Ministry for Primary Industries
Manatū Ahu Matua

Approved Diagnostic Tests, Vaccines, Treatments, and Post-Arrival Testing Laboratories for Animal Import Health Standards

MPI-STD-TVTL

Contents

Endorsement

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Schedule 1: MPI approved diagnostic tests

MPI approved tests are recorded in table 1 of this document and appropriate test methodology will be stated where required (e.g. as per OIE Manual, as per publication, as per SCAHLS procedure, etc.). MPI may approve alternative tests to those stated in an IHS for a particular risk organism when satisfied with the evidence provided. Satisfactory evidence includes details such as sensitivity, specificity, validation for species and tissue/samples used.

Table 1: MPI approved diagnostic tests

Disease name	MPI approved tests
Import Health Standard: Alpacas and llamas (CAMANIIC.GEN)	
Bovine viral diarrhoea (BVD) – type 2	Antigen ELISA (as per OIE methodology)
	VI (as per OIE methodology)
	RT-PCR (as per OIE methodology)
Brucellosis	CF (as per OIE methodology)
	ELISA (as per OIE methodology)
	Fluorescence polarisation assay (as per OIE methodology)
	Buffered Brucella antigen test (as per OIE methodology)
Foot and mouth disease (FMD)	ELISA (as per OIE methodology)
	VN (as per OIE methodology)
Infectious bovine rhinotracheitis (IBR) and infectious pustular vulvovaginitis/balanoposthitis (IPV/B)	VN (as per OIE methodology)
	ELISA (as per OIE methodology)
Q fever	CF (approved for Australia – SCAHLS methodology)

Import Health Standard: Bovine Semen (BOVSEMID.GEN) and Bovine Embryos (BOVEMBID.GEN)	
Bluetongue	VI (as per OIE methodology)
	SN/VN (as per OIE methodology)
	C-ELISA (as per OIE methodology)
	RT-PCR (as per OIE methodology)
	AGID (alternative prescribed test, as per OIE methodology)
Bovine Viral Diarrhoea (BVD) – virus genotype 2 (BVDV2) is exotic	VI (as per OIE methodology)
	Antigen capture ELISA (as per OIE methodology)
	SN/VN (approved for Australia, USA, Canada, EU, Norway, Switzerland)
	ELISA (approved for Australia, USA, Canada, EU, Norway, Switzerland)
Contagious bovine pleuropneumonia (CBPP)	CF (as per OIE methodology)
	ELISA (as per OIE methodology)
Foot and mouth disease (FMD)	VN (as per OIE methodology)
	ELISA (as per OIE methodology)
Infectious bovine rhinotracheitis (IBR), bovine herpes virus 1.1, 1.2a, and 5	SN/VN (as per OIE methodology)
	ELISA (as per OIE methodology)
	RT-PCR (on germplasm as per OIE methodology)
	VI (on germplasm as per OIE methodology)
Q fever	ELISA (approved for Australia, USA, Canada, EU, Norway, Switzerland)

	CF (approved for Australia, USA, Canada, EU, Norway, Switzerland)
Rift Valley fever	VN (as per OIE methodology)
Tuberculosis	Intradermal tuberculin test (as per OIE methodology)
Vesicular stomatitis	ELISA (as per OIE methodology)
	CF (as per OIE methodology)
	VN (as per OIE methodology)
Import Health Standard: Horses (HORANIIC.GEN) and Equine Semen and Embryos (HORSSEMB.GEN)	
African horse sickness	Complement Fixation (as per OIE methodology)
	ELISA (as per OIE methodology)
	Agent identification (PCR) (alternative proposed by OIE)
	Virus Neutralisation (VN) (alternative proposed by OIE)
Contagious equine metritis	Agent identification (culture) (as per OIE methodology)
	Quantitative PCR (qPCR)
Dourine	Complement Fixation (as per OIE methodology)
	ELISA (alternative proposed by OIE)
	Indirect Fluorescent Antibody Test (IFAT) (alternative proposed by OIE)
Equine infectious anaemia	Agar Gel Immunodiffusion (AGID) (Coggins)(as per OIE methodology)
	ELISA (alternative proposed by OIE)
Equine influenza	PCR (alternative proposed by OIE)

