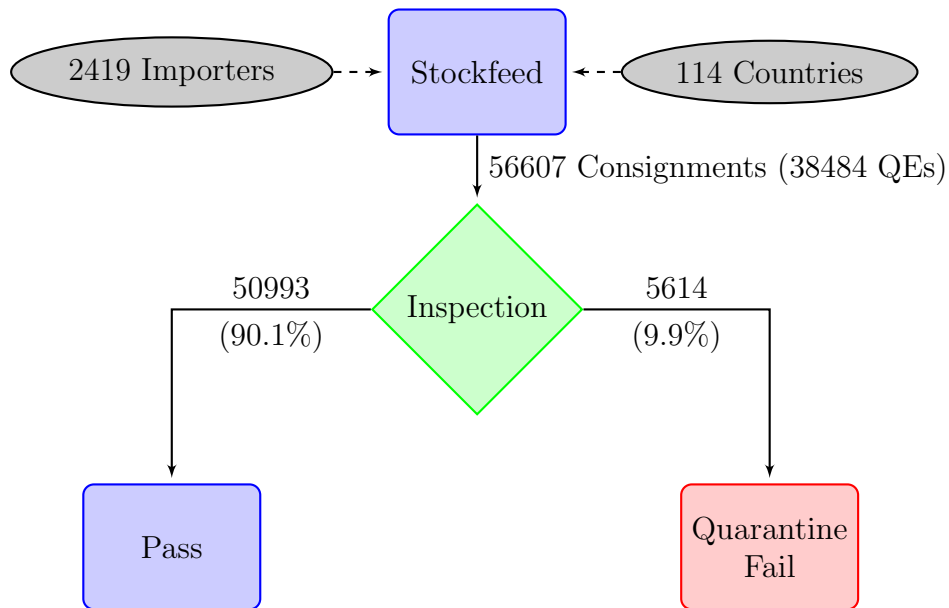


Figure 4.1: Stockfeed consignments flow chart with statistics for October 2005 to October 2011, inclusive. A consignment is a line within a quarantine entry (QE).

A smoothed plot of the quarantine failure rate against time is presented in Figure 4.2. The failure rate for the entire period was 9.92%.

Table 4.1 provides the annual arrival count of consignments. The statistics in Table 4.2 summarize the inspection data for those countries with at least 100 consignments, including, paradoxically, Australia. Consignments from countries other than those listed on p. 8 are included in the tariffs that formed the basis for the search, but presumably are *not* PBS. Table 4.3 summarizes the inspection data for the importers with at least 200 consignments. Table 4.4 summarizes the inspection data for the suppliers with at least 250 consignments. Finally, Table 4.5 presents the statistics by tariff code, showing the diversity of the pathway.

Table 4.1: Pattern of inspections and quarantine failure counts by year. *Count* is the number of consignments imported during the study period, and *QF %* is the percentage of consignments with contamination of quarantine interest.

Year	Count	QF %
2005	1355	8.9
2006	7751	8.2
2007	8762	9.2
2008	9526	10.4
2009	9313	10.6
2010	10912	11.7
2011	8987	8.9

