



Influence of daily free time spent outside in a paddock and stable management on behavioural disturbances and health in the horse.

Daglig utevistelse och skötselns inverkan på förekomsten av beteendestörningar och hälsoproblem hos hästar.

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“Meminerimus etiam adversus
infimos iustitiam esse servandam”
Cicero

In the first place, I would like to thank the community of Enköping, Sweden, that enabled this study to take place. Furthermore, all the horse-keepers in Enköping, that shared their knowledge and time, should feel that they all have the greatest part in this study.

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*The following words I would like to give to you all to keep in your hearts;
What you not know or feel you should not fear. Instead be happy, live in the moment and enjoy the feelings of today.*

My warmest love to you all, annika eklund



Abstract

“ People involved with horses must understand causes and effects of behaviours, why they arise, their cost and benefits, if they truly are undesirable behaviours and in that case to whom and in the end how to best treat them without reducing the horses quality of life”(Cooper and Mason 1998).

The present study investigated whether lack of daily spent free time outside in a paddock, possibility for social contact between horses, number of feeding occasions of roughage and concentrate and keeping horses on muddy grounds affects the prevalence of behavioural disturbances (like wood-chewing, wind-sucking, crib-biting, weaving and box-walking) and the health of the horse (in particular problem related to the hooves and legs, to the respiratory system and to the digestive system). A total of 841 horses in the central part of Sweden were studied during 2002 and 2004. The type of horses included were Swedish trotters, ponies, Swedish halfbloods, Icelandic horses, mixed large breeds, coldbloods and thoroughbreds, divided into categories of mares with foal, weaned foal, horses that had reached one year but were not yet in training, competition horses, companionship or exercise horses, convalescents and stallions. Data collection was carried out during personal inspections, made by the same inspector at all locations, including a personal meeting with each horse-keeper at the farm. Participants were provided with questionnaires detailing the housing, diet, daily spent free time outside in a paddock, social contact between horses, injuries occurring when spending free time outside in a paddock or indoors in housing or during transport, behavioural disturbances (wood-chewing, weaving, crib-biting and box-walking) and health related problems (related to the hooves/legs, respiratory- or digestive systems) of the horses. The questions were framed in a way that enabled comparison of results on both national and international levels. The prevalence of behavioural disturbances reported in the present study was on average 3.3% (1.4% wood-chewing, 0.6% either weaving or crib-biting and 0.4% box-walking) compared to an average 21.4% (11.8% wood-chewing, 4.1% crib-biting, 3.3% weaving and 2.2% box-walking) on an international level. The results from the present study indicate that fewer feeding occasions of roughage may increase the risk of behavioural disturbances and digestive related health problems. Further, spending less than 12h/day outside may increase the risk of behavioural disturbance and respiratory related problems in horses.

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1. Introduction

At the time the present study was initiated the former Swedish Animal Welfare Agency (SBA) was working on a new legislation for horses (SBA Dnr 34-667/02; Konsekvensutredning avseende översyn och uppdatering av SBA föreskrifter (1993:129) om djurhållning inom lantbruket m.m (L100)). The 6§: "Horses must be given daily opportunity to spend free time outside in a paddock or equivalent if the animal has not an injury or disease that demands resting in a loose-box" received a lot of criticism from the great majority of groups commenting on the proposal from the Swedish Animal Welfare Agency (Svar från remiss instanserna rörande förslaget från SBA tillhörande Dnr 34-667/02 (L100)). Their standpoints above all were risk of injuries, especially at times with slippery grounds, or lack of access to paddocks in which to turn the horses out. The groups commenting on the proposal also expressed concern regarding horses being compelled to spend too long time outside in paddocks on muddy grounds and during that time not being fed regularly. The final wording of the paragraph turned out to be: "horses should normally on a daily basis be given the opportunity to move freely in its natural paces and in paddocks, or if a paddock is not available an indoor arena could be accepted (DFS 2007:6)."

In the present study we wanted to find out if there was any basis for the concerns of the stakeholders described above and a cross-sectional study was designed which continued during a period of 2 years, including 841 horses. The study covered a wide area regarding stable environment, management and animal health. Since there are differences in management during summer and winter time according to time spent outside, stable management and feeding special questions were asked about this. Special questions were also asked regarding behaviour problems and health related problems like hoof/leg problems, respiratory problems and digestive related problems.

To counterbalance the concerns expressed by the groups commenting on the proposal that horses should be outside each day, described above, the present study showed that no horses were kept indoors due to lack of access to paddocks or because the handlers could not manage to bring them in on time. Further only 6.7% of the study population had injuries originated from spending free time outside in a paddock the last year and worth noticing is that 99.8% of the total amount of horses included in the study had access to spend free time outside daily for 7 days a week. This could also be one reason for the low prevalence of behavioural disturbances which only 3.3% of the population showed. The frequency of behavioural disturbances in the present study can be referred to as low compared to figures showed by Nicol (1995b) who reported that the average prevalence of behavioural disturbances, in 13 different horse populations, was 21.4%.

