Annex XXXIV

DRAFT CHAPTER 7.X.

ANIMAL WELFARE AND DAIRY CATTLE PRODUCTION SYSTEMS

Article 7.X.1.

Definition

Dairy cattle production systems are defined as all commercial cattle production systems where the purpose of the operation includes some or all of the breeding, rearing and management of cattle intended for production of milk.

Article 7.X.2.

Scope

This chapter addresses the welfare aspects of dairy cattle production systems.

Article 7.X.3.

Commercial dairy cattle production systems

Commercial dairy cattle production systems include:

1. Housed ~~or confined~~

   These are systems where cattle are kept housed ~~in confinement~~ and are fully dependent on humans to provide for basic animal needs such as food, shelter and water ~~on a daily basis~~. The type of the housing will depends on the environment, climatic conditions and management system. The animals may be loose housed or tethered, within this housing system.

2. Pastured

   These are systems where cattle ~~have the freedom to roam~~ live outdoors, and ~~where the cattle~~ have some autonomy over diet selection ~~(through grazing)~~, water consumption and access to shelter. Pastured systems exclude any housing except that required for milking.

3. Combination systems

   These are systems where cattle are managed in ~~exposed to~~ any combination of housed ~~housing, confinement or~~ and pasture ~~husbandry methods~~ production systems, either simultaneously, or varied according to changes in climatic conditions or physiological state of the cattle.

Article 7.X.4.

Criteria (or measurables) for the welfare of dairy cattle

The following outcome-based criteria, specifically animal-based criteria, can be useful indicators of *animal welfare*. The use of these indicators and their appropriate thresholds should be adapted to the different situations where dairy cattle are managed. ~~Consideration should also be given to the design of the system~~. These criteria can be considered as a tool to monitor ~~the efficiency~~ impact of design and management, given that both of these can affect *animal welfare* ~~will be affected by both system design and stockmanship~~.

Consideration should also be given to the design of the system and stockmanship.

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1. Behaviour

Certain behaviours could indicate an *animal welfare* problem. These include decreased feed intake, altered locomotory behaviour and posture, altered lying time, ~~human-animal relationship,~~ altered respiratory rate and panting, coughing, shivering and huddling, grooming and the demonstration of stereotypic, agonistic, ~~aggressive~~, depressive or other abnormal behaviours (Wiepkema *et al.*, 1983; Moss, 1992; Desire *et al.*, 2002; Appleby, 2006; Mason and Latham, 2004; Lawrence, 2008; Chapinel *et al.*, 2009).

2. Morbidity rates

Morbidity rates, including for infectious and metabolic *diseases* ~~such as mastitis and metritis~~, lameness, ~~metabolic diseases, parasitic diseases~~, post-partum and post-procedural complications and injury rates, above recognised thresholds, may be direct or indirect indicators of the *animal welfare* status of the whole *herd*. Understanding the aetiology of the *disease* or syndrome is important for detecting potential *animal welfare* problems (Blecha, 2000). Mastitis, lameness, reproductive and metabolic diseases are also particularly important animal health problems for adult dairy cows. Scoring systems, such as body condition, lameness scoring and milk quality, can provide additional information (Sprecher *et al*., 1997; Roche *et al*., 2004; EFSA, 2012)

Both clinical examination and pathology should be utilised as an indicator of *disease*, injuries and other problems that may compromise *animal welfare*. *Post-mortem* examination is useful to establish causes of *death* in cattle.

3. Mortality and culling rates

Mortality and culling rates, affect the length of productive life, and like morbidity rates, may be direct or indirect indicators of the *animal welfare* status (Moss, 1992). Depending on the production system, estimates of mortality and culling rates can be obtained by analysing the rate and causes of *death* and culling and ~~the~~ their temporal ~~tempore~~ and spatial patterns of ~~mortality~~ occurrence. Mortality and culling rates should ~~can~~ be ~~reported~~ recorded regularly, i.e. daily, monthly, annually or with reference to key husbandry activities within the production cycle.

4. Changes in milk yield, body weight and body condition

In growing *animals*, body weight ~~gain (failure to achieve appropriate~~ changes outside the expected growth rate ~~curve)~~ especially excessive sudden loss ~~may be~~ are ~~an~~indicators of poor ~~animal health and~~ *animal welfare*. Future performance, including milk yield and fertility, of replacement heifers can be affected by under or over-nutrition at different stages of rearing.

In lactating *animals*, body condition ~~score~~ outside an acceptable range, significant body weight change and significant decrease in milk yield may be indicators of compromised welfare (Roche *et al.*, 2004; Roche *et al.*, 2009).

In non-lactating *animals*, including bulls, body condition ~~score~~ outside an acceptable range and significant body weight change may be indicators of compromised welfare.

5. Reproductive efficiency

Reproductive efficiency can be an indicator of animal health and *animal welfare* status. Poor reproductive performance, compared with the expected standard for that particular breed, can indicate *animal welfare* problems. Examples may include:

– anoestrus or extended post-partum interval ~~prolonged post-partum anoestrus~~,

– low conception rates,

– high abortion rates,

– high rates of dystocia,

– retained placenta,

– metritis,

– loss of fertility in breeding bulls.

6. Physical appearance

Physical appearance may be an indicator of animal health and *animal welfare*, as well as the conditions of management. Attributes of physical appearance that may indicate compromised welfare include:

– presence of ectoparasites,

– abnormal coat colour, texture or hair loss,

– excessive soiling with faeces, mud or dirt (cleanliness),

– abnormal swellings, injuries and lesions,

– discharges (e.g. from nose, eyes, reproductive tract),

– feet abnormalities,

– abnormal posture indicating pain (e.g. rounded back, head low),

– emaciation and dehydration.

7. Handling responses

Improper handling can result in fear and distress in cattle. Indicators could include:

– evidence of poor human-animal relationship, such as excessive flight distance,

– negative behaviour at milking time, such as reluctance to enter the milking parlour, kicking, vocalisation,

– ~~percentage of~~ *animals* striking restraints or gates,

– ~~percentage of~~ *animals* injured during handling, such as bruising, lacerations, broken horns and fractured legs,

– ~~percentage of~~ *animals* vocalising abnormally or excessively during restraint and handling,

– disturbed behaviour in the chute or race such as reluctance to enter ~~behaviour~~,

– ~~percentage of~~ *animals* slipping or falling.

8. Complications ~~due to~~ from ~~routine~~ common procedures ~~management~~

Surgical and non-surgical procedures may be performed in dairy cattle for ~~improving *animal* performance,~~ facilitating management, ~~and~~ improving human safety and *animal welfare*, and treatment of certain conditions e.g. disbudding, hoof trimming, displaced abomasum. However, if these procedures are not performed properly, *animal welfare* can be compromised. Indicators of such problems could include:

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– post procedure infection ~~and~~, swelling and pain behaviour,

– reduced feed and water intake

– post procedure body condition and weight loss,

– morbidity and mortality.

Article 7.X.5.

Provisions for good animal welfare

Ensuring high welfare of dairy cattle is contingent on several management factors, including system design, environmental management, and stockmanship which include~~s~~ responsible husbandry and provision of appropriate care. Serious problems can arise in any system if one or more of these elements are lacking.

Each recommendation includes a list of relevant outcome-based measurables derived from Article 7.X.4. This does not exclude other measures being used where appropriate.

1. Recommendations on system design and management including physical environment

When new facilities are planned or existing facilities are modified, professional advice on design in regards to animal health and welfare, should be sought ~~(e.g. Milk Development Council, 2006)~~.

Many aspects of the environment can impact on the health and welfare of dairy cattle. These include heat and cold, air quality, lighting, noise, etc.

a) Thermal environment

Although cattle can adapt to a wide range of thermal environments particularly if appropriate breeds are used for the anticipated conditions, sudden fluctuations in weather can cause heat or cold stress.

i) Heat stress

The risk of heat stress for cattle is influenced by environmental factors including air temperature, relative humidity, ~~and~~ wind speed, animal density (area and volume available per animal), lack of sufficient shade, ~~and~~ animal factors including breed, age, body condition, metabolic rate and stage of lactation, and coat colour and density (West, 2003; Bryant *et al.*, 2007).

Animal handlers should be aware of the risk that heat stress poses to cattle and of the thresholds in relation to heat and humidity that may require action. As conditions change, routine daily activities that require moving cattle should be amended appropriately. If the risk of heat stress reaches very high levels the *animal handlers* should institute an emergency action plan that could include provision of shade, fans, ~~easy~~ access to additional drinking water, reduction of animal density, and provision of cooling systems as appropriate for the local conditions (Igono *et al.*, 1987; Kendall *et al.*, 2007; Blackshaw and Blackshaw, 1994).

Outcome-based measurables: feed and water intake, behaviour, ~~including~~ especially respiratory rate and panting, morbidity rate, mortality rate, changes in milk yield.

ii) Cold stress

Protection from extreme weather conditions should be provided when these conditions are likely to create a serious risk to the welfare of cattle, particularly in neonates and young cattle and others that are physiologically compromised. This could be provided by extra bedding and natural or man-made shelters (Manninen *et al.*, 2002).

During extreme cold weather conditions, *animal handlers* should institute an emergency action plan to provide cattle with shelter, adequate feed and water.

Outcome-based measurables: mortality and morbidity rates, physical appearance, behaviour, ~~including~~ especially abnormal postures, shivering and huddling, growth rate ~~curve~~, body condition and weight loss.

b) Lighting

~~Confined~~ Housed cattle that do not have sufficient access to natural light should be provided with supplementary lighting which follows natural periodicity sufficient for their health and welfare, to facilitate natural behaviour patterns and to allow adequate and safe inspection of the cattle (Arab *et al.*, 1995; Dahl *et al.*, 2000; Phillips *et al.*, 2000). The lighting should not cause discomfort to the animals. Housed dairy cows should be provided with subdued night time lighting.