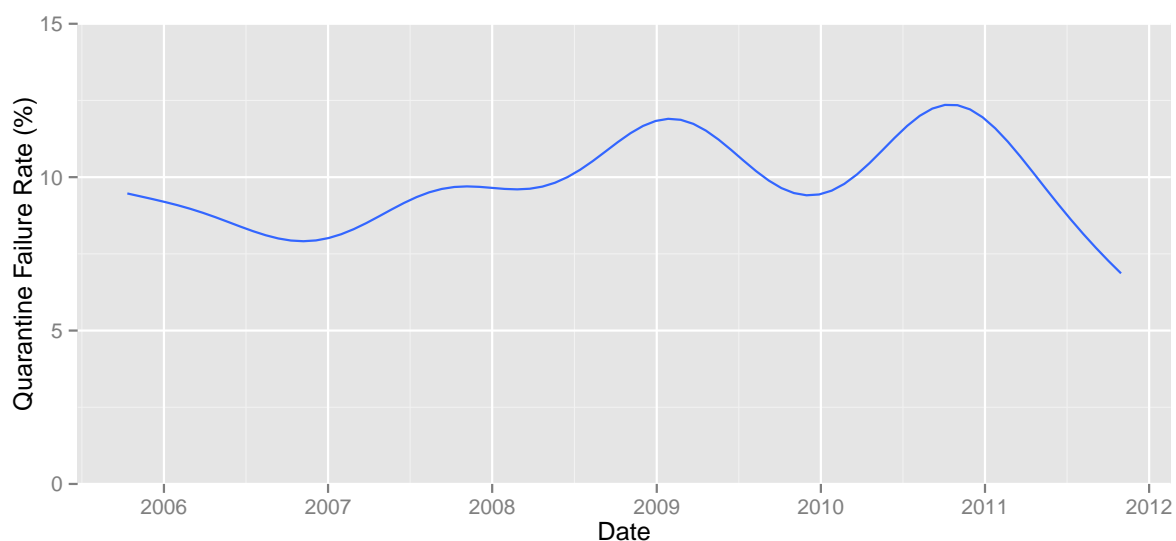


Figure 4.2: Quarantine failure rates (%) smoothed by date, using an automated smoothing routine.

Table 4.2: Summary statistics by country. *Cons* is the number of consignments, by which the table is ordered. *CF* is the number of consignments with quarantine fails. *CR %* is the consignment-level failure rate. The *Importers* column reports the number of importers that have imported from each country during the time period. The *Suppliers* column reports the number of suppliers that have exported from each country during the time period.

Country	Cons	CF	CR %	Importers	Suppliers
Thailand	12751	153	1.2	168	102
United States	11914	765	6.4	510	445
China	5714	497	8.7	451	525
New Zealand	4001	118	2.9	269	142
India	3596	709	19.7	267	310
Japan	2325	340	14.6	67	60
France	1645	185	11.2	48	51
Taiwan	1633	380	23.3	100	105
Canada	1259	423	33.6	57	50
Malaysia	1125	110	9.8	97	50
Germany	986	353	35.8	87	82
Papua New Guinea	972	349	35.9	43	41
Singapore	925	68	7.4	55	38
United Kingdom	911	120	13.2	96	71
Netherlands	849	47	5.5	74	76
South Africa	495	112	22.6	40	38
Belgium	476	61	12.8	39	48
Indonesia	424	57	13.4	38	26
Italy	350	55	15.7	57	62
Brazil	343	30	8.7	34	25
Korea Republic Of	257	31	12.1	47	53
Chile	230	38	16.5	17	8
Switzerland	214	31	14.5	21	16
Mexico	198	19	9.6	24	19
Sweden	184	5	2.7	7	9
Spain	181	2	1.1	22	15
Finland	180	4	2.2	4	6
Hungary	179	12	6.7	8	7
Australia	161	29	18.0	65	85
Hong Kong	148	38	25.7	61	35
Austria	145	10	6.9	16	18
Ireland	137	3	2.2	20	11
Sri Lanka	133	30	22.6	29	25
Seychelles	117	25	21.4	6	3
Argentina	100	17	17.0	17	18

Table 4.3: Summary statistics by importer for importers with at least 200 consignments. See Table 4.2 for explanations of the columns.

Importer	Cons	CF	CR %	Countries	Suppliers
88000014675	5364	29	0.5	4	10
77000011316	3601	111	3.1	28	70
15001855910	3242	787	24.3	9	16
19052489924	3152	5	0.2	2	9
48008454313	1912	121	6.3	11	33
84091918197	1753	13	0.7	4	5
27007427581	1488	19	1.3	2	7
86003954550	1306	13	1.0	1	3
52005318810	1262	79	6.3	17	60
76075560584	1143	152	13.3	4	9
80000333353	963	325	33.7	10	27
87082434277	949	17	1.8	7	9
46055122891	920	83	9.0	9	12
71054434061	887	149	16.8	2	7
36003080260	770	103	13.4	4	3
42376175154	739	31	4.2	18	43
36000991793	693	184	26.6	12	9
88092020178	679	26	3.8	4	6
94006544145	596	28	4.7	16	20
52115676536	579	8	1.4	10	29
82059480054	511	19	3.7	3	22
89089953560	484	58	12.0	4	8
16000689136	437	34	7.8	5	5
84097374368	430	109	25.3	3	9
94000108289	299	26	8.7	2	4
36010345150	276	81	29.3	15	15
12962391157	267	28	10.5	3	10
68050291766	264	28	10.6	3	9
48003780229	249	5	2.0	8	10
90005666599	249	62	24.9	5	25
S1008861	244	7	2.9	3	3
73057641308	240	14	5.8	3	6
16108375855	232	44	19.0	3	5
23009476064	203	26	12.8	12	17
60190466880	201	0	0.0	1	2

Table 4.4: Summary statistics by supplier for suppliers with at least 250 consignments. See Table 4.2 for explanations of the columns.