1.1 Horses

"A house and a garden can provide a satisfactory environment for a dog or cat that gets its food from a bowl. A stable and field do not provide a satisfactory environment for a single horse or pony. Humans as the only species available for social intercourse may be satisfactory for the dog that thinks itself one of the family, adequate for the cat that walks by itself, but seriously lacking for a horse that needs the herd for friendship and security. Horses kept as pets will be happier in a livery yard than 'at home'. Love is not enough; one has to be fair" (Webster 2005)

1.1.1 Evolution and domestication

According to Kiley-Worthington (1987) the earliest records of domestic horses are from around 3000 BC and (Zeuner 1963) suggests that the centre of their original domestication is Turkestan. The first picture showing a boy riding a black horse is dated 1560 BC. From this time on the use of draught and ridden horses spread over Europe. Horses became

important in war and were looked upon as comrades, building a close relationship with humans. The obvious way to understand why horses behave in certain ways is to follow the biological evolution. Horses have evolved to live in particular environments in specific ways (Kiley-Worthington 1987). Like other members of the family Equidae, horses have developed important social relationships allowing them to live safely as grazing herds on open plains (Davies 2005). Further Davies (2005) concluded that domestic horses, as well as wild ones, have a sharp response to either fight or flight from danger.

When domesticated, around 5000 years or 250 generations ago, horses had evolved physically from a small four-toed mammal to the modern one-toed horse. Despite this horses still had almost the same internal physiology. Also the behaviour has changed little (Haupt 1981) and is proved to be almost the same as their ancestors. By studying feral horse populations around the world basic behaviours regarding social organisation, sexual behaviour, suckling behaviour, habitat selection, foraging behaviour, relationship between individuals and communication systems appear not to have changed during domestication (Goodwin 2002; Kiley-Worthington 1987).

1.1.2 Housing

Clarke (1994) divided the four broad housing categories into; stalls, loose-boxes, barns and shelter systems. Loose-boxes are probably the most common form of housing used in temperate climates like Europe and North America, the boxes are big enough to enable the horse to walk around, but do not provide the area required for a normal level of movement (Mills and Clarke 2002). Horses kept in loose-boxes with ad libitum hay and straw, and with visual and social contact, spent 40% of their time standing and 47% of their time eating (Kiley-Worthington 1987). This could be compared to feral free roaming Camargue horses which spend 20% of their time standing and 60% eating throughout the year (Duncan 1980). This supports Mills and Clarke (2002) study concluding that boxing interferes with the normal allocation of diurnal activity.

Stalls involve tying horses via a head collar. Horses should be able to stand up and lie down but this system restricts movement to a minimum (Mills and Clarke 2002). In Sweden this system has been forbidden since 2007 when building new housing systems (DFS 2007:6). In barns horses are housed indoors in free-ranging groups, commonly on deep-litter beddings (Mills and Clarke 2002). The system comprises normal levels of movement but requires that horse-keepers have an excellent feeling and knowledge about horses to be able to offer good husbandry in general and specifically in grouping horses to minimise the risk of injuries from aggression. Shelters open onto a paddock and comprise an open-fronted building (Mills and Clarke 2002) for horses housed at free-range outdoors with or without access to grass on the ground.

Kiley-Worthington (1987) stated that to minimise problems with horse behaviour and health, horse-keepers ought to strive to provide conditions similar to those from which horses evolved when housing and managing horses. On the other hand Casey (2002) concludes that although grazing is the natural way of feeding horses and the method which best matches their motivational needs horse-keepers need to be aware that the most common health problem related to management forms including grazing, is laminitis. This painful state is caused by an inflammatory response in the sensitive laminae in the hoof and the condition is a significant cause of euthanasia. Further Casey (2002) concludes that management factors in stabled horses causing damp conditions for the hoof is probably a less common problem than those situations where horses spend a majority of their time

with their hooves in very absorbent bedding materials. In combination with genetic effects on hoof structure and shoeing practices, drying of the laminae can be a factor in the development of a range of painful conditions of the hooves (Casey 2002).

1.2 Behaviour

“If we believe in evolution, then in order to avoid suffering, it is necessary over a period of time for the animal to perform all the behaviours in its repertoire” (Kiley-Worthington 1989)

1.2.1 Normal behaviour - horses

According to Goodwin (2002) horses are adapted to live on open plains or mountain areas. Feral or free-ranging horses occupy a home range containing grazing area, shelter, water and shade. They prefer grazing but also browse on forbs, sedges, shrubs and trees and eat 16–18 hours per day (Goodwin 2002; Davidson and Harris 2002). According to Rundgren (1994) the grazing time varies between one to three hours and Davidson and Harris (2002) conclude that horses rarely fast voluntarily for more than 4 hours at a time. Further horses invest their time budget in 4 hours of resting and 2 hours moving about freely (Rundgren 1994). Horses range up to 80 km per day exploring wide spaces (Davidson and Harris 2002).

Horses behave socially if it is in the interest of the individual and if it will enhance its survival and that of its young (Kiley-Worthington 1987). Whether free-living or domesticated the social structure is characterised by a non-territorial herd of one stallion and up to six mares, the society is matriarchal and consist of strong bonds between mares and offspring. In the wild it is life saving to be a member of a herd due to predators and therefore horse behaviour functions to minimise conflict and promote stability within the group (Goodwin 2002).