Outcome-based measurables: behaviour, especially altered locomotory behaviour, morbidity, physical appearance~~, mobility~~

c) Air quality

Good air quality and ventilation ~~is an~~ are important ~~factor~~ for the health and welfare of cattle by reducing the risk of respiratory discomfort and *diseases*. ~~It~~ Air quality is affected by air constituents such as gases, dust and micro-organisms, and is influenced strongly by management and building design in housed systems. ~~The air~~ Air composition is influenced by ~~the stocking~~ animal density, the size of the cattle, flooring, bedding, waste management, building design and ventilation system.

Proper ventilation is important for effective heat dissipation in cattle and to prevent~~ing~~ the build-up of effluent gases (e.g. ammonia and hydrogen sulphide), including those from manure storage systems, and dust in the ~~confinement~~ housing unit. Poor air quality and poor ventilation are risk factors for respiratory discomfort and *diseases*. The ammonia level in enclosed housing should not exceed 25 ppm.

Outcome-based measurables: morbidity rate, ~~behaviour,~~ mortality rate, behaviour, especially respiratory rate or panting, coughing, changes in weight and body condition ~~score~~ or~~,~~ growth rate ~~curve~~.

d) Noise

Cattle are adaptable to different levels and types of noise. However, exposure of cattle to sudden and unexpected noises, including from personnel, should be minimised where possible to prevent stress and fear reactions. Ventilation fans, alarms, feeding machinery or other indoor or outdoor equipment should be constructed, placed, operated and maintained in a manner that minimises ~~sudden and unexpected~~ noise.

Outcome-based measurables: behaviour especially altered locomotory behaviour, changes in milk yield.

e) Flooring, bedding, resting surfaces and outdoor areas

In all production systems cattle need a well-drained and comfortable place to rest (Baxter *et al.*, 1983; Baxter, 1992; Moberg and Mench, 2000; Bell and Huxley, 2009; O'Driscoll *et al.*, 2007). All cattle in a group should have sufficient space to lie down and rest at the same time (Kondo *et al.*, 2003; Barrientos *et al.,* 2013; Chapinal *et al*., 2013).

Particular attention should be given to the provisions for calving areas. The environment in such areas (e.g. floors, bedding, temperature, calving pen and hygiene) should be appropriate to ensure the welfare of calving cows and new born calves (Sepúlveda-Varas *et al.* accepted).

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In housed systems calving areas should be thoroughly cleaned and provided with fresh bedding between each calving. Group pens for calving should be managed based on the principle 'all in - all out'. The group calving pen should be thoroughly cleaned and provided with fresh bedding between each animal group. The time interval between first and last calving of cows kept in the same group calving pen should be minimised.

Outdoor calving pens and paddocks should be selected to provide the cow with a clean and comfortable environment. (See also 7.x.5.1 point 2 point i.)

Floor management in housed production systems can have a significant impact on cattle welfare (Ingvartsen *et al.*, 1993; Rushen and de Passillé, 1992; Barkema *et al.*, 1999; Drissler *et al.*, 2005). Areas that compromise welfare and are not suitable for resting (e.g. places with excessive ~~water and~~ faecal accumulation, wet bedding (Fregonesi *et al.*, 2007)) should not be included in the determination ~~calculation~~ of the area available for cattle to lie down.

Slopes of the pens should ~~be maintained to~~ allow water to drain away from feed troughs and not pool ~~excessively~~in the pens.

~~Facilities~~ Flooring, bedding, resting surfaces and outdoor yards should be cleaned as conditions warrant, to ensure good hygiene and minimise disease risk.

In pasture systems, stock should be rotated between paddocks to ensure good hygiene and minimise disease risk.

Some form of bedding should be provided to all animals housed on concrete. In straw, sand or other bedding systems such as rubber mats, crumbled-rubber-filled mattresses and waterbeds, the bedding should be suitable (e.g. hygienic, non-toxic) and maintained to provide cattle with a dry and comfortable place in which to lie (Fisher *et al.*, 2003; Zdanowicz *et al.*, 2004; Bell, 2007; Bell and Huxley, 2009;Fregonesi, *et al.,* 2009).

The design of a standing, or cubicle, or free stall, should be such that the *animal* can stand and lie comfortably on a solid surface (e.g. length, width and height should be appropriate for the size of the largest animal) (Tucker *et al.* 2003; Tucker *et al.*, 2004; Bell 2007; Cook *et al.*, 2008; Tucker *et al.*, 2009; Bernardi *et al.*, 2009; Anderson, 2010). There should be sufficient room for the animal to rest and to rise adopting normal postures, to move its head freely as it stands up, and to groom itself without difficulty. ~~Where possible, this design should allow for the *animal* to move its head freely as it stands up~~. Where individual spaces are provided for cows to rest, there should be at least one space per cow (Fregonesi *et al.*, 2007).

Alleys and gates should be designed and operated to allow free movement of cattle. Floors should be designed to minimise slipping and falling, promote foot health, and reduce the risk of claw injuries. ~~Slippery surfaces should be avoided (e.g. grooved concrete; metal grating, not sharp; rubber mats or deep sand) to minimise slipping and falling~~ (Rushen and de Passilé, 2006; Haufe *et al.*, 2009).

If a housing system includes areas of slatted floor, cattle, including replacement stock, should have access to a solid lying area. The slat and gap widths should be appropriate to the hoof size of the cattle to prevent injuries (Hinterhofer *et al.*, 2006; Telezhenko *et al.*, 2007).

If cattle have to be tethered whether indoors or outdoors, they should, as a minimum, be able to lie down, ~~and~~ stand up, maintain normal body posture, and turn around unimpeded. Cows kept in tie stall housing should be allowed sufficient untethered exercise to prevent welfare problems. When tethered outdoors they should be able to walk. *Animal handlers* should be aware of the higher risks of welfare problems where cattle are tethered (Loberg *et al.*, 2004; Tucker *et al.*, 2009).

Where breeding bulls are in housing systems, care should be taken to ensure that they have sight of other cattle with sufficient space for resting and exercise. If used for natural mating, the floor should not be slatted or slippery.

Outcome-based measurables: morbidity rates, especially ~~(e.g.~~ lameness~~,~~ and injury rates (e.g. hock and knee injuries and skin lesions ~~pressure sores~~), behaviour, especially altered posture, grooming and locomotory behaviour, changes in weight and body condition ~~score~~, physical appearance (e.g. hair loss, cleanliness score), growth rate ~~curve~~.

f) Location, construction and equipment

The impacts of climate and geographical factors on dairy cattle should be evaluated when farms are established. Efforts should be made to mitigate any negative impacts of those factors, including matching dairy breed to location and consideration of alternate sites.

~~Farms for dairy cattle should be situated in an appropriate geographical location for the health, welfare and productivity of the cattle.~~

All facilities for dairy cattle should be constructed, maintained and operated to minimise the risk to the welfare of the cattle (Grandin, 1980).

In pasture and combination systems tracks and races between the milking area and paddocks should be laid out and managed so as to minimise the overall distances walked. Construction and maintenance of tracks and races, including their surface, should minimise any risk to the welfare of the cattle, especially from foot health.

Equipment for milking, handling and restraining dairy cattle should only be used in a way that minimises the risk of injury, pain or distress. Manufacturers of such equipment should consider animal welfare when preparing operating instructions.

Electrified equipment designed to control animal behaviour (e.g. cow trainer, electrified gate) that has been associated with increased incidence of welfare problems should not be used.

Electric fences should be well-designed and maintained to avoid welfare problems, and used only according to manufacturer's instructions

Cattle in all ~~housed or pastured~~ production systems should be offered adequate space for comfort and socialisation (Kondo *et al.*, 2003).

Where access to an outdoor area, including pasture, is possible, there may be additional benefits to dairy cattle from the opportunity to graze and exercise, and a decreased risk of lameness.

In all production systems, feed and water provision should allow all cattle to have ~~unimpeded~~ access to feed and water (DeVries and Keyserlingk, 2005; DeVries *et al.*, 2005, DeVries *et al.*, 2004; Endres *et al.*, 2005). Feeders and water providers should be clean and free of spoiled, mouldy, sour, unpalatable feed and faecal contamination.

Milking parlour, free stalls, standings, cubicles, races, chutes and pens should be free from sharp edges and protrusions to prevent injury to cattle.

Where possible, there should be a separate~~d~~ area ~~to closely examine~~ where individual *animals~~,~~* can be examined closely and which should have restraining facilities.

~~A hospital area for~~ When relevant, sick and injured *animals* should ~~be provided so the *animals* can~~ be treated away from healthy *animals* When a dedicated space is provided this should accommodate all the needs of the animal e.g. recumbent animals may require additional bedding or alternative floors.

Hydraulic, pneumatic and manual equipment should be adjusted, as appropriate, to the size of cattle to be handled. Hydraulic and pneumatic operated restraining equipment should have pressure limiting devices to prevent injuries. Regular cleaning and maintenance of working parts is imperative to ensure the system functions properly and safe for the cattle.

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Mechanical and electrical devices used in facilities should be safe for cattle.

Dipping baths and spray races are sometimes used in dairy cattle production for ectoparasite control. Where these are used, they should be designed and operated to minimise the risk of crowding and to prevent injury and drowning.

Collecting yards (e.g. entry to the milking parlour) should be designed and operated to minimise stress ~~crowding~~ and prevent injuries and lameness.

The loading areas and ramps, including the slope of the ramp, should be designed to minimise stress and injuries for the *animals* and ensure the safety of the *animal handlers*, according to Chapters 7.2., 7.3. and 7.4.