Supplier	Cons	CF	CR %	Countries	Importers
CCC4363397F	3022	1	0.0	2	2
CCC3794447K	2661	620	23.3	5	1
CCE7939347N	1987	68	3.4	1	3
	1760	62	3.5	73	960
CCL9476743J	1735	1	0.1	1	8
CCC3673969N	1324	12	0.9	1	2
CCC3937664J	1269	13	1.0	1	3
CCH6777977H	1259	0	0.0	1	1
CCC6466776K	1140	152	13.3	3	3
19052489924	980	4	0.4	2	2
73007151993	909	12	1.3	1	1
CCC7673644E	832	82	9.9	5	3
CCC3367974N	780	107	13.7	3	4
CCH6699399Y	777	9	1.2	1	8
CCC4364634C	705	138	19.6	1	1
CCE9696699H	679	8	1.2	1	2
CCC9479344C	664	4	0.6	1	2
CCG4947994L	657	178	27.1	9	2
CCE6936344J	501	7	1.4	5	4
CCE7773634C	499	12	2.4	2	2
CCF9774699G	492	57	11.6	4	1
CCC3369963H	445	11	2.5	1	4
CCC4969737E	439	38	8.7	1	1
CCH6393499C	411	15	3.6	1	3
CCH6977779E	394	25	6.3	1	2
CCH7399744N	376	1	0.3	9	5
CCC3666697L	374	290	77.5	2	1
CCN7943669M	343	80	23.3	1	5
CCH9366639R	333	73	21.9	1	1
CCM7796493X	307	12	3.9	2	1
CCH7336936W	304	5	1.6	2	2
CCC6737743H	287	8	2.8	1	1
CCK3396744T	285	14	4.9	1	1
CCP3637734E	266	5	1.9	2	3
CCH7433964H	260	0	0.0	1	3
CCC7793394J	258	15	5.8	1	4
CCR4367366N	250	20	8.0	1	1

Table 4.5: Summary statistics by tariff. See Table 4.2 for explanations of the columns.

Tariff	Cons	CF	CR %	Countries	Suppliers	Importers
23091000	23144	523	2.3	34	253	140
23099000	16878	2385	14.1	54	878	453
12074000	2779	400	14.4	28	279	200
11090000	1693	108	6.4	21	134	81
2309	1580	35	2.2	58	125	697
12010000	1261	173	13.7	21	127	94
12079900	1261	257	20.4	55	305	233
12081000	1106	168	15.2	26	136	109
12075000	1008	327	32.4	25	194	155
23040000	767	101	13.2	13	68	45
11031300	581	140	24.1	23	94	83
12089000	548	99	18.1	26	126	109
23065000	480	185	38.5	14	34	16
11031100	418	106	25.4	26	126	115
23031000	352	8	2.3	10	14	14
23024000	333	45	13.5	15	47	38
23023000	300	88	29.3	12	21	18
23080000	283	48	17.0	19	41	30
11031900	259	58	22.4	26	66	62
23066000	184	128	69.6	7	12	9
1213	180	14	7.8	28	11	155
12030000	152	43	28.3	7	10	11
12079100	127	33	26.0	15	34	31
23070000	113	16	14.2	3	7	5
1207	89	5	5.6	30	9	78
12149000	89	32	36.0	15	29	23
23032000	84	12	14.3	5	11	9
23069000	83	16	19.3	11	20	18
12130000	76	18	23.7	9	26	24
1201	75	7	9.3	18	9	52
23021000	60	8	13.3	9	19	16

5

Proposed Border Inspection Regime for PBS Bulk in Ship Holds

5.1 Introduction

We now report against the updated project goal of assessing a proposed new border inspection regime for PBS that is imported in bulk in ships holds. The pathway reported here is a subset of that discussed in the previous chapter.

5.2 Current Protocol

The current DAFF intervention protocol can be broadly summarized as follows.

1. All importers of medium-risk stockfeed are required to have an import permit, which is generally issued every two years based on the manufacturer and associated export pathway passing an audit.
2. The transporting vessel and associated export pathway is inspected for cleanliness by a third party before loading.
3. Upon arrival, DAFF personnel inspect the vessel and take some samples from the top layer of the PBS stored in the hold. The samples are inspected for gross infestation or contamination. If the consignment passes this test then it is off-loaded and transported to a class 2.3 QAP.
4. At the QAP, DAFF personnel inspect the piled stored PBS. Generally access is available to less than 1% of the cargo, and accessible product is likely not representative.