1.2.2 Behavioural disturbances - general

“Much behaviour is the result of innate tendencies that are moulded by experience, if humans do not understand these and or take them into account, then we may end up with animals which have constant conflicts within their minds and those are the ones which have behavioural problems” (Kiley-Worthington 1987)

There are several types of behavioural disturbances. Among the most discussed is stereotyped behaviour. Stereotypies share the unifying characteristics of being repetitive, invariant in form and appearing to have no obvious function, they also develop in captive animals faced with insoluble problems (Mason 1991) and may be indicative of reduced welfare (Waters 2002). As early as the 1970's Ödberg (1978) defined stereotypies as movement patterns that are repeated with a relative regularity in the same way without any apparent function in the context in which they are performed. According to Cooper (1996) stereotypies tend to become increasingly self-organised, less dependent on the original causal situation and also harder to disrupt with time. Cooper and Ödberg (1991) and Kiley-Worthington (1987) also suggest that once established, stereotypies can become dissociated from their initiating cause. Concerning horses McGreevy (1995a) concluded that prevention of stereotypies in young stock is important because, once established, such behaviours rarely disappear.

Studies have demonstrated that young animals are influenced by their environment to a greater extent than older animals and so are particularly susceptible to developing stereotypic behaviour in captive conditions (Cooper and Nicol 1996). Cooper and Nicol (1996) concluded that the performance of stereotypic behaviour appears to become less

responsive to changes in the environment with age, referring to Ödberg (1987) who found that stereotypies arose in young voles reared in small, barren cages but not in 2 month old voles transferred from a large, enriched cage to a small, barren cage. Further Cooper and Nicol (1996) concluded that young voles that were reared in small, barren cages cease to stereotype when transferred to a large, enriched cage whilst older voles (over 14 months of age) continued to stereotype.

1.2.3 Behavioural disturbances - horses

In general most horse-keepers believe that horses are able to copy abnormal behaviours. A study by McGreevy (1995b) showed that 72% of more than a thousand of UK horse owners support the thesis, despite the lack of evidence to support the possibility of observational learning showed by Nicol (1999a).

Waters (2002) showed that the rate of development of stereotypic behaviour was greatest during the first 9 months of life. The horses were weaned at different ages so it seems that some factor associated with the weaning process, rather than an increase in risk with age, is responsible for the results. Stereotypic behaviour was significantly more common where weaning by confinement in a stable being box-weaned (abrupt weaning with complete separation and isolation from conspecifics usually involving a substantial period of confinement in the stable) or barn-weaned (abrupt weaning carried out with small groups of foals kept together in a loose-house arrangement) were practised, compared with paddock-weaning (abrupt weaning, usually with groups of weanlings being kept together in a field situation, and in 50% of cases one or 2 nanny mares were left with groups).

This information above could confirm Kiley-Worthington's (1987) view that "weaning may be the single most important factor governing the development of stereotypies". McGreevy (1995a) concluded that management factors related to the time spent stabled (often more than 20 h/day) showed the strongest associations with stereotypic behaviour and the most significant finding was that the risk of stereotypic behaviour increased when horses were fed less than 6.8 kg roughage/day. In another study McGreevy (1995b) showed that the prevalence of weaving, crib-biting and wood-chewing was higher in dressage and event horses than in the endurance discipline. Further the study showed that endurance horses spent more time out of the stable than did the other two disciplines. Nicol (1999a) suggests that oral stereotypies like crib-biting might be related to feeding behaviour while locomotor stereotypies like, weaving and box-walking, may derive from some frustrated attempt to move or escape from the stable.

According to Cooper and Mason (1998) and Mills (2005) prevention of behavioural problems in horses can be achieved with a variety of techniques some of which are clearly questionable from an animal welfare point of view. They include physical barriers such as weaving bars above stable doors or harness that restrict movement, pain caused by nails hammered into cribbed wooden surfaces or spike collars intended to function to prevent the horse from performing the behaviour and finally surgical intervention such as cutting the muscles in the neck used for crib-biting. These techniques however do not address the primary causes of the behavioural problem and therefore the results vary in success.

1.2.3.1 Wood-chewing

Wood-chewing is when a horse bites, chews and sometimes ingests wood or wood-like material from any available structure in its environment (McGreevy 1995a; Cooper and McGreevy 2002; Waters 2002). Cooper and Mason (1998), Kiley-Worthington (1987), and

Cooper and McGreevy (2002) referring to Owen (1982), all consider wood-chewing to be a stereotypic behaviour. Whilst Nicol (1999a), McGreevy (1995a) and Waters (2002) all suggest that wood-chewing is not sufficiently invariant to be classed as a stereotypy and should be referred to as a redirected behaviour. Despite this, (Nicol 1999a) suggest that it is useful to consider wood-chewing as it may precede or be associated with other oral behaviours, particularly crib-biting. Whichever, Waters (2002) showed that 74% of foals developing crib-biting had shown wood-chewing prior to crib-biting. Further Waters (2002) showed that weaned horses, which were confined to a barn- or stable-housing, were at significantly greater risk of developing wood-chewing than those which were kept at grass after weaning. Also horses fed on haylage/silage as opposed to hay after weaning had a significantly greater risk of developing wood-chewing. Waters (2002) suggested that an additional cause for weaned foals to wood-chew or crib-bite, could be that the frustrated motivation to suck postweaning leads to frequent attempts to redirect the sucking motivation.

Redbo (1998) and Kiley-Worthington (1983) showed that wood-chewing was strongly influenced by the amount of roughage given daily and concluded that the lack of high-fibre forage predisposed horses to start chewing on wood material. This is also supported by Houpt (1981) who concluded that the loss of grazing time leads to wood-chewing. Willard (1977) supports this idea, since the horses when they were given a concentrated diet spent more time wood-chewing than when they were given hay. Further Krzak (1991) concluded that exercise and turning the horses out in paddocks reduced wood-chewing, which is confirmed in a study by Redbo (1998).