Equine piroplasmosis	ELISA (as per OIE methodology)
	Indirect Fluorescent Antibody Test (IFAT) (as per OIE methodology)
Equine viral arteritis	Virus isolation (on semen only; as per OIE methodology)
	Virus Neutralisation (VN) (as per OIE methodology)
	Reverse-transcription PCR (EDTA whole blood or semen, alternative proposed by OIE)
Glanders	Complement Fixation (CF) (as per OIE methodology)
Venezuelan equine encephalomyelitis	Complement Fixation (alternative proposed by OIE)
	Haemagglutination Inhibition (HI) (alternative proposed by OIE)
	Plaque Reduction Neutralisation (PRN) (alternative proposed by OIE)

Import Health Standard: Ovine and Caprine Semen and Embryos (OVCAGERM.GEN)	
Bluetongue	ELISA (as per OIE methodology)
	VI (as per OIE methodology)
	PCR (as per OIE methodology)
Foot and mouth disease (FMD)	ELISA (as per OIE methodology)
	VN (as per OIE methodology)
Maedi-visna	AGID (as per OIE methodology)
	ELISA (as per OIE methodology and LSIVet ELISA for MV/CAE in France)
Ovine pulmonary adenomatosis	Post-mortem examination of respiratory system and associated lymphatics (as per OIE discussion of OPA necropsy)
	PCR (as per OIE methodology)
	Histopathology (as per OIE methodology)
	Immunohistochemistry (as per OIE methodology)

Peste des petits ruminants	VN (as per OIE methodology)
Rift Valley fever	VN (as per OIE methodology)
Wesselsbron	Serum Neutralisation or Haemagglutination inhibition test on a blood sample any time prior to collection and between 3 weeks and 2 years after collection. Semen and embryos that were collected between tests which indicate a rise in titre are ineligible for export to New Zealand (test methodology to be approved by MPI).
Contagious agalactia	Culture and identification of the organism (as per OIE methodology)
	PCR (as per OIE methodology)
	ELISA (as per OIE methodology)
	Immunoblotting (methodology to be approved by MPI)
Caprine and ovine brucellosis	BBAT (as per OIE methodology)
	CF (as per OIE methodology)
	ELISA (as per OIE methodology)
	FPA (as per OIE methodology)
Ovine epididymitis	CFT (as per OIE methodology)
	ELISA (as per LNCR France methodology)
Contagious caprine pleuropneumonia	CF (as per OIE methodology)
Bovine and caprine tuberculosis	Intradermal tuberculin test (as per OIE methodology)
Enzootic abortion of ewes	CF (as per OIE methodology)
	PCR (conducted at LNCR in France)
	DNA microarray hybridisation assay (methodology to be approved by MPI)

Q fever	ELISA (as per OIE methodology)
	IFA (as per OIE methodology)
	PCR (as per OIE methodology)
Import Health Standard: Poultry Hatching Eggs & Specific-Pathogen-Free Chicken Eggs (COMEGIC.GEN)	
Salmonella	Agent identification (Salmonella culture as per OIE methodology)
	Rapid whole blood agglutination test (as per OIE methodology)
	Rapid serum agglutination test (as per OIE methodology)
Avian influenza	PCR (approved for Canada, Australia, Netherlands, United Kingdom)
	Virus isolation with pathogenicity testing (as per OIE methodology)
	ELISA (as per OIE methodology) (serological methods not acceptable for use in ducks)
APMV-1(Newcastle disease)	ELISA (subject to MPI approved method) (serological methods not acceptable for use in ducks)
	Heamagglutination Inhibition (HI) serology (as per OIE methodology)
	RT-PCR (approved for Australia, Canada, United Kingdom and Netherlands)
Chlamydia psittaci	Post-arrival testing- histochemical staining of liver and spleen impression smears
	Pre-export testing by CFT (approved for Australia)
	RT-PCR (approved for post-arrival testing)
Ornithobacterium rhinotracheale	IDEXX ORT ELISA
Mycoplasma iowae	Agent identification (Culture approved for United Kingdom with serotyping by IFAT)