A problem with this protocol is that inspecting the piled product at the QAP is time-consuming and inefficient. It is virtually impossible to get a representative sample of the product. Also, the current inspection protocol presents additional potential contamination points. Both the truck and the QAP can potentially contaminate the imported product, compromising the integrity of inspection outcomes within the QAP. Such an issue came up last year where insects found within the QAP were probably domestic. Currently, truck hygiene and QAP hygiene are not strictly monitored before use. A truck could drop off a load of grain to the port for export and proceed to be loaded with soy bean meal (still having traces of wheat).

An alternative protocol has been proposed within DAFF. The alternative approach can be broadly summarized as follows, for nominated pathways.

1. All importers of medium-risk stockfeed are required to have an import permit, which is issued every two years based on the importer passing an audit.
2. The export pathway is certified by an authorized third party. The certification requires inspection for freedom of contamination by previous products. The third party's certification and inspection procedures will be subject to a DAFF audit at the same time as the manufacturing facility.
3. Transporting vessel is inspected for cleanliness before loading by a third party.
4. Offshore sampling of the commodity is performed. The sampling is carried out according to a DAFF standard, and compliance with this standard will be confirmed at the time of offshore manufacturing facility and third party audits. Samples are continuously taken as the consignment is loaded. The samples are consolidated, resampled, and send by air freight to DAFF Bulk National Coordination Centre (Newcastle) for inspection. Directions can then be applied or risk mitigation plan developed by the time the vessel arrives.
5. Upon arrival, DAFF personnel inspect the vessel and take some samples from the top layer of the PBS stored in the hold to confirm the absence of infestation or gross contamination. If the consignment passes this test then it is off-loaded and released without the need to pass through a QAP.

The pathway should demonstrate compliance under current inspection regimes before being assessed for suitability under the new protocol. Offshore audits will expand in scope to include coverage of third-party inspection and sampling protocols.

5.3 Assessment Process

Accompanied by Ivan Popovic of DAFF, AR and AD visited two stockfeed production facilities in Rosario Argentina, namely Cargill and Molinos. The primary purpose of the visits was to undertake site audits for the assessment of the renewal of import permits for the two facilities. In addition, the audit team inspected the proposed facilities and protocols for sampling the product as it is loaded to the bulk carrier.

The audit team also interviewed representatives of Red Flint, a third-party provider of regulatory inspection services, including Florencia Jozami and Rodrigo Coronel. The purpose of this interview was to discuss the sampling protocol, including the selection of the sample, and the preparation and packaging of the sample for shipping.

5.4 Sample System Design

The following protocol is derived from similar procedures as specified by the Grain and Feed Trading Association (GAFTA) *Sampling Rules* Document #124. The proposed protocol creates the requirement of obtaining a representative sample of the product as it is being loaded. Obtaining the sample decomposes into several steps: taking the sample, processing the sample (for example, to conform to shipping volume requirements), and shipping the sample. The representativeness of the sample can be compromised at any of the steps. We provide more detail on them as follows.

1. The sample is taken continuously by means of a scoop. The shape of the product when on the conveyor belt that transports the product to the bulk carrier is approximately ovoid in cross-section. Two scoops are taken at the centre of the belt for each scoop on the outside. The scoops are poured into a receptacle, which is taken to a processing room. Any gross contamination is identified and the supplier will be alerted. *The contamination is retained with the sample.*
2. The sample is then processed using a *homogenizer*. A homogenizer is a device into which grain is poured and which mixes and divides the grain using internal channels. The purpose of the homogenizer is to take representative sub-samples of the product. Using the homogenizer, the sample is reduced to a representative subsample weighing 15 kilograms representing each individual “hold” within the consignment. The DAFF team were able to suggest alternative approaches to the use of the homogenizer that would be more likely to generate representative sub-samples.
3. The 15 kg samples are packaged and sent to the Bulk Commodities National Coordination Centre in Newcastle for inspection along with the sampling report and the manufacturer’s declaration by air freight.