1.2.3.2 Crib-biting

Crib-biting is an oral based stereotyped behaviour where the horse grasps a fixed object with its incisor teeth, contracts the neck muscles and draws air into the cranial oesophagus, all accompanied with an audible grunt (Waters 2002; McGreevy 1995a). Waters (2002) showed that feeding concentrate after weaning was associated with a four-fold increase in rate of developing crib-biting. According to Redbo (1998) a study of Kusunose (1992) showed that crib-biting was increased 1 to 2 h after the delivery of concentrate but decreased after delivery of roughage. This is also supported by Redbo (1996), and Redbo and Nordblad (1997) who showed that in other herbivores, like cattle, a short eating duration per day significantly increased the development and performance time of stereotyped oral behaviours.

McGreevy and Nicol (1998) showed that when horses were prevented from performing both crib-biting and eating hay, crib-biting horses showed a significant increase in gut transit time. The authors concluded that normal gut motility and transit times in crib-biting horses may depend on physical flushing by saliva associated with their crib-biting behaviour. Further Casey (2002) concluded that the pain of gastric ulceration is one of the precipitatory factors in the development of crib-biting. Johnson (1998) showed that the sub-therapeutic use of antibiotic virginiamycin has been found to reduce the incidence of crib-biting in horses on high grain diets.

1.2.3.3 Weaving

Weaving is a locomotor based stereotyped behaviour where the horse sways its head and sometimes also its neck and forequarters laterally (McGreevy 1995a; Waters 2002). Redbo (1998) referred to a study by Sambraus and Radtke (1989) which showed that weaving was mainly released by environmental cues, especially of imminent feeding with concentrate.

This situation released weaving in all observed horses, suggesting that expectation of food, and the increased level of arousal that accompanies such a motivational state, could be one factor behind weaving. According to Cooper and Mason (1998), a foraging device like the football, developed by Young (1994) for pigs which delivers food when pushed around, reduced the incidence of weaving (Henderson 1995; Winkill 1996). Nicol (1999a) referred to a study of McBride (1996) which showed that neither anti-weaving bars nor naloxone reduced the occurrence of weaving.

Cooper (2000) concluded that increased social contact reduced weaving and that this effect could be replicated with mirrors (Mills and Davenport 2002). Further the effect does not appear to be due to novelty since it endures over several weeks (McAfee 2002).

McGreevy (1995a) showed that using bedding material other than straw increased the risk of weaving, suggesting that straw enriches the locomotory environment of horses. Cooper and Mason (1998) suggested that weaving and box-walking may be related to exercise, therefore giving the horses opportunity to spend free time outside in a paddock or frequent exercise can reduce their incidence (Houpt and McDonnell 1993).

1.2.3.4 Box-walking

Box-walking is a locomotor based stereotyped behaviour where the horse performs a circular route-tracing or a figure of eight-shaped pathway within the stable (Cooper and McGreevy 2002; McGreevy 1995a). McGreevy (1995b) found that box-walking was common among endurance horses, often represented by more reactive breeds like for example Arabs (Kiley-Worthington 1983), which could all be expected to demonstrate a high level of abnormal behaviour in response to confinement (McGreevy 1995b).

McGreevy (1995b) argued that these horses may be motivated to keep moving through some form of physiological reward or because they are less habituated to being confined in a stable. Mills (2005) concluded that the use of mirrors to create an atmosphere of social contact reduced the performance of box-walking, even to a greater extent than it did to weaving.

1.3 Health

**“Humans should be aware that taking care of the animal physical health does not automatically heal the mental health”
(Appleby 1999)**

McGlone (1993) argued that health includes freedom from disease as well as being in a state of normal physiology. Webster (2005) approached the definition of health through the concept of fitness, meaning protected from injury and able to achieve normal growth and function, which is sustainable. Further the author imagines that the concept of fitness expands to also include physical welfare, which is freedom from disease, injury and incapacity. Broom's (1999) approach to health is to imply absence of illness or injury, which to him is encompassed within the term welfare. Like welfare, health can be qualified as a range of states as either good or poor. Appleby (1999) agreed that health includes both physical and mental health and McMillan (2005) argues that good mental health may be of greater importance when experiencing good Quality Of Life.

1.3.1 Normal health - horses

“Simply be with animals, ideally in situations where they have behavioural freedom and can be with their own kind. Observe them, feel with them and for them, and become them” (Fox 2005)

A horse in a good state of health according to most general texts should be active, have an alert glance, respond to normal stimuli, show a relaxed posture, have a normal bodyweight, have a shiny coat and normal shedding of its winter coat, have normal faeces (firm balls with an aromatic smell) and urine and normally, show no discharge from the eyes or nose. According to Sköld (2000) a horse defecates approximately 8-10 times a day, corresponding to 10-15 kg, and drinks normally between 15- 25 litre water per day, but can drink up to 50-60 litres without being ill. The normal respiration rate is 8-16 respirations per minute and is determined by observing the rise and fall of the flank or rib cage as well as the nostril wings. Pulse rate, as dependent on the heart, can be taken from the facial artery or the inside of the thigh. A normal pulse rate is 28-40 beats per minute. Body temperature is usually taken with a rectal thermometer and should be between 37,5-38,2 degrees Celsius (Hintz 1990; Sköld 2000).