	Real-time PCR (as described in J.Diagn Invest 20.330-325 (2008)) (approved for Canada)
Mycoplasma meleagridis	Agent identification (Culture as per OIE methodology for *M. gallisepticum*)
	Haemagluttination inhibition test (as per OIE methodology for *M. gallisepticum*) (approved for Canada and United Kingdom)
	PCR (methodology to be approved by MPI)
	Rapid serum agglutination test (as per OIE methodology for *M. gallisepticum*)(approved for Canada and United kingdom)
	ELISA (methodology to be approved by MPI)
	Western Blot (methodology to be approved by MPI)
	Immunoblot (approved for United Kingdom)
Reovirus of Muscovy ducks	SN,AGID,ELISA (subject to MPI approved method)
Goose parvo virus and Muscovy duck parvo virus	RT-PCR or ELISA (subject to MPI approved method)
Duck virus enteritis	Virus isolation, PCR (as per OIE methodology)
Import Health Standard: Pig Semen (PIGSEMEN.GEN)	
Porcine reproductive and respiratory syndrome (PRRS) virus	RT-PCR (approved for Canada) Multivalent ELISA using both North American and European strains (approved for Canada)
Transmissible gastroenteritis (TGE) virus	Serum neutralisation and specific competitive blocking ELISA (approved for Canada)
Brucella suis	Fluorescence polarisation assay and indirect ELISA (approved for Canada)
Import Health Standard: Turkey Meat and Meat Products (POUTURIC.GEN)	
Salmonella arizonae	Agent identification (Salmonella culture as per OIE methodology)

Turkey viral hepatitis	Post-mortem inspection and associated liver condemnation rate, interpreted at flock level (<2% condemnation)
Turkey coronavirus	RT-PCR (subject to MPI approved method)
APMV-2 & APMV-3	Virus isolation (subject to MPI approved method)
Import Health Standard: Canine Semen (CANSEMIC.GEN)	
Brucella canis	RSAT
	TAT
	CpAg-AGID
	IFAT
	PCR
Leptospirosis interrogans serovar *canicola*	MAT (Alternative proposed by OIE)
Import Health Standard: Cats and dogs (CATDOG.GEN)	
Rabies	FAVN or RFFIT rabies neutralising antibody titration test (as per OIE Manual)
Babesia canis	IFAT or ELISA, PCR
Babesia gibsoni	IFAT or ELISA, PCR
Brucella canis	RSAT, TAT, CPAg-AGID, or IFAT
Leptospirosis interrogans serovar *canicola*	MAT
Heartworm (*Dirofilaria immitis*)	ELISA

Import Health Standard: Egg Products (EGGPRODS.GEN)	
Angara disease (fowl adenovirus type 4 [FAdV-4])	PCR (as per methodology in Ganesh K, Suryanarayana VV and Raghavan R (2002). Detection of fowl adenovirus associated with hydropericardium hepatitis syndrome by a polymerase chain reaction. Veterinary Research Communications, 26(1), pp73-80)

Schedule 2: MPI approved vaccines

MPI may approve alternative vaccines to those stated in the IHS. MPI will only approve vaccines once satisfied with the details provided by the Competent Authority of the exporting country about the vaccination protocol, including vaccine type, discussion of potential risks with the vaccine and how they can be managed (for example reversion to virulence), and surveillance details, including how vaccinated animals will be distinguished from infected animals. MPI approved vaccines are recorded in table 2 of this document.