The proposed protocol for handling reduced risk pathways will be as follows. The conditions of inclusion are that the facility and associated export pathway are determined to be of a *reduced risk* during DAFF desk and onsite audits, and the facility and associated export pathway demonstrate compliance with import conditions through a history of compliance under traditional inspection regimes. The protocols for determining the risk status of a facility that seeks these different permit conditions have not yet been established, however, they will reflect ease of cleaning and inspection activities, and any alternate uses of the infrastructure, for example, exporting whole grains.

The vessel must have a low-risk status (based on the nature of previous cargo). The consignment must be accompanied by phytosanitary certification and a manufacturer’s declaration, as above. There will also be approved third-party certification of the export pathway and vessel cleanliness (for bulk vessels) and analysis by the Bulk NCC of the product samples taken by the third party. The process at the border will be: assessment of documentation, along with inspection of pre-shipment samples and testing if required, inspection upon arrival for gross infestation or contamination at first port, and release of the consignment if all previous checks are satisfied.

5.5 Leakage

The importance of using leakage surveys to properly estimate pathway risk has recurred throughout ACERA projects (see, e.g., Robinson et al., 2012). The purpose of this project is to assess an inspection protocol that we think is likely safer, more efficient, and more accurate than the existing protocol. However, the protocol relies on third-party engagement. A leakage survey will provide a means of measuring the effectiveness of third-party intervention, and provide further motivation for the third party to monitor the pathway thoroughly. We recommend that DAFF consider introducing onshore leakage surveillance of the pathway by sampling from trucks during vessel discharge for randomly selected consignments.

5.6 Governance

Once the proposed offshore process is implemented across the PBS in bulk ship holds pathway, and possibly other pathways, we expect that there will be a large number of third parties applying for certification to provide the offshore sampling service. The problem of certification and governance of third-party providers is similar to that faced by the Australian Fumigation Accreditation Scheme (AFAS), within the Offshore Development Unit. We recommend that the pathway manager approach AFAS to discuss potential governance schemes.

5.7 Outcomes

We are satisfied based on our review of the system that, conditional on the professionalism and quality of the third-party staff involved, the proposed offshore monitoring approach is a safer, more efficient sampling method that will lead to much more representative samples than the existing protocol of trying to sample a pile in a QAP. Further assurance can be provided by implementation of a leakage survey, as noted above.

We recommend that DAFF proceed with third-party offshore sampling of medium-risk stockfeed in place of the within-QAP bulk inspection for bulk in-ship hold PBS.

Furthermore, if the proposed protocol is deemed successful after a trial period (say, 2 years), such an offshore sampling protocol should be considered for use across other bulk in-ship hold commodities, such as fertilizer, or even for bulk containerized product such as fishmeal, fertilizer, or plant-based stockfeed. More generally, issuing of import permits of bulk commodities could be made contingent on offshore sampling, regardless of the onshore monitoring status.

5.8 Extensions

The principles of sampling a product on a conveyer hold more generally for border inspection as well. That is, it will generally be convenient and efficient to sample a product that is unloaded using a conveyer belt using a continuous scoop sampling procedure as documented here.

6

Recommendations

The following recommendations arise from this report.

1. That DAFF proceed with third-party offshore sampling of medium-risk stockfeed in place of the within-QAP bulk inspection for bulk in-ship hold PBS (p. 22).
2. If deemed successful after a trial period (say 2 years) such an offshore sampling protocol should be considered for use across other bulk in-ship hold commodities, such as fertilizer, or even for bulk containerized product such as fishmeal, fertilizer, or plant-based stockfeed. Import of bulk commodities could be made contingent on offshore sampling, regardless of onshore monitoring. (p. 22).
3. The pathway manager should discuss potential third-party governance schemes with the Australian Fumigation Accreditation Scheme (AFAS), within the Offshore Development Unit (p. 22).
4. DAFF should consider introducing onshore leakage surveillance of the pathway by sampling from trucks during vessel discharge. (p. 21).
5. Given the current data holdings, data capture policies, and the offshore risk management strategies in place, there does not seem to be much potential benefit to risk-based management of formal connection between the outcomes of audits and border inspections. DAFF should determine what are the impediments to the routine and reliable entry of import permit details for Entry Management staff (p. 10).
6. DAFF should examine the factors that influence the recording of quarantine entries in container mode, which is a significant impediment to strategic use of quarantine inspection data for risk-based management (p. 10).

Bibliography

Robinson, A., Bell, J., Woolcott, B., and Perotti, E. (2012). DAFF Biosecurity: Plant-Product Pathways. Technical Report 1001j 1, Australian Centre of Excellence for Risk Analysis.