1.3.2 Health problems - horses

Two of the most common health problems and causes of euthanasia among horses are colic and chronic coughing, although common are also lameness, laminitis and hoof abscesses (Attrell 1994). Collober (2001) examined 1040 horses post mortem to determine the cause of death and showed that 13% were due to locomotor disorders and of these 8.2% due to laminitis. In a Swedish study by Egenvall (2006) the proportional mortality rates among 101517 horses were 4% for laminitis, 4% for colic, 40% for lameness and 3% for Chronic Obstructive Pulmonary Disease (COPD). Colic in horses, defined as abdominal pain, covers a large group of intestinal diseases causing abdominal pain. Several different types of colic have been recognised, divided for example by type of process and anatomical location (Davidson and Harris 2002). Chronic coughing is a symptom of inflammatory responses in the respiratory tracts, often induced by dust. To improve the condition action has to be taken early in the progress and includes excellent housing environment (Davidson and Harris 2002). According to Casey (2002) stabling can also have an impact on the natural health of the hoof. The horny laminae, that makes up the outer part of the structure of the hoof wall, allows moisture to pass in and out from the sensitive laminae. When the hoof wall remains in too damp or too dry conditions, the moisture content of the

environment causes changes in the integrity of the horny laminae, which can in turn result in a negative hoof quality and could result in diseases of the hoof.

1.3.2.1 Hoof/leg related health problems

The hoof is influenced by its environment. As early as in the 1980's Magnusson (1980) concluded that a high content of ammonia in bedding material had a negative influence on the hoof walls. Casey (2002) expanded the argument and stated that damp conditions make the laminae soft and the wall becomes a less effective barrier to infectious agents. On the other hand, in dry conditions the wall becomes hard and brittle which can lead to hoof cracks. Hard and brittle walls also prevent the hoof from expanding and contracting naturally when the horse puts weight on it. Casey (2002) concluded that under the circumstances described above, the pain of laminitis (defined as an inflammatory response in the sensitive laminae in the hoof) is severe. The most common cause of laminitis is a sudden change in food availability, like eating a lot of concentrate in a very short period of time or getting access to high quality pasture. In these occasions Gram negative bacteria produce endotoxins in the colon, which proliferate when there is an excess of carbohydrate in the diet that is not digested in the small intestine (Casey 2002). This inflammation makes the hoof bone start to rotate and in severe cases it can penetrate the sole (Magnusson 1980). A horse suffering from acute laminitis may stand in the "saw-horse" position and refuse to move, the hooves may be warm with increased pulse and the horse indicates by its behaviour that it feels pain (Attrell 1994). If the acute state of laminitis becomes established, chronic laminitis arises and can be seen as specific laminitis-rings on the hoof wall (Magnusson 1980).

1.3.2.2 Respiratory related health problems

Chronic Obstructive Pulmonary Disease (COPD) or "heaves" is an allergic respiratory disease and is one of the oldest documented diseases of the horse (Davidson and Harris 2002). A preliminary state to the disease is coughing (Hintz 1990) and reduced exercise-tolerance (Halliwell 1993). COPD occurs mainly in temperate climates and is closely associated with type of housing and the presence of dust and fungal spores in the air (Halliwell 1993). Blackman and Moore-Colyer (1998) estimated that around 12 million particles may be taken into the lungs of an average stabled horse with each breath and even in well ventilated buildings the level of airborne particles is high, especially within the breathing zone if fed with hay. The ammonia level in a building may affect the respiratory system negatively and high levels are usually due to poor hygiene and bedding choices (Davidson and Harris 2002). Further the authors suggested to avoid development of the disease, that horses should spend as much time outside as often as possible, be provided a well-ventilated housing, not be kept on deep-litter bedding systems, not be fed dusty or mouldy feed, be moved from the stable before cleaning the bedding or grooming and be provided low dust hay that is soaked for 30 minutes in clean water before feeding.

1.3.2.3 Digestive related health problems

According to Casey (2002) modern practises used for many stabled competition horses, such as high energy diet fed in small hard feed rations, do not match the digestive system of the horse. This can lead to ulceration of the gastric mucosa, which is a rare cause of clinic colic, but which frequently gives more subtle effects, such as loss of condition and weight loss. Casey (2002) referred to a study by Vatisstas (1999) who examined the gastric mucosa of 202 thoroughbred racehorses endoscopically and found that 82% had some degree of ulceration and 39% showed clinical signs consistent with gastric ulceration.

According to Hintz (1990) and Sköld (2000) a horse that is restless, kicking towards its belly, getting up or down frequently, rolls or sits like a dog, as well as shows the “saw-horse” posture, could be suffering from colic. The pain in severe cases is constant, and while the pulse rate is increased, temperature may be normal. According to Hintz (1990) and Davidson and Harris (2002) digestive colic may be caused by over-feeding, a sudden change in the type of feed, mouldy feed or feed that was not properly chewed due to dental problems. Intestinal obstruction, usually caused by blockage of food, is a less common cause of colic (compared to the previous) but very painful and often fatal. Hintz (1990) as well as Cooper and McGreevy (2002) concluded that ingestion of small objects, for example during wood-chewing or crib-biting, might become the centre of balls of ingesta called fecaliths. These grow by accumulating material on the surface and may cause chronic problems of colic.

1.4 Aim

The aim of this study was to investigate whether lack of daily free spent time outside in a paddock affects the occurrence of behavioural disturbances (like wood-chewing, wind-sucking, crib-biting, weaving, box-walking) and the health of the horse (in particular problem related to the hooves and legs, to the respiratory system and to the digestive system).