Table 2: MPI approved vaccines

Disease name	MPI approved vaccines
Import Health Standard: Horses (HORANIIC.GEN)	
Equine influenza	Registered vaccines containing equivalent strains of EI virus as recommended by the OIE Expert Surveillance Panel on Equine Influenza Vaccine Composition: http://www.oie.int/en/our-scientific-expertise/specific-information-and-recommendations/equine-influenza/. Vaccines should contain both clade 1 and clade 2 viruses of the Florida sublineage. Clade 1 continues to be represented by A/eq/South Africa/04/2003-like or A/eq/Ohio/2003-like viruses but more recent clade 1 viruses are available from the OIE reference laboratories. Clade 2 continues to be represented by A/eq/Richmond/1/2007-like viruses but more recent clade 2 viruses are available from the OIE reference laboratories.
Equine encephalomyelitis (Eastern, Western, and Venezuelan)	EEE and WEE: inactivated vaccines, as per OIE Manual VEE: attenuated virus or inactivated virus vaccines, as per OIE Manual
Equine viral arteritis	Modified live virus or inactivated vaccines, as per OIE Manual
Japanese encephalitis	Inactivated vaccine, as per OIE Manual
Hendra virus	Zoetis *Equivac HeV*

Rabies virus	Inactivated vaccines, as per OIE Manual
Import Health Standard: Cats and Dogs (CATDOG.GEN)	
Rabies	Inactivated virus vaccine or recombinant vaccine expressing the rabies virus glycoprotein.
Import Health Standard: Semen and Embryos from Sheep and Goats (OVCAGERM.GEN)	
Bluetongue virus	Live-attenuated, as per OIE Manual
Foot and mouth	Chemically inactivated cell-culture-derived preparations of a seed virus strain blended with a suitable adjuvant/s and excipients, as per OIE Manual
Peste des petits ruminants	Cell culture-attenuated strains of natural PPRV, as per OIE Manual
Sheep and goat pox	Attenuated live and inactivated capripoxvirus vaccines, as per OIE Manual
Q fever	Inactivated whole phase 1 vaccine, as per OIE Manual

Schedule 3: MPI approved Treatments

MPI may approve treatments for a particular risk organism(s) when satisfied with the evidence provided. MPI approved treatments are recorded in table 3 of this document.

Table 3: MPI approved treatments

Disease name	MPI approved treatment
Leptospira interrogans serovar *canicola*	Dihydrostreptomycin
	Doxycycline
Bacillus anthracis	12.5% formalin –at least 10 hours as disinfectant for liquid waste.
Coxiella burnetii	5% formalin – for at least 24-48 hours as disinfectant for liquid waste.
Leptospirae and/or mycoplasmae in germplasm	For semen from pigs, cattle, sheep, goats, deer, and camelids: a) 50 µg tylosin, 250 µg gentamicin, 150 µg lincomycin, 300 µg spectinomycin; or b) 500 IU penicillin, 500 µg streptomycin, 150 µg lincomycin, 300 µg spectinomycin; or c) 25 µg dibekacin, 75 µg amikacin For embryos from cattle, sheep, goats, deer, and camelids: a) 100 IU penicillin and 100 µg streptomycin; or b) 100 IU penicillin and 50 µg gentamicin
	For equine semen and embryos, the following antibiotics can be used. For semen, the antibiotics listed should be included per ml of semen and for embryos the antibiotics listed below should be included during embryo production: a) A combination of 50 µg tylosin, 250 µg gentamicin, 150 µg lincomycin, and 300 µg spectinomycin; or b) A combination of 500 IU penicillin, 500 µg streptomycin, 150 µg lincomycin, and 300 µg spectinomycin; or c) A combination of 25 µg dibekacin and 75 µg amikacin; or d) A combination of 1.2 mg/ml ticarcillin and 0.5 mg/ml amikacin; or e) 50 µg gentamicin alone. Additionally, for equine embryos only, the following antibiotics can be used. The antibiotics listed below should be included during embryo production: a) A combination of 100 IU penicillin and 100 µg streptomycin; or b) A combination of 100 IU penicillin and 50 µg gentamicin