Outcome-based measurables: handling response, morbidity rate, especially lameness, mortality rate, behaviour, especially altered locomotory behaviour, changes in weight and body condition ~~score~~, physical appearance, ~~lameness,~~ growth ~~curve~~ rate.

g) Emergency plans

Where the failure of power, water and feed supply systems could compromise *animal welfare,* dairy producers should have contingency plans to cover the failure of these systems. These plans may include the provision of fail-safe alarms to detect malfunctions, back-up generators, ~~access to maintenance providers~~ contact information for key service providers, ability to store water on farm, access to water cartage services, adequate on-farm storage of feed and alternative feed supply.

~~Dairy producers should have contingency plans to cover the evacuation of animals in case of emergency (e.g. fire, flooding).~~

~~Outcome-based measurables: mortality, morbidity, behaviour, vocalization.~~

Preventive measures for emergencies should be input-based rather than outcome based. Contingency plans should be documented and communicated to all responsible parties. Alarms and back-up systems should be checked regularly.

2. Recommendations on stockmanship and animal management

Good management and stockmanship are critical to providing an acceptable level of *animal welfare*. Personnel involved in handling and caring for dairy cattle should be competent and receive up-to-date ~~appropriate~~ training to equip them with the necessary practical skills and knowledge of dairy cattle behaviour, handling, health, biosecurity, physiological needs and welfare. There should be a sufficient number of *animal handlers* to ensure the health and welfare of the cattle.

a) Biosecurity and animal health

i) Biosecurity and disease prevention

Biosecurity means a set of measures designed to maintain a *herd* at a particular health status and to prevent the entry or spread of infectious agents.

Biosecurity plans should be designed, ~~and~~ implemented and maintained, commensurate with the best possible ~~desired~~ *herd* health status, available resources and infrastructure, and current *disease* risk and, for OIE *listed diseases* in accordance with relevant recommendations found in the *Terrestrial Code*.

These biosecurity plans should address the control of the major sources and pathways for spread of pathogens:

– cattle, including introductions to the herd,

– calves coming from different sources,

– other domestic animals, ~~and~~ *wildlife*, and pests,

– people including sanitation practices,

– equipment, tools and facilities,

– *vehicles*,

– air,

– water supply, feed and bedding,

– manure, waste and dead stock disposal

– ~~feed,~~

– semen and embryos.

Outcome-based measurables: morbidity rate, mortality rate, reproductive efficiency, changes in weight and body condition ~~score~~, changes in milk yield.

ii) Animal health management

Animal health management means a system designed to optimise the physical and behavioural health and welfare of the dairy *herd*. It includes the prevention, treatment and control of *diseases* and conditions affecting the *herd* (in particular mastitis, lameness, reproduction and metabolic diseases).

There should be an effective programme for the prevention and treatment of *diseases* and conditions, formulated in consultation with a *veterinarian*, where appropriate. This programme should include the recording of production data (e.g. number of lactating cows, births, animal movements in and out of the *herd*, milk yield), morbidities, mortalities, culling rate and medical treatments. It should be kept up to date by the *animal handler*. Regular monitoring of records aids management and quickly reveals problem areas for intervention.

At national or regional level there should be programmes to gather records and monitor diseases of importance for animal welfare.

For parasitic burdens (e.g. endoparasites, ectoparasites and protozoa), a programme should be implemented to monitor, control and treat, as appropriate.

Lameness is a problem in dairy cattle ~~herds~~. *Animal handlers* should take measures to prevent lameness, and monitor the state of feet and claws and maintain foot health (Sprecher et al., 1997; Flower and Weary, 2006; Chapinal et al., 2009)

Those responsible for the care of cattle should be aware of early specific signs of *disease* or distress (e.g. coughing, ocular discharge, changes in milk appearance, changing locomotion score), and non-specific signs such as reduced feed and water intake, reduction of milk production, changes in weight and body condition, changes in behaviour or abnormal physical appearance (FAWC, UK, 1993; Ott *et al.*, 1995; Anonymous, 1997; Blecha, 2000; EU-SCAHAW, 2001; Webster, 2004; Mellor and Stafford, 2004; Millman *et al.*, 2004; OIE, 2005; Appleby, 2006; Broom, 2006; Gehring *et al.*, 2006; Fraser, 2008; Blokhuis *et al.*, 2008; Mench, 2008; Fraser, 2009; Ortiz-Pelawz *et al.*, 2008; FAWAC, Ireland; Hart, 1987; Tizard, 2008; Weary *et al.*, 2009).

Cattle at higher risk of *disease* or distress will require more frequent inspection by *animal handlers*. If *animal handlers* suspect the presence of a *disease* or are not able to correct the causes of *disease* or distress, they should seek advice from those having training and experience, such as *veterinarians* or other qualified advisers, as appropriate.

~~In the event of an *OIE listed disease* being suspected or diagnosed, the official veterinary services should be notified (see Chapter 1.1. of the *Terrestrial Code*).~~

Vaccinations and other treatments administered to cattle should be undertaken by people skilled in the procedures and on the basis of veterinary or other expert advice.

Animal handlers should be competent ~~have experience~~ in managing chronically ill or injured cattle, for instance in recognising and dealing with non-ambulatory cattle, especially those that have recently calved. Veterinary advice should be sought as appropriate.

Non-ambulatory cattle should have access to water at all times and be provided with feed at least once daily and milked as necessary. They should be provided shade and protected from predators. They should not be transported or moved unless absolutely necessary ~~except~~ for treatment or diagnosis. Such movements should be done carefully using methods avoiding dragging or excessive lifting.

Animal handlers should also be competent in assessing fitness to transport, as described in Chapter 7.3.

In case of chronic *disease* or injury, when treatment has failed or ~~been attempted and~~ recovery ~~deemed~~ is unlikely (e.g. cattle that are unable to stand up, unaided or refuse to eat or drink), the *animal* should be humanely killed (AABP, 2013; AVMA, 2013) and in accordance to Chapter 7.5 or Chapter 7.6 as applicable.

Animals suffering from photosensitisation should be provided with ~~offered~~ shade and where possible the cause should be identified.

Outcome-based measurables: morbidity rate, mortality rate, reproductive efficiency, depressive behaviour, altered locomotory behaviour, physical appearance and changes in weight and body condition ~~score~~, changes in milk yield.

iii) Emergency plans for disease outbreaks

Emergency plans should cover the management of the farm in the face of an emergency *disease outbreak*, consistent with national programmes and recommendations of *Veterinary Services* as appropriate.

b) Nutrition

The nutrient requirements of dairy cattle have been well defined. Energy, protein, mineral and vitamin content of the diet are major factors determining milk production and growth, feed efficiency, reproductive efficiency, and body condition (National Research Council, 2001).

Cattle should be provided with access to an appropriate quantity and quality of balanced nutrition that meets their physiological needs. Feeding systems should be designed to minimise agonistic behaviour.

Where cattle are maintained in outdoor conditions, short term exposure to climatic extremes may prevent access to nutrition that meets their daily physiological needs. In such circumstances the *animal handler* should ensure that the period of reduced nutrition is not prolonged and that extra food and water supply are provided if welfare would otherwise be compromised.

Animal handlers should have adequate knowledge of appropriate body condition ~~scores~~ scoring systems for their cattle and should not allow body condition to go outside an acceptable range according to breed and physiological status (Roche *et al.*, 2004; Roche *et al.*, 2009).

Feedstuffs and feed ingredients should be of satisfactory quality to meet nutritional needs and stored to minimise contamination and deterioration (CA 2004, CAC/RCP 54-2004). Where appropriate, feed and feed ingredients should be tested for the presence of substances that would adversely impact on animal health (Binder, 2007).

The relative risk of digestive upset in cattle increases as the proportion of grain increases in the diet or if quality of silage is poor. Therefore, when grain is given to dairy cattle it should be introduced slowly and constitute no more than 50% of the daily diet. Palatable fibrous food such as silage, grass and hay, should be available *ad libitum* to meet metabolic requirements in a way that promotes digestion and ensures normal rumen function.

Animal handlers should understand the impact of cattle size and age, weather patterns, diet composition and sudden dietary changes in respect to digestive upsets and their negative consequences (displaced abomasum, sub-acute ruminal acidosis, bloat, liver abscess, laminitis) (Enemark, 2008; Vermunt and Greenough, 1994). Where appropriate, dairy producers should consult a cattle nutritionist for advice on ration formulation and feeding programmes.

Particular attention should be paid to nutrition in the last month of pregnancy, with regards to energy balance, roughage and micronutrients, in order to minimise calving and post-calving diseases and body condition loss (Drackley, 1999; Huzzey *et al.*, 2005; Bertoni *et al.*, 2008; Goldhawk *et al,* 2009; Jawor *et al.,* 2012; Vickers *et al.,* 2013).

Feeding calves all-liquid diets limits the physiological development of the fore-stomach and the normal development of the process of rumination. Calves over two weeks old should have a sufficient daily ration of fibrous food to promote rumen development (Reece & Hotchkiss. 1987)

Dairy producers should become familiar with potential micronutrient deficiencies or excesses for ~~housed and pastured~~ production systems in their respective geographical areas and use appropriately formulated supplements where necessary.

All cattle, including unweaned calves, need an adequate supply and access to palatable water that meets their physiological requirements and is free from contaminants hazardous to cattle health (Lawrence *et al.*, 2004a; Cardot *et al.*, 2008).