The specific hypothesis we wanted to test were;

- 1. Hypothesis; the risk of behavioural disturbances increases as the possibility for social contact between horses decreases.*
- 2. Hypothesis; the risk of behavioural disturbances increases as the free time spent regularly outside in a paddock containing grass and amount of exercise decreases.*
- 3. Hypothesis; the risk of behavioural disturbances and digestive related health problems increases when the feeding occasions given for feeding roughage decreases and when the feeding occasions given for concentrate increases.*
- 4. Hypothesis: the risk of hoof/leg related health problems increases with decreasing free time spent outside and the risk of hoof/leg related health problems increases if horses are kept on muddy grounds.*
- 5. Hypothesis; the risk of respiratory related health problems increases with less free time spent regularly outside breathing fresh air and when the amount of time spent inside the stable increases.*

An epidemiological approach was used. Nicol (1999a) wrote that modern epidemiology with its emphasis on the quantification of risk is a particularly appropriate technique to use for problems that are complex and multifactorial. It is also concluded that epidemiological studies avoid some of the ethical issues associated with experimental work on horses. One of Nicol's (1999a) concerns, that epidemiological studies have to rely on information supplied by owners instead of observations by experimenters, are partly removed in the present study when it has been the same person visiting all the horse-keepers and therefore the common problem that the stable environment is judged by different persons is avoided. However, the study still relies on the horse-keepers information according to management and frequency of behavioural disturbances. A second concern of Nicol's (1999a) was that epidemiological studies only present a statistical snapshot in time. That drawback is also partly removed in the present study by being able to include for how long stereotypic horses have been exposed to the specific management factors identified as important by the statistic analyses.

2. Material and Methods

2.1 Material

2.1.1 Study population

A cross-sectional study including 78 horse-keepers housing 10 or less horses and 28 horse-keepers housing more than 10 horses located in the central part of Sweden were entered and information on stable environment, management and animal health was compiled between 2002 and 2004.

2.1.2 Study design

The study population was divided into two groups. Group 1 (contained horse-keepers housing 10 or less horses) and Group 2 (contained horse-keepers housing more than 10 horses). In Group 1 information on horses was collected for individuals, i.e individual-level information. In Group 2 the horses were divided into categories and the major part of questions was posed on herd-level. Collecting of data was carried out during personal inspections, made by the same inspector at all locations, including a personal meeting with each horse-keeper at the farm. The questions in the questionnaire were framed in a way that enabled comparison between the two groups. This included the issues of interest in the current study like stable management, daily time spent free outside and health of the horses. Since we know that there are differences in management during the summer and winter according to time spent outside, stable management and feeding, even if stables were visited throughout the year, questions were specified according to the time of year. Special questions were also related according to behaviour problems and health related problems like hoof/leg problems, respiratory problems and digestive related problems.

2.1.3 Data analysis

Analysis for Group 1 was performed on individual-level data regarding each horse calculated from the three relevant questionnaires. Analysis for Group 2 was performed on category-level and calculated from the three relevant questionnaires. Statistical analyses were performed on observed counts using Fisher's Exact Tests and Chi-Square Goodness-of-Fit tests to determine any significant trends between housing and management practices and the prevalence of behavioural disturbances and/or health related problems.

2.2 Methods

Data were collected using a checklist (appendix 3) which included questions related to the Swedish Law of Protection of Animals. Four different questionnaires related to Group 1, containing horse-keepers housing 10 or less horses, (appendices 1a, 1b) and Group 2, containing horse-keepers housing more than 10 horses, (appendices 2a, 2b) were used. A total of three questionnaires were therefore used at each farm.

The questionnaires related to Group 1 (appendices 1a, 1b) were more precise about horses at the individual level regarding sex (mare, stallion, gelding), date of birth, type of horse (pony, coldblood, Swedish halfblood, thoroughbred, trotter, Icelandic horse or others), horse category (mare with foal, weaned foal, horses that had reached one year but were not yet in training, competition horses, companionship or exercise horses and others), stable management, social contact with other horses, weaning, feeding (differences in practice during summer and winter time noted) and daily spent free time outside (differences during summer and winter time noted). Questions regarding types of injuries perceived to arise from stable management, during transport or when daily spending free time outside were

also asked. Concerns about behavioural disturbances like wood-chewing, crib-biting, weaving, box-walking and health problems like lameness, inflammation in the skin of the middle phalanx, thrush, laminitis and respiratory-/digestive-related problems were also discussed.

In Group 2 (appendices 2a, 2b) horses were divided into the following categories: mares with foals, weaned foals, horses that had reached one year but were not yet in training, competition horses, companionship or exercise horses, convalescents and stallions. The questions were then precise at the category level regarding number of horses/category, stable management, social contact with other horses, weaning, feeding (differences during summer and winter time noted) and daily spent free time outside (differences during summer and winter time noted). As in Group 1 questions regarding types of injuries arisen from stable management, during transport or when daily spending free time outside were also asked. Further, concerns about behavioural disturbances like wood-chewing, crib-biting, weaving, box-walking and health problems like lameness, inflammation in the skin of the middle phalanx, thrush, laminitis and respiratory-/digestive-related problems were also discussed.