Heartworm *(Dirofilaria immitis)*	Ivermectin at 6 mcg/kg
	Milbemycin at 0.5 mg/kg
	Moxidectin at 2-4mcg/kg
	Selamectin at 6 mg/kg
	Moxidectin sustained-released injection
Nematodes of alpacas and llamas: Angiostronghylus cantonensis Graphinema aucheniae Marshallagia marshalli Nematodirus lamae Spiculopteragia peruvianus Thelazia californiensis Parelaphostrongylus tenuis **Trematodes of alpacas and llamas:** Dicrocoelium dendriticum Eurytrema pancreaticum Fasciola gigantica Fasciola magna **Cestodes of alpacas and llamas:** Monezia benedeni Thysaniezia spp.	Approved treatments for Australia are registered for the purpose by the Australian Pesticides and Veterinary Medicines Authority (APVMA) and listed in the appendix of the Australian country-specific veterinary certificate.
Ectoparasites of alpacas and llamas: Psoroptes ovis (mite) Microthoracius spp. (lice) Vermipsylla spp. (flea) Amblyomma spp. (tick)	Approved treatments for Australia are registered for the purpose by the Australian Pesticides and Veterinary Medicines Authority (APVMA) and listed in the appendix of the Australian country-specific veterinary certificate.

Bophilus spp. (tick) Dermacentor spp. (tick) Ixodes spp. (tick) Rhipicephalus spp. (tick) **Myiasis caused by**: Cochliomyia hominivorax (new world screwworm), Calliphora albifrontalis, C. auger, C. imperialis, C. nociva, Cephenemyia spp. Dermatobia spp. Wohlfahrtia spp.	
Cestodes of fish *Bothriocephalus acheilognathi*	Praziquantel base at ≥ 1 mg/L for 24 hrs to be completed 96 hrs before biosecurity clearance
	Praziquantel base at ≥ 4 mg/L for 12 hrs to be completed 96 hrs before biosecurity clearance
	Fenbendazole 40mg/kg orally on two occasions 4 days apart before biosecurity clearance
Nematode of fish *Capillaria philippinensis*	Levamisole base bath (1mg/L) for 24 hours.
Treatments permitted for routine prophylactic use of ornamental fish [*Facility Standard Ornamental Fish and Marine Invertebrates*]	Acriflavine
	Bay oil (Pimenta racemosa)
	Benzalkonium chloride
	Chloramine-t
	Copper sulfate
	Formalin
	Hydrogen peroxide
	Malachite green
	Methylene blue
	Quinine sulphate
	Salt (Sodium chloride)
	Tea tree oil (melaleuca)

Schedule 4: MPI approved laboratories for post-arrival testing

Diagnostic testing undertaken during post-arrival quarantine is conducted by MPI Investigation and Diagnostic Centre (IDC) laboratories. When set out as a requirement in the import health standard, MPI may approve other laboratories that submit satisfactory evidence of equivalence. Satisfactory evidence for equivalence for laboratories includes: details of approval to a transitional facility standard with the appropriate physical containment approval for the samples held and testing carried out; and current approval under the MPI Recognised Laboratory Programme (RLP) to conduct the required tests. MPI approved laboratories for post-arrival testing are recorded in table 4 of this document.

Table 4: MPI approved laboratories for post-arrival laboratory testing

Laboratory Name	Transitional Facility Approval Number	Laboratory tests
Import Health Standard: Poultry Hatching Eggs & Specific-Pathogen-Free Chicken Eggs (COMEGIC.GEN)		
MPI IDC		All import testing
Poultry Veterinary Services	3583	Newcastle disease virus HI antibody or real-time PCR
		Avian influenza ELISA antibody or real-time PCR

Schedule 5: Definitions and Acronyms

Term/acronym	Definitions
AGID	Agar gel immunodiffusion
BBAT	*buffered* Brucella *antigen test*
C-ELISA	Competitive enzyme-linked immunosorbent assay (C-ELISA)
CF	Complement fixation
CPAg-AGID	Cytoplasmic agar gel immunodiffusion test
ELISA	Enzyme-linked immunosorbent assay
FAVN	Fluorescent antibody virus neutralisation
FPA	Fluorescence polarisation assay
IFAT	Indirect fluorescent antibody test
LP-ELISA	Liquid-phase blocking enzyme-linked immunosorbent assay
MAT	Microscopic agglutination test
PCR	Polymerase chain reaction
RFFIT	Rapid Fluorescent Foci Inhibition Test
RSAT	Rapid slide agglutination test
RT-PCR	Reverse transcription polymerase chain reaction
TAT	Tube agglutination test
SN or VN	Serum virus neutralisation

VI	Virus isolation
VN	Virus neutralisation