Outcome-based measurables: mortality rates, morbidity rates, behaviour, especially agonistic behaviour (at the feeding area), changes in weight and body condition ~~score~~, reproductive efficiency, changes in milk yield, growth rate ~~curve~~ vocalisation.

c) Social environment

Management of cattle should take into account their social environment as it relates to *animal welfare,* particularly in housed systems (Le Neindre, 1989; Sato *et al.*, 1993; Jóhannesson and Sørensen, 2000; Bøe and Færevik, 2003; Bouissou *et al.*, 2001; Kondo *et al.*, 2003). Problem areas include: agonistic and oestrus activity, mixing of heifers and cows, feeding cattle of different size and age in the same pens, high stocking density, insufficient space at the feeder, insufficient water access and mixing of bulls.

Management of cattle in all systems should take into account the social interactions of cattle within groups. The *animal handler* should understand the dominance hierarchies that develop within different groups and focus on high risk *animals*, such as very young, very old, small or large size for cohort group, for evidence of agonistic behaviour ~~bullying~~ and excessive mounting behaviour. The *animal handler* should understand the risks of increased agonistic interactions between *animals*, particularly after mixing groups. ~~Cattle that are suffering from excessive agonistic activity should be removed from the group~~ (Bøe and Færevik, 2003; Jensen and Kyhn, 2000; von Keyserlingk *et al.*, 2008).

When other measures have failed, cattle that are expressing excessive agonistic activity or excessive mounting behaviour should be removed from the group (Bøe and Færevik, 2003; Jensen and Kyhn, 2000; von Keyserlingk et al., 2008).

Animal handlers should be aware of the *animal welfare,* problems that may be caused by mixing of inappropriate groups of cattle, and provide adequate measures to minimise them (e.g. introduction of heifers in a new group, mixing of *animals* at different production stages that have different dietary needs) (Grandin, 1998; Grandin, 2003; Grandin, 2006; Kondo *et al.*, 2003).

Horned and non-horned cattle should not be mixed because of the risk of injury (Menke *et al.*, 1999). When farmers intend to change the phenotype of their animals, they should take appropriate measures to reduce this risk.

Outcome-based measurables: behaviour, especially ~~(e.g.~~ lying times~~,)~~, physical injuries and lesions, changes in weight and body condition ~~score~~, physical appearance (e.g. cleanliness), lameness scores, changes in milk yield, morbidity rate, mortality rate, growth rate, ~~curve~~ vocalisation.

d) ~~Stocking density~~ Space allowance

~~High stocking densities~~ Insufficient and inadequate space allowance may increase the occurrence of injuries and have an adverse effect on growth ~~curve~~ rate, feed efficiency, and behaviour such as locomotion, resting, feeding and drinking (Martin and Bateson, 1986; Kondo *et al.*, 2003).

Space allowance ~~Stocking density~~ should be managed taking into account different areas for lying, standing and feeding. ~~such that c~~ Crowding should not ~~does not~~ adversely affect normal behaviour of cattle and durations of time spent lying. (Bøe and Færevik, 2003).

~~This includes the ability to~~ All cattle should be able to rest simultaneously, and each animal ~~to~~ lie down ~~freely~~, stand up and move around freely. ~~without the risk of injuries, move freely around the pen and access feed and water.~~In growing animals space allowance ~~Stocking density~~ should also be managed such that weight gain ~~and duration of time spent lying~~ is not adversely affected ~~by crowding~~ (Petherick and Phillips, 2009). If abnormal behaviour is seen, corrective measures should be taken, such as increasing space allowance, ~~reducing stocking density~~, redefining the areas available for lying, standing and feeding.

In pastured systems, stocking density should depend on the available feed and water supply and pasture quality (Stafford and Gregory, 2008).

Outcome-based measurables: behaviour, especially depressive behaviour, morbidity rate, mortality rate, changes in weight and body condition ~~score~~, physical appearance, changes in milk yield, parasite burden, growth rate ~~curve.~~

e) Protection from predators

Cattle should be protected as much as possible from predators.

Outcome-based measurables: mortality rate, morbidity rate (injury rate), behaviour, physical appearance.

f) Genetic selection

Welfare and health considerations, in addition to productivity, should be taken into account when choosing a breed or subspecies for a particular location or production system (Lawrence *et al.*, 2001; Lawrence *et al.*, 2004b; Boissy and Le Neindre, 1997; Dillon *et al.*, 2006; Boissy *et al.*, 2007; Jensen *et al.*, 2008; Veissier *et al.*, 2008; Macdonald *et al.*, 2008). ~~Examples of these include nutritional maintenance requirement, ectoparasite resistance and heat tolerance.~~

In breeding programmes, at least as much attention should be paid to criteria conducive to the improvement of cattle welfare, including health, as to production criteria. The conservation and development of genetic lines of dairy cattle, which limit or reduce animal welfare problems, should be encouraged. Examples of such criteria include nutritional maintenance requirement, ectoparasite resistance and heat tolerance.

Individual *animals* within a breed should be selected to propagate offspring that exhibit traits beneficial to animal health and welfare by promoting robustness and longevity. These include resistance to infectious and production related *diseases*, ease of calving, fertility, body conformation and mobility, and temperament.

Outcome-based measurables: morbidity rate, mortality rate, length of productive life, behaviour, physical appearance, reproductive efficiency, lameness, human-animal relationship, growth rate ~~curve,~~ body condition ~~score~~ outside an acceptable range.

g) Artificial insemination, pregnancy diagnosis and embryo transfer

Semen collection should be carried out by a trained operator in a manner that does not cause pain or distress to the bull and any teaser animal used during collection and in accordance with Chapter 4.6.

Artificial insemination and pregnancy diagnosis should be performed by a competent operator and in accordance with the provisions of Chapter 4.7..

Embryo transfer should be performed under an epidural or other anaesthesia by a trained operator, preferably a *veterinarian* or a *veterinary para-professional* and in accordance with the provisions of Chapter 4.7.and Chapter 4.8.

Outcome-based measurables: behaviour, morbidity rate, reproductive efficiency

h) Dam and ~~S~~sire selection and calving management

Dystocia is ~~can be~~ a welfare risk to dairy cattle (Proudfoot *et al*, 2009). Heifers should not be bred before they reach ~~are at~~ the stage of physical maturity sufficient to ensure the health and welfare of both dam and calf at birth. The sire has a highly heritable effect on final calf size and as such can have a significant impact on ease of calving. Sire selection for embryo implantation, insemination or natural mating, should take into account the maturity and size of the female.

Pregnant cows and heifers should be managed during pregnancy so as to achieve an appropriate body condition range for the breed. Excessive fatness increases the risk of dystocia and metabolic disorders during late pregnancy or after parturition.

Cows and heifers should be monitored when they are close to calving. *Animals* observed to be having difficulty in calving should be assisted by a competent handler as soon as possible after they are detected.

Outcome-based measurables: morbidity rate ~~(rate of dystocia)~~, mortality rate (cow and calf), reproductive efficiency, especially rate of dystocia, retained placenta and metritis, body condition ~~score~~.

i) New born calves (see also 7.x.5 1e)

Calving aids should not be used to speed the birthing process, only to assist in cases of dystocia, and should not cause undue pain, distress, or further medical problems.

Newborn calves are susceptible to hypothermia. The temperature and ventilation of the birthing area should consider the needs of the newborn calf. Soft, dry bedding and supplemental heat can help prevent cold stress.

Receiving adequate immunity from colostrum generally depends on the volume and quality of colostrum ingested, and how soon after birth the calf receives it.

Animal handlers should ensure that calves receive sufficient colostrum, preferably from their own dam, and within 24 hours of birth to provide passive immunity. Colostrum is most beneficial if received during the first six hours after birth. Where there is risk of disease transfer from the dam, colostrum from a healthy cow should be used. Where possible, calves should continue to receive colostrum or equivalent for at least five days after birth.

~~Where new~~ Recently born calves ~~need to be~~ should not be transported until the navel has healed, and after which time any transport required ~~this~~ should be carried out according to Chapter 7.3.

Calves should be handled and moved in a manner which minimises distress and avoids pain and injury.

Outcome-based measurables: mortality rate, morbidity rate, growth rate ~~curve~~.

j) Cow-calf separation and weaning

Different strategies to separate the calf from the cow are utilised in dairy cattle production systems. These include early separation (usually within 48 hours of birth) or a more gradual separation (leaving the calf with the cow for a longer period so it can continue to be suckled). Separation is ~~can be~~ stressful for both cow and calf (Newberry and Swanson, 2008; Weary *et al.*, 2008).

For the purposes of this chapter, weaning means the change from a milk-based diet to a fibrous diet and the weaned calf no longer receives milk in its diet. This change should be made ~~done~~ gradually and calves should be weaned only when their ruminant digestive system has developed sufficiently to enable them to maintain growth, health and good welfare (Roth *et al.*, 2009).

~~If necessary,~~ ~~d~~Dairy cattle producers should seek expert advice on the most appropriate time and method of weaning for their type of cattle and production system.

Outcome-based measurables: morbidity rate, mortality rate, behaviour after separation (vocalisations, activity of the cow and calf) , physical appearance, changes in weight and body condition ~~score~~, growth rate ~~curve~~.

k) Rearing of replacement stock

Young calves are at particular risk of thermal stress. Special attention should be paid to management of the thermal environment (e.g. provision of additional bedding, nutrition or protection to maintain warmth and appropriate growth). (Camiloti, et al. 2012)

Where possible, replacement stock should be reared in groups. Animals in groups should be of similar age and physical size (Jensen and Kyhn, 2000; Bøe and Færevik, 2003).

Whether reared individually or in group pens ~~When in pens~~, each calf should have enough space to be able to turn around, rest, stand up and groom comfortably and see and touch other animals. (see also 1.e).