The greater part of the questions in the checklist (appendix 3) were framed in the same way as in the Swedish Board of Agriculture's national horse project questionnaire (appendix 4) to enable comparisons of results on a national basis. Some of the questions correlated to Group 1 and Group 2 (appendices 1a, 1b, 2a, 2b) were framed in the same way as in similar studies (Borroni and Canali 1993; McGreevy 1995a;b; Luescher 1998 and Redbo 1998) to enable comparison of results on an international basis.

3. Results

3.1 Response rate

There were 78 horse-keepers housing 10 or less horses (Group 1 giving data on 284 individual horses) and 28 horse-keepers housing more than 10 horses (Group 2 giving data on 557 horses) in the central part of Sweden that were entered into the study between 2002 and 2004. Of the horse-keepers housing 10 or less horses (Group 1) behaviour disturbances/health problems were found in 40 (51.3%) of 78 stables. Of the horse-keepers housing more than 10 horses (Group 2) behaviour disturbances/health problems were found in 11 (39.3%) of totally 28 stables.

3.2 Variables analyzed from the questionnaire

3.2.1 Housing and Management

3.2.1.1 General

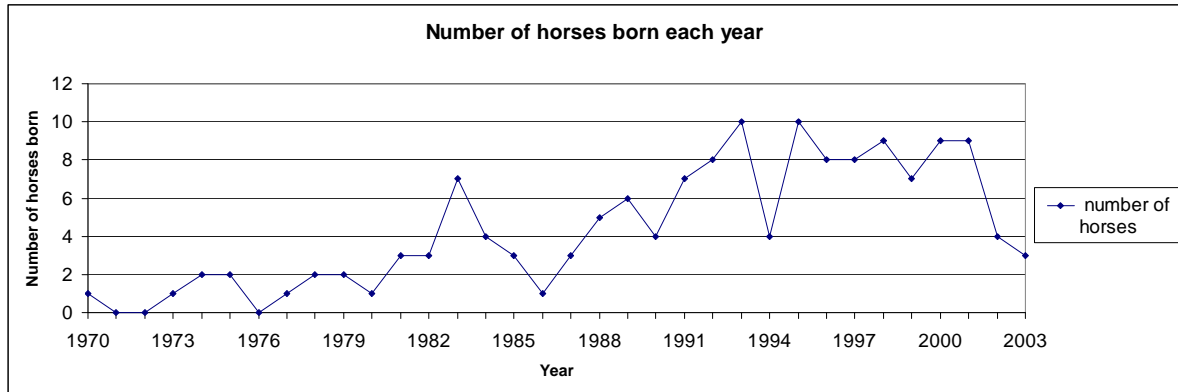
The horses were represented in breeds according to Table 1. Among these 284 horses 112 (39.4%) were geldings, 106 (37.3%) mares and 16 (5.6%) stallions.

Table 1. Breeds and horses ($n=284$).

Group 1		
Breeds	Number of horses	% of 284
Warmbloods (Swedish trotters)	75	26,4
Ponies	64	22,5
Swedish halfbloods	63	22,2
Icelandic horses	30	10,6
Mixed large breeds	19	6,7
Coldbloods	17	6,0
Thoroughbreds	16	5,6
Total	284	100

According to diagram 1 the median of birth year of the horses in Group 1 was 1993, therefore half of the study population was no more than 10 years of age when the study took place. The oldest horse present was born 1970 and the youngest 2003.

Diagram 1. Number of horses born each year.



The horses in Group 1 and Group 2 were represented in categories according to Table 2.

Table 2. Horse-categories.

Categories	Group 1		Group 2	
	No	% of 284	No	% of 557
Mares with foal	29	10,2	80	14,4
Weaned foal	11	3,9	1	0,2
Horses, reached one year, not in training	21	7,4	95	17,1
Competition horses	64	22,5	287	51,5
Companionship or exercise horses	150	52,8	66	11,8
Convalescents	0	0	22	3,9
Stallions	0	0	6	1,1
Unknown	9	3,2	0	0
Total	284	100	557	100

3.2.1.2 Housing

Table 3 compares type of housing between horses in Group 1 (information on 2 horses was unavailable) and Group 2, shown category-wise. Notice that from now on the one horse in the category weaned foal is included in the category mares with foal.

Table 3. *Type of housing.*

	Total number of horses/ Category	Stall		Box		Free-range outdoors with no access to feed on natural grass		Free-range outdoors on grassland	
		No	%	No	%	No	%	No	%
Categories									
Mares with foal	81	0	0	49	60,5	0	0	32	39,5
Horses, reached one year, not in training	95	0	0	48	50,5	18	18,9	29	30,5
Competition horses	287	0	0	287	100	0	0	0	0
Companionship or exercise horses	66	7	10,6	56	84,8	0	0	3	4,5
Convalescents	22	13	59,1	9	40,9	0	0	0	0
Stallions	6	0	0	5	83,3	0	0	1	16,7
Total Group 2	557	20	3,6	454	81,5	18	3,2	65	11,7
Total Group 1	284	6	2,1	245	86,3	4	1,4	27	9,5
Total Horses	841	26	3,1	699	83,1	22	2,6	92	10,9

3.2.1.3 Social contact

All 284 horses (except 2) in Group 1 and all 557 horses in Group 2 had daily opportunity to some form of social contact with other horses. The 2 horses in Group 1 with no social contact were housed all alone because there were no other horse present on that particular farm, one was a warmblood gelding that showed wood-chewing and the other was a pony gelding with no behavioural disturbances.

Table 4 compares type of social contact between horses in Group 1 and Group 2, shown category-wise.