Replacement stock should be monitored for cross-sucking and appropriate measures taken to prevent this occurring (e.g. provide~~sion of~~ sucking devices, revise or modify feeding practices, provide other environmental enrichments ~~use of nose guards or temporary separation~~) (Seo *et al*., 1998; Jemsem, 2003; De Paula Vieira *et al*., 2010; Ude *et al*., 2011).

Particular attention should be paid to the nutrition, including trace elements, of growing replacement stock to ensure good health and that they achieve an appropriate growth curve for the breed and farming objectives.

Outcome-based measurables: morbidity rate, mortality rate, behaviour, especially cross-sucking, altered grooming and lying behaviours, injuries, physical appearance, changes in weight and body condition ~~score~~, growth rate ~~curve, reproduction efficiency~~.

l) Milking management

Milking, whether by hand or machine, should be carried out in a calm and considerate manner in order to avoid pain and distress. Special attention should be paid to the hygiene of personnel, the udder and milking equipment (Barkema *et al.*, 1999; Breen *et al.*, 2009). All cows should be checked for abnormal milk at every milking.

Milking machines, especially automated milking systems, should be used and maintained in a manner which minimises injury to teats and udders. Manufacturers of such equipment should provide operating instructions that consider animal welfare.

A regular milking routine should be established relevant to the stage of ~~the~~ lactation and the capacity of the system. ~~(e.g.~~ For example, cows ~~female~~ in full lactation may need more frequent milking to relieve udder pressure.~~,)~~. ~~All milking cows should be checked for abnormal milk at all milking times.~~

Animal handlers should regularly check the information provided by the milking system and act accordingly to protect the welfare of the cows.

~~Where a milking machine is used, it should be maintained, according to the recommendations of the manufacturer, in order to minimise teat and udder damage.~~

Special care should be paid to *animals* being milked for the first time. If possible, they should be familiarised with the milking facility prior to giving birth.

Long waiting times before and after milking can lead to health and welfare problems (e.g. lameness, reduced time to eat). Management should ensure that waiting times are minimised.

Outcome-based measurables: morbidity rate (e.g. udder health), behaviour, changes in milk yield, milk quality, physical appearance (e.g. lesions).

m) Painful husbandry procedures

Husbandry practices are routinely carried out in cattle for reasons of management, *animal welfare* and human safety. Those practices that have the potential to cause pain should be performed in such a way as to minimise any pain and stress to the *animal*.

~~Alternative procedures that reduce or avoid pain should be considered.~~

Future options for enhancing *animal welfare* in relation to these procedures include: ceasing the procedure and addressing the current need for the operation through management strategies; breeding cattle that do not require the procedure; or replacing the current procedure with a non-surgical alternative that has been shown to enhance *animal welfare*.

Example of such interventions include: dehorning, tail docking and identification.

i) Disbudding and ~~D~~ dehorning ~~(including disbudding)~~

Dairy cattle that are naturally horned are commonly dehorned in order to reduce animal injuries and hide damage, improve human safety, reduce damage to facilities and facilitate transport and handling (Laden *et al.*, 1985; Petrie *et al.*, 1996; Singh *et al.*, 2002; Sutherland *et al.*, 2002; Stafford *et al.*, 2003; Stafford and Mellor, 2005). Where practical and appropriate for the production system, the selection of polled cattle is preferable to dehorning.

Annex XXXIV (contd)

Performing disbudding at an early age where practicable, is preferred, rather than dehorning older cattle.

Thermal cautery of the horn bud by a trained operator with proper equipment is the recommended method in order to minimise post-operative pain. This should be done at an appropriate age before the horn bud has attached to the skull.

Guidance from a *veterinarian* or *veterinary paraprofessional* as to the optimum method and timing for the type of cattle and production system should be sought. The use of anaesthesia and analgesia are strongly recommended when performing disbudding, and should always be used when dehorning. Appropriate restraint systems and procedures are required when disbudding or dehorning.

Other methods of disbudding include: removal of the horn buds with a knife and the application of chemical paste to cauterise the horn buds. Where chemical paste is used, special attention should be paid to avoid chemical burns to other parts of the calf or to other calves. This method is not recommended because pain management is difficult.

Operators should be trained and competent in the procedure used, and be able to recognise the signs of pain and complications that may include excessive bleeding, sinus infection.

~~Where it is necessary to dehorn dairy cattle, producers should seek guidance from veterinary advisers as to the optimum method, use of anesthesia and analgesia, and timing for their type of cattle and production system.~~

~~Performing dehorning or disbudding at an early age, where practicable, and the use of anaesthesia or analgesia, under the supervision of a *veterinarian*, are strongly recommended.~~

~~Thermal cautery of the horn bud by a trained operator with proper equipment is the recommended method in order to minimise post-operative pain. This should be at an appropriate age before the horn bud has attached to the skull. Other methods of dehorning include: removal of the horn buds with a knife and the application of chemical paste to cauterise the horn buds. Where chemical paste is used, special attention should be paid to avoid chemical burns to other parts of the calf or to other calves.~~

Methods of dehorning when horn development has commenced involve the removal of the horn by cutting or sawing through the base of the horn close to the skull. Operators removing developed horns from dairy cattle should be trained and competent in the procedure used, and be able to recognise the signs of complications (e.g. excessive bleeding, sinus infection).

ii) Tail docking

Research shows that tail docking does not improve the health and *welfare of* dairy cattle ~~*animals*~~, therefore it is not recommended~~,~~ as a routine procedure~~, to dock the tails of dairy cattle.~~ As an alternative, trimming of tail hair should be considered where maintenance of hygiene is a problem (Sutherland and Tucker, 2011).

iii) Identification

Ear-tagging, ear-notching, tattooing, ~~freeze~~ branding and radio frequency identification devices (RFID) are ~~preferred~~ methods of permanently identifying dairy cattle ~~from an *animal welfare* standpoint~~. The least invasive approach should be adopted whichever method is chosen (e.eg minimum number of ear tags per ear, size of notch). It should be accomplished quickly, expertly and with proper equipment. ~~In some situations however hot iron branding may be required or be the only practical method of permanent identifying dairy cattle. If cattle are branded, it should be accomplished quickly, expertly and with the proper equipment. Identification systems should be established also according to Chapter 4.1.~~

Freeze branding is thought to be less painful than branding with a hot iron. Both methods should be avoided as alternative identification methods exist (e.g. electronic identification or ear-tags). When branding is used, operator should be trained and competent in procedures used and be able to recognise signs of complications.

Identification systems should be established also according to Chapter 4.1.

Outcome-based measurables: ~~postprocedural complication rate~~, morbidity rate (post-procedural complications), abnormal behaviour, vocalisations, physical appearance, ~~changes in weight and body condition score~~.

n) Inspection and handling

Dairy cattle should be inspected at intervals appropriate to the production system and the risks to the health and welfare of the cattle. ~~In most circumstances cattle~~ Lactating cows should be inspected at least once a day. Some *animals* ~~may benefit from~~ should be inspected more frequently, ~~inspection~~ for example: neonatal calves (Larson *et al.*, 1998; Townsend, 1994), cows in late gestation (Boadi and Price, 1996; Mee, 2008; Odde, 1996, Proudfoot, K., et al. 2013), newly weaned calves, cattle experiencing environmental stress and those that have undergone painful husbandry procedures or veterinary treatment.

Dairy cattle identified as sick or injured should be given appropriate treatment at the first available opportunity by competent and trained *animal handlers*. If *animal handlers* are unable to provide appropriate treatment, the services of a *veterinarian* should be sought.

Recommendations on the handling of cattle are also found in Chapter 7.5. In particular handling aids that may cause pain and distress (e.g. ~~sharp prods,~~ electric goads) should be used only in extreme circumstances and provided that the animal can move freely. Dairy cattle should not be prodded in sensitive areas including the udder, face, eyes, nose or ano-genital region. Electric prods should not be used on calves (see also point 3 of Article 7.3.8.).

Where dogs are used, as an aid for cattle herding, they should be properly trained. *Animal handlers* should be aware that presence of dogs can stress the cattle and cause fear and should keep them under control at all times. The use of dogs is not appropriate in housed systems, collection yards or other small enclosures where the cattle cannot move freely away.

Cattle are adaptable to different visual environments. However, exposure of cattle to sudden ~~or persistent~~ movement or changes in visual contrasts should be minimised where possible to prevent stress and fear reactions.

Electroimmobilisation should not be used.

Outcome-based measurables: human-animal relationship, morbidity rate, mortality rate, behaviour, especially altered locomotory behaviour, vocalisations. ~~reproductive efficiency, changes in weight and body condition score, changes in milk yield.~~

o) Personnel training

All people responsible for dairy cattle should be competent according to their responsibilities and should understand cattle husbandry, animal handling, milking routines, reproductive management techniques, behaviour, biosecurity, signs of *disease*, and indicators of poor *animal welfare* such as stress, pain and discomfort, and their alleviation.

Competence may be gained through formal training or practical experience.

Outcome-based measurables: human-animal relationship, morbidity rate, mortality rate, behaviour, reproductive efficiency, changes in weight and body condition ~~score~~, changes in milk yield.

Annex XXXIV (contd)

p) Disaster management

Plans should be in place to minimise and mitigate the effect of disasters (e.g. earthquake, flooding, fire, hurricane). Such plans may include evacuation procedures, identifying high ground, maintaining emergency food and water stores, destocking and humane killing when necessary.

~~Plans should be in place to minimise and mitigate~~There should also be plans to address the effects of ~~natural disasters or~~ extreme climatic conditions, such as ~~heat stress,~~ drought, blizzard and flooding. ~~Humane *killing* procedures for sick or injured cattle should be part of the emergency action plan~~. In times of drought, animal management decisions should be made as early as possible and these should include a consideration of reducing cattle numbers.

Humane *killing* procedures for sick or injured cattle should be part of the disaster management plan.

Reference to emergency plans can also be found in points 1 g) and 2a) iii) of Article 7.X.5.

q) Humane killing

For sick and injured cattle a prompt diagnosis should be made to determine whether the animal should be treated or humanely killed.

The decision to kill an *animal* humanely and the procedure itself should be undertaken by a competent person.

Reasons for humane killing may include:

– severe emaciation, weak cattle that are non-ambulatory or at risk of becoming downers;

– non-ambulatory cattle that will not stand up, refuse to eat or drink, have not responded to therapy;

– rapid deterioration of a medical condition for which therapies have been unsuccessful;

– severe, debilitating pain;

– compound (open) fracture;

– spinal injury;

– central nervous system *disease*;

– multiple joint *infections* with chronic weight loss; and

– premature calves that are unlikely to survive, or calves that have debilitating congenital defect.

– as part of disaster management response

For a description of acceptable methods for humane *killing* of dairy cattle see Chapter 7.6.

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Annex XXXVI

CHAPTER X.X.

INFECTION WITH *TAENIA SOLIUM*

Article X.X.1.

General provisions

Taenia solium is a cestode (tapeworm) that is endemic in major parts of Latin America, Asia and sub-Saharan Africa. The adult worm occurs in the small intestine of humans (definitive host) causing taeniosis. The larval stage (cysticercus) occurs in striated muscles, subcutaneous tissues and central nervous system of pigs (intermediate hosts), causing cysticercosis. Other suids and dogs can be infected but are not epidemiologically significant. Humans may also harbour the larval stage. The most severe form of the infection in humans by the larval stage is neurocysticercosis. Cysticercosis, although normally clinically inapparent in pigs, is associated with significant economic losses due to carcass condemnation and decreased value of pigs, and causes a major *disease* burden in humans, especially epilepsy.

For the purposes of the *Terrestrial Code*, infection with *T. solium* is defined as a zoonotic parasitic *infection* of pigs.

In humans, taeniosis occurs following ingestion of pig *meat* containing viable cysticerci and can be prevented by avoiding consumption of raw or undercooked contaminated pig *meat*. In humans, cysticercosis occurs following ingestion of *T. solium* eggs and can be prevented by avoiding exposure to *T. solium* eggs through detection and treatment of human carriers, community health education, appropriate sanitation, personal hygiene, and good food hygiene. Collaboration between the *Veterinary Authority* and the public health authority is an essential component in preventing and controlling *T. solium* transmission.

In pigs, cysticercosis occurs by ingestion of *T. solium* eggs from faeces or environments contaminated with faeces, from humans harbouring adult *T. solium*.

The aim of this chapter is to reduce the risk of infection with *T. solium* of humans and pigs and to minimise the international spread of *T. solium*. The chapter provides recommendations for prevention, control, and *surveillance* of infection with *T. solium* in pigs.

This chapter should be read in conjunction with the Codex Alimentarius Code of Hygienic Practice for Meat (CAC/RCP 58-2005).

When authorising the import or transit of the *commodities* covered in this chapter, with the exception of those listed in Article X.X.2. *Veterinary Authorities* should apply the recommendations in this chapter.

Standards for diagnostic tests are described in the *Terrestrial Manual*.

Article X.X.2.

Safe commodities

When authorising import or transit of the following *commodities* of pigs, *Veterinary Authorities* should not require any *T. solium* related conditions regardless of the status of the animal population of the *exporting country* or *zone*:

1) processed fat;

2) casings;

3) semi-processed skins which have been submitted to the usual chemical and mechanical processes in use in the tanning industry;

4) bristles, hooves and bones;

5) embryos, oocytes and semen.

Annex XXXVI (contd)

Article X.X.3.

Measures to prevent and control infection with *T. solium*

The *Veterinary Authority* or other *Competent Authorities* and the public health authority should carry out community awareness and education programmes on the risk factors associated with transmission of *T. solium* emphasising the role of pigs and humans.

The *Veterinary Authority* or other *Competent Authorities* should also implement the following measures:

1. Prevention of infection in pigs

   Transmission of *T. solium* eggs from humans to pigs can be avoided by preventing:

   a) the exposure of pigs to environments contaminated with human faeces;

   b) the deliberate use of human faeces as pig feed or the use of pigs as a means of human faeces disposal;

   c) the use of untreated sewage effluent to irrigate or fertilise land to be used by pigs for forage and food crops;

   d) the involvement of human tapeworm carriers in pig rearing.

2. Control of infection in pigs

   a) The *Veterinary Authority* should ensure that all slaughtered pigs are subjected to post-mortem *meat* inspection in accordance with Chapter 6.2., and with Chapter 2.9.5. of the *Terrestrial Manual*.

   b) When cysticerci are detected during post-mortem *meat* inspection:

      i) if the carcass of a pig has 20 or more cysticerci, all pigs from the same origin should be disposed of in accordance with Article 4.12.6.;

      ii) if the carcass of a pig has less than 20 cysticerci, all pigs from the same origin should be treated in accordance with Article X.X.6. or disposed of in accordance with Article 4.12.6.;

      iii) an investigation should be carried out by the *Veterinary Authority* and the public health authority to identify the possible source of the *infection* in order to target an intervention.

An optimal control programme should include detection and treatment of human carriers.

Article X.X.4.

Surveillance for infection with *T. solium* in pigs

Communication procedures on the occurrence of *T. solium* should be established between the *Veterinary Authority* and public health authorities.

The *Veterinary Authority* should use information from public health authorities and other sources, on human cases of taeniosis or cysticercosis in the initial design and any subsequent modification of *surveillance* programmes.

Surveillance can be conducted by:

1) *meat* inspection at *slaughterhouses/abattoirs*;

2) tongue inspection of live pigs at markets;

3) other diagnostic tests on live pigs.

The data collected should be used for investigations and for the design or amendment of control programmes as described in Article X.X.3.

Animal identification and *animal traceability* systems should be implemented in accordance with the provisions of Chapters 4.1. and 4.2.

Article X.X.5.

Recommendations for the importation of meat and meat products of pigs

Veterinary Authorities of *importing countries* should require the presentation of an *international veterinary certificate* attesting that the entire consignment of *meat* or *meat products*:

1) has been produced in accordance with the Codex Code of Hygienic Practice for Meat (CAC/RCP 58-2005);

AND

2) comes from pigs which have been slaughtered in an approved *slaughterhouse*/*abattoir*;

AND

3) either

   a) comes from pigs which have been subjected to post-mortem inspections for *T. solium* cystercerci with favourable results;

   or

   b) has been processed to ensure the inactivation of the *T. solium* cysticerci in conformity with one of the procedures referred to in Article X.X.6.

Article X.X.6.

Procedures for the inactivation of *T. solium* cysticerci in meat of pigs

For the inactivation of *T. solium* cysticerci one of the following procedures should be used:

1) heat treatment to a core temperature of at least 60°C; or

2) freezing to minus 10°C or below for at least ten days or any time/temperature equivalent.

Annex XXXVIII

CHAPTER X.X.

INFECTION WITH PORCINE REPRODUCTIVE AND RESPIRATORY SYNDROME VIRUS

Article X.X.1.

General provisions

The pig is the only natural host for porcine reproductive and respiratory syndrome virus (PRRSV).

For the purposes of the *Terrestrial Code,* porcine reproductive and respiratory syndrome (PRRS) is defined as an *infection* of domestic and *captive wild* pigs with PRRSV.

The following defines *infection* with PRRSV:

1) a strain of PRRSV has been isolated from samples from a domestic or *captive wild* pig;

OR

2) viral antigen has been identified, or viral ribonucleic acid specific to PRRSV has been demonstrated to be present, in samples from a domestic or *captive wild* pig epidemiologically linked to a confirmed or suspected *outbreak* of PRRS, or giving cause for suspicion of previous association or contact with PRRSV, with or without clinical signs consistent with PRRS;

OR

3) virus-specific antibodies against PRRSV that are not a consequence of *vaccination*, have been identified in samples from a domestic or *captive wild* pig in a *herd* showing clinical signs consistent with PRRS, or epidemiologically linked to a confirmed or suspected *outbreak* of PRRS, or giving cause for suspicion of previous association or contact with PRRSV;

OR

4) the detection of a vaccinal or vaccine-like virus in a non-vaccinated domestic or *captive wild* pig.

For the purposes of the *Terrestrial Code*, the *incubation period* for PRRS is 14 days. Pigs are usually infective between days 3 and 40 post-*infection*, but can remain so for several months.

A Member Country should not impose bans on the trade in *commodities* of domestic and *captive wild* pigs in response to information on the presence of *infection* with PRRSV in *wild* or *feral* pigs.

Standards for diagnostic tests and vaccines are described in the *Terrestrial Manual.*

Article X.X.2.

Safe commodities

When authorising import or transit of the following *commodities* and any products made from these *commodities* and containing no other tissues from pigs, *Veterinary Authorities* should not require any PRRS related conditions, regardless of the PRRS status of the *exporting country, zone* or *compartment*:

Annex XXXVIII (contd)

1) hides, skins and trophies;

2) bristles;

3) *meat products*;

4) *meat-and-bone meal*;

5) blood by-products;

6) casings.

Article X.X.3.

Country, zone or compartment free from PRRS

A country, *zone* or *compartment* may be considered free from PRRS when:

1) PRRS is a *notifiable disease* in the country;

2) an *early detection system* is in place;

3) *surveillance* in accordance with Articles X.X.15. to X.X.18. has been in place for at least 12 months, capable of detecting the presence of *infection* with PRRSV even in the absence of clinical signs;

4) no evidence of *infection* with PRRSV has been found in domestic and *captive wild* pigs during the past 12 months;

5) no *vaccination* against PRRS has been carried out during the past 12 months;

6) measures are in place to prevent the introduction of PRRSV;

7) imported pigs and pig *commodities* comply with the requirements in Articles X.X.5. to X.X.14.

Article X.X.4.

Recovery of free status

Should a PRRS *outbreak* occur in a free country, *zone* or *compartment* the free status may be restored by means of a *stamping-out policy* or a *modified stamping-out policy* with or without emergency *vaccination.* Free status can be regained three months after the culling of the last *case* or vaccinated pig provided s*urveillance* is carried out, in accordance with Articles X.X.15. to X.X.18., with negative results.

Where a *stamping-out policy* or *modified stamping-out policy* is not practised, the provisions of Article X.X.3. apply.

Article X.X.5.

Recommendations for importation from countries, zones or compartments free from PRRS

For domestic and captive wild pigs

Veterinary Authorities should require the presentation of an *international veterinary certificate* attesting that the *animals*:

1) showed no clinical sign of PRRS on the day of shipment;

2) were kept in a country, *zone* or *compartment* free from PRRS since birth or for at least the past three months.

Article X.X.6.

Recommendations for importation from countries or zones not free from PRRS

For domestic and captive wild pigs for breeding or rearing

Veterinary Authorities should require the presentation of an *international veterinary certificate* attesting that the *animals:*

1) showed no clinical sign of PRRS on the day of shipment;

2) have not been vaccinated against PRRS nor are they the progeny of vaccinated sows;

3) were isolated and subjected to a serological test for PRRS, with negative results, on two occasions, at an interval of not less than 21 days, the second test being performed within 15 days prior to shipment.

Article X.X.7.

Recommendations for importation from countries or zones not free from PRRS

For domestic and captive wild pigs for *slaughter*

Veterinary Authorities should require the presentation of an *international veterinary certificate* attesting that the *animals* showed no clinical sign of PRRS on the day of shipment.

The pigs should be transported directly from the *place of shipment* to the *slaughterhouse*/*abattoir* for immediate *slaughter*.

Article X.X.8.

Recommendations for importation of wild and feral pigs

Regardless of the PRRS status of the country of origin, *Veterinary Authorities* should require the presentation of an *international veterinary certificate* attesting that the *animals:*

1) showed no clinical sign of PRRS on the day of shipment;

2) were isolated in a *quarantine station*, and were subjected to a serological test for PRRS, with negative results, on two occasions, at an interval of not less than 21 days, the second test being performed within 15 days prior to shipment;

3) have not been vaccinated against PRRS.

Article X.X.9.

Recommendations for importation from countries, zones or compartments free from PRRS

For semen of domestic and captive wild pigs

Veterinary Authorities should require the presentation of an *international veterinary certificate* attesting that:

Annex XXXVIII (contd)

1) the donor *animals*:

   a) were kept in a country, *zone* or *compartment* free from PRRS since birth or for at least three months prior to collection;

   b) showed no clinical sign of PRRS on the day of collection of the semen;

2) the semen was collected, processed and stored in conformity with the provisions of Chapters 4.5. and 4.6.

Article X.X.10.

Recommendations for importation from countries or zones not free from PRRS

For semen of domestic and captive wild pigs

Veterinary Authorities should require the presentation of an *international veterinary certificate* attesting that:

1) the donor *animals* have not been vaccinated against PRRS;

   a) and either:

      i) were kept, since birth or for at least three months prior to entry into the pre-entry isolation facility in an *establishment* without any evidence of PRRS ;

      ii) showed no clinical sign of PRRS and were serologically tested with negative results on the day of entry into the pre-entry isolation facility;

      iii) were kept in the pre-entry isolation facility for at least 28 days and were subjected to a serological test with negative results at least 21 days after entry;

      iv) have been kept in an *artificial insemination centre* where all boars are subjected, at least every month, to a serological test for PRRS with negative results;

   b) or

      i) have been kept in an *artificial insemination centre* where all boars were seronegative for PRRS on the day of collection;

      ii) a sample of semen from each collection for export has been tested for PRRSV nucleic acid with negative results;

2) the semen was collected, processed and stored in conformity with the provisions of the relevant Articles in Chapters 4.5. and 4.6.

Article X.X.11.

Recommendations for importation of *in vivo* derived embryos of domestic and captive wild pigs

Regardless of the PRRS status of the country of origin, *Veterinary Authorities* should require the presentation of an *international veterinary certificate* attesting that:

1) the donor females showed no clinical sign of PRRS on the day of collection of the embryos;

2) the embryos were collected, processed and stored in conformity with the relevant provisions of Chapters 4.7. and 4.9.

Article X.X.12.

Recommendations for importation of fresh meat of domestic and captive wild pigs

Regardless of the PRRS status of the country of origin, *Veterinary Authorities* should require the presentation of an *international veterinary certificate* attesting that the entire consignment of *fresh meat*;

1) does not contain lymphoid tissues of the head and neck, and thoracic and abdominal viscera; and

2) comes from *animals* which:

   a) showed no clinical signs suggestive of PRRS within 24 hours before *slaughter*;

   b) have been slaughtered in a *slaughterhouse*/*abattoir* and have been subjected to ante- and post-mortem inspections in accordance with Chapter 6.2.

Article X.X.13.

Recommendations for importation of fresh meat of wild and feral pigs

Regardless of the PRRS status of the country of origin, *Veterinary Authorities* should require the presentation of an *international veterinary certificate* attesting that the entire consignment of *fresh meat*;

1) does not contain lymphoid tissues of the head and neck, and thoracic and abdominal viscera; and

2) comes from *animals* which:

   a) have been subjected to a post-mortem inspection in accordance with Chapter 6.2. in an approved examination centre;

   b) have been found free from any sign suggestive of PRRS.

Article X.X.14.

Recommendations for importation of offal

Veterinary Authorities should require the presentation of an *international veterinary certificate* attesting that the entire consignment of offal or products containing offal comes from pigs coming from *establishments* located in a PRRS free country, *zone* or *compartment*.

Article X.X.15.

Introduction to surveillance

The following defines the principles and provides a guide to the *surveillance* for PRRS, complementary to Chapter 1.4. This may be for the entire country, a *zone* or a *compartment*. Guidance is also provided for Member Countries seeking recovery of PRRS status for the entire country, for a *zone* or for a *compartment*, following an *outbreak* and for the maintenance of PRRS status.

Surveillance for PRRS should be in the form of a continuing programme designed to establish that domestic and *captive wild* pig populations in a country, *zone* or *compartment* are free from *infection* with PRRSV or to detect the introduction of PRRSV into a population already defined as free. Consideration should be given to the specific characteristics of PRRS epidemiology which include:

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– the role of semen in transmission of the virus;

– the existence of aerosol transmission over short distances;

– the existence of two distinct genotypes of PRRSV, also with antigenic and virulence variability among strains of both genotypes;

– the frequency of clinically inapparent *infections*, particularly in older *animals*;

– the occurrence of long-term virus-shedding even in the presence of antibodies;

– the lack of a differentiating test for vaccinal antibodies and the inherent risks associated with the use of modified live vaccines for PRRS.

Veterinary Authorities may have information on the genotype prevailing in the country but the absence of the other genotype should not be assumed. Therefore, molecular and serological tests used for *surveillance* should be able to detect both genotypes and antibodies to both genotypes with similar sensitivity.

Article X.X.16.

General conditions and methods for surveillance

1) A *surveillance* system in accordance with Chapter 1.4. and under the responsibility of the *Veterinary Authority* should be in place including the following aspects:

   a) formal and on-going system for detecting and investigating *outbreaks* of PRRS;

   b) a system for recording, managing and analysing diagnostic and *surveillance* data.

2) The PRRS *surveillance* programme should:

   a) include a system for reporting suspected *cases*. Diagnosticians and those with regular contact with pigs should report promptly any suspicion of PRRS to the *Veterinary Authority*;

   b) implement, when relevant, regular and frequent clinical inspections and *laboratory* testing of populations at high risk of contracting or spreading *disease*, such as *artificial insemination centres* and nucleus *herds*, establishments in high pig density areas or with low biosecurity measures.

Article X.X.17.

Surveillance strategies

1. Introduction

   The objective of *surveillance* is to demonstrate freedom from *infection* or to detect introduction of PRRSV as soon as possible.

   Serology in unvaccinated populations is often the most effective and efficient *surveillance* methodology. In some *animals*, antibodies against PRRSV can disappear after approximately three to six months in the absence of further exposure and this should be considered when interpreting serological *surveillance* results.

In some circumstances such as clinical *disease* investigations and in high risk populations, virological *surveillance* may provide advantage through earlier detection.

The *surveillance* strategy chosen should be justified as adequate to detect the presence of *infection* with PRRSV in accordance with Chapter 1.4. and the epidemiological situation. Cumulative results of targeted and general *surveillance* will increase the level of confidence in the *surveillance* strategy.

2. Clinical surveillance

Clinical signs and pathological findings are useful for early detection. Episodes of high morbidity or mortality in young piglets and reproductive disorders in sows should also be investigated. Highly pathogenic strains may affect pigs of all ages and can include severe respiratory signs. In PRRSV *infections* involving low virulence strains, clinical signs may not be present or are seen only in young *animals*. Therefore, clinical *surveillance* should be supplemented by serological and virological *surveillance*.

3. Virological surveillance

Virological *surveillance* should be conducted to investigate clinically suspect cases. Molecular detection methods are most commonly used for virological *surveillance* and can be also applied to large-scale screening. If targeted at high-risk populations, they provide an opportunity for early detection that can considerably reduce the subsequent spread of *disease*. Molecular analysis can provide valuable information on genotype circulating in the country and enhance epidemiological understanding of the pathways of spread in endemic areas and those involved in *outbreaks* in *disease* free areas.

4. Serological surveillance

Maternal antibodies are generally detectable until four to eight weeks of age. The collection of samples should therefore take account of the type of *herd* and the age structure of the pigs, with an emphasis on older *animals*. However, in countries or *zones* where *vaccination* has been recently discontinued, targeted serological *surveillance* of young unvaccinated *animals* can indicate the presence of *infection*.

Article X.X.18.

Additional surveillance requirements for recovery of free status

In addition to the general conditions described in this chapter, a Member Country declaring the recovery of country, *zone* or *compartment* PRRS free status should provide evidence of an active *surveillance* programme to demonstrate absence of *infection* with PRRSV.

This *surveillance* programme should cover:

1) *establishments* in the proximity of the *outbreaks*;

2) *establishments* epidemiologically linked to the *outbreaks*;

3) *animals* moved from or used to re-populate affected *establishments*.

The pig *herds* should undergo regular clinical, pathological, virological and serological examinations, planned and implemented according to the general conditions and methods described in these recommendations. To regain PRRS free status, the *surveillance* approach should provide at least the same level of confidence as within the original declaration of freedom.

Annex XL

FUTURE WORK PROGRAMME FOR THE TERRESTRIAL ANIMAL HEALTH STANDARDS COMMISSION

Topic		
Action	**How to be managed**	**Status (Feb 2014)**
Restructuring of the *Terrestrial Code*, including Harmonisation of the *Terrestrial* and *Aquatic Codes*		
1) Work with AAHSC towards harmonisation, as appropriate, of the Codes 2) CH rename by disease agents 3) Revision and formatting of Section 7 4) Revision of the Users' guide 5) OIE policy on wildlife	TAHSC & ITD 3) TAHSC & AWWG 4) TAHSC & SCAD 5) TAHSC with WG on Wildlife & SCAD	1) Revised CH 1.1. for adoption 2) Ongoing 3) ongoing 4) Revised User's Guide for adoption 5) Ongoing
Notification of 'emerging disease'		
Clarification of definition, criteria for notification, etc.	SCAD & TAHSC	Revised texts for adoption
Listed diseases		
1) Criteria for listing 2) List of diseases	TAHSC & SCAD	1) Revised CH 1.2. for adoption 2) done
Evaluation of VS and OIE PVS pathway		
Veterinary education aspect	TAHSC & AHG & ITD	Ongoing
Veterinary products (AMR)		
1) Updating CH 6.9. 2) Updating CH 6.10. 3) Updating CH 6.6. 4) Updating CH 6.7.	TAHSC & SCAD & AHG	1) Revised CH 6.9. for adoption 2) Revised CH 6.10. for adoption 3) Revised CH 6.6. for adoption 4) Ongoing
FMD		
Revise chapter including wildlife	SCAD & TAHSC	Ongoing
AHS		
Official recognition – zones	SCAD & TAHSC	Revised CH 12.1. for adoption
PPR		
Update CH on PPR	SCAD & TAHSC	Revised CH 14.8. adoption
CSF		
Official recognition CSF	SCAD/AHG & TAHSC	Ongoing
Horse diseases		
1) International movement of competition horses 2) Update Dourine chapter 3) Update Glanders chapter	1) AHG/SCAD & TAHSC 2) SCAD/TAHSC 3) AHG/SCAD/TAHSC	1) Draft new CH for adoption 2) Pending expert advice 3) Ongoing
CWD		
Decision on listing (new CH)	TAHSC & SCAD & AHG	AHG to be convened

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PRRS		
New CH	SCAD/AHG	Draft new CH for MC
Other *Terrestrial Code* texts on diseases in need of revision		
Review chapter on BSE	SCAD/TAHSC	September 2014
Update BT and EHD in line with AHS	SCAD & AHG	Ongoing
Update CH on brucellosis	AHG/SCAD & TAHSC	Revised CH for adoption
Update CH on tuberculosis	AHG/SCAD & TAHSC	AHG to be convened
Update CH on avian mycoplasmosis	SCAD and TAHSC	Seek expert opinion
Update CH on ASF	SCAD	AHG to be convened
Pet food certificate CH	TAHSC	On hold
Update CH on Scrapie	TAHSC	Ongoing
Animal production food safety		
1) Collaboration with Codex 2) Zoonotic parasitic diseases a) *Trichinella* spp. b) *Taenia solium* (Porcine cysticercosis)	1) TAHSC and ITD 2) AHG & TAHSC	1) Ongoing 2) a) Revised CH 8.14. for adoption b) Draft new CH for MC
Animal welfare		
New texts: 1) Broiler production systems 2) Dairy cattle production systems 3) CH 7.5. and 7.6. 4) Disaster management	AWWG & AHGs &TAHSC	1) Revised CH 7.10. for adoption 2) Draft new CH for MC 3) Ongoing 4) AHG to be convened

Note: MC; Member comments, CH: chapter, Q: questionnaire, SURV: surveillance, ITD: International Trade Department, S&T Dept: Scientific & Technical Department

Annex XL (contd)

ITEM, ANNEX, CHAPTER NUMBERS AND CURRENT STATUS

Item	Annex	Chapter	Title	Provided for comments	GS82
1			General comments		
2	IV		User's Guide	Feb. 13	A
2	V	5.1.	General obligations related to certification		A
3	VI		Glossary	Sep.13	A
4	VII	1.1.	Notification of diseases and epidemiological information	Sep.13	A
5	VIII	1.2.	Criteria for listing diseases	Sep.13	A
		8.15.	Vesicular stomatitis		
		15.4.	Swine vesicular disease		
6	IX	2.1.	Import risk analysis	Sep.13	A
8		4.6.	Collection and processing of bovine, small ruminant and porcine semen		E
	X	4.7.	Collection and processing of *in vivo* derived embryos from livestock and equids		A
9	XI	5.2.	Certification procedures		A
	XII	5.4.	Animal health measures applicable before and at departure		A
10	XIII	6.6.	Introduction to the recommendations for controlling antimicrobial resistance	Sep. 12	A
		6.7.	Harmonisation of national antimicrobial resistance surveillance and monitoring programmes	Sep. 12	E
	XIV	6.9.	Responsible and prudent use of antimicrobial	Sep.13	A
	XV	6.10	Risk assessment for antimicrobial resistance arising from the use of antimicrobials in animals	Feb. 12	A
11	XXXIV	7.X.	Animal welfare and dairy cattle production systems	Feb. 13	C
	XXXV		Report of *ad hoc* Group on Animal welfare and dairy cattle production systems		I
		7.5.	Slaughter of animals	Feb. 13	E
		7.6.	Killing of animals for disease control purposes	Feb. 13	E
	XVI	7.10.	Animal welfare and broiler chicken production systems	Sep. 13	A
	XVII	3.1.	Veterinary Services	Sep.13	A
	XVIII	3.2.	Evaluation of Veterinary Services		A
	XIX	3.3.	Communication		A
12	XX	12.1	Infection with African horse sickness virus	Sep. 12	A
		8.3.	Infection with bluetongue virus		E
		8.X.	Infection with epizootic hemorrhagic virus	Sep. 12	E
13	XXI	8.14.	Infection with *Trichinella* spp	Sep. 13	A
	XXXVI	New	Infection with *Taenia solium*		C
	XXXVII		Report of *ad hoc* Group on *Taenia solium*		I

Annex XL (contd)

Item	Annex	Chapter	Title	Provided for comments	GS82
14		8.6.	Foot and mouth disease	Feb. 13	D
		1.6.	Procedure for self declaration and for official recognition by the OIE		
15	XXII	8.12.	Infection with Rift Valley fever virus	Sep. 13	A
16	XXIII	8.15.	Tularemia		A
17	XXIV	8.X.	Infection with *Brucella abortus*, *B. melitensis* and *B. suis*	Sep. 11	A
18	XXV	10.4.	Infection with avian influenza viruses	Sep. 13	A
19	XXVI	10.9.	Newcastle disease	Sep. 13	A
20	XXVII	11.8.	CBPP	Sep. 13	A
		1.6.	Procedure for self declaration and for official recognition by the OIE		
21	XXVIII	4.X.	High health status horse subpopulation	Sep. 13	A
	XXIX	12.8.	Infection with Equid herpesvirus type 1 (Equine rhinopneumonitis)	Sep. 13	A
	XXX	12.9.	Infection with equine arteritis virus	Sep. 13	A
		12.10	Glanders		D
22	XXXI	14.8.	Infection with peste des petits ruminants virus	Sep. 13	A
23		15.2.	Infection with classical swine fever virus		D
24	XXXVIII	New	Porcine reproductive and respiratory syndrome		C
26	XL		Work programme		C
28	XXXII	6.5.	Prevention, detection and control of *Salmonella* in poultry		A
	XXXIII	4.13	General recommendation on disinfection and disinsectisation		A

A: proposed for adoption at 82nd General Session, C: For Member comments, E: under expert consultation (*ad hoc* Groups, Specialist Commissions etc.), D: deferred to Sep 2014 meeting, I: For Member Country information.

List of abbreviations	
AAHSC	Aquatic Animal Health Standards Commission
AHS	African horse sickness
APFSWG	Animal Production Food Safety Working Group
AWWG	Animal Welfare Working Group
EHD	Epizootic haemorrhagic disease
FMD	Foot and mouth disease
PPR	Peste des petits ruminants
PRRS	Porcine reproductive and respiratory syndrome
SCAD	Scientific Commission for Animal Diseases
TAHSC	Terrestrial Animal Health Standards Commission