Table 4. *Type of social contact between horses.*

	Total number of horses/ category	Daily opportunity to spend time with other horses and actively touch each other		Daily touch other horses through bars		Daily visual contact with other horses		Housed all alone	
Categories	No	No	%	No	%	No	%	No	%
Mares with foal	81	81	100	0	0	0	0	0	0
Horses, reached one year, not in training	95	81	85,3	14	14,7	0	0	0	0
Competition horses	287	107	37,3	161	56,1	19	6,6	0	0
Companionship or exercise horses	66	66	100	0	0	0	0	0	0
Convalescents	22	22	100	0	0	0	0	0	0
Stallions	6	2	33,3	0	0	4	66,7	0	0
Total Group 2	557	359	64,5	175	31,4	23	4,1	0	0
Total Group 1	284	264	93,0	11	3,9	7	2,5	2	0,7
Total Horses	841	623	74,1	186	22,1	30	3,6	2	0,2

3.2.1.4 Feeding – roughage on daily basis

Table 5 compares number of horses fed roughage on daily basis and feeding locality during summer- (30/3-26/10) and wintertime (26/10-30/3) in each Group.

Table 5. *Roughage fed summer- and wintertime.*

Roughage fed on daily basis	Group 1		Group 2	
	No	% of 284	No	% of 557
<i>Number of horses fed roughage</i>				
Summertime (30/3–26/10)	97	34,2	395	70,9
Wintertime (26/10–30/3)	282	99,3	557	100
<i>Feeding locality</i>				
Number of horses fed inside stable – Summertime	68	23,9	354	63,6
Number of horses fed outside – Summertime	70	24,6	180	32,3
Number of horses fed inside stable – Wintertime	243	85,6	532	95,5
Number of horses fed outside – Wintertime	262	92,3	302	54,2

Table 6 compares number of horses in Group 1 and Group 2, shown category-wise, regarding different kinds of roughage fed on daily basis during summertime (30/3–26/10) and wintertime (26/10-30/3). Note that horses could be given different kinds of feed on several occasions during the same day.

Table 6. Type of roughage fed summer- and wintertime.

	Total number of horses/ category	Hay summer- time		Hay winter- time		Haylage summer- time		Haylage winter- time		Silage summer- time		Silage winter- time		Mix of hay/ haylage/silage summertime		Mix of hay/ haylage/silage wintertime	
Categories		No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
Mares with foal	81	3	3,7	0	0	26	32,1	36	44,4	6	7,4	22	27,2	2	2,5	23	28,4
Horses, reached one year, not in training	95	6	6,3	3	3,2	6	6,3	31	32,6	27	28,4	47	49,5	1	1,1	14	14,7
Competition horses	287	104	36,2	81	28,2	68	23,7	71	24,7	48	16,7	48	16,7	27	9,4	87	30,3
Companionship or exercise horses	66	22	33,3	10	15,2	20	30,3	13	19,7	0	0	0	0	24	36,4	43	65,2
Convalescents	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22	100
Stallions	6	2	33,3	2	33,3	2	33,3	2	33,3	0	0	0	0	1	16,7	2	33,3
Total Group 2	557	137	24,6	96	17,2	122	21,9	153	27,5	81	14,5	117	21,0	54	9,7	191	34,3
Total Group 1	284	94	33,1	241	84,9	0	0	13	4,6	0	0	25	8,8	3	1,1	3	1,1
Total Horses	841	231	27,5	337	40,1	122	14,5	166	19,7	81	9,6	142	16,9	57	6,8	194	23,1

Table 7a compares number of horses in Group 1 and Group 2, shown category-wise, regarding feeding occasions (three times or more) of roughage fed on daily basis during summertime (30/3–26/10) and wintertime (26/10–30/3).

Table 7a. Feeding occasions (three times or more) of roughage fed summer- and wintertime.

Categories	Total number of horses/ category	Feeding three times or more inside summertime		Feeding three times or more inside wintertime		Feeding three times or more outside summertime		Feeding three times or more outside wintertime	
		No	%	No	%	No	%	No	%
Mares with foal	81	6	7,4	28	34,6	6	7,4	29	35,8
Horses, reached one year, not in training	95	15	15,8	60	63,2	15	15,8	66	69,5
Competition horses	287	33	11,5	45	15,7	23	8,0	23	8,0
Companionship or exercise horses	66	1	1,5	20	30,3	1	1,5	1	1,5
Convalescents	22	0	0	9	40,9	0	0	0	0
Stallions	6	2	33,3	5	83,3	3	50	2	33,3
Total Group 2	557	57	10,2	167	30	48	8,6	121	21,7
Total Group 1	284	21	7,4	79	27,8	12	4,2	57	20,1
Total Horses	841	78	9,3	246	29,3	60	7,1	178	21,2

Table 7b compares number of horses in Group 1 and Group 2, shown category-wise, regarding feeding occasions (less than three times) of roughage fed on daily basis during summertime (30/3–26/10) and wintertime (26/10–30/3).

Table 7b. Feeding occasions (less than three times) of roughage fed summer- and wintertime.

Categories	Total number of horses/ category	Feeding less than three times inside summertime		Feeding less than three times inside wintertime		Feeding less than three times outside summertime		Feeding less than three times outside wintertime	
		No	%	No	%	No	%	No	%
Mares with foal	81	31	38,3	30	37,0	29	35,8	34	42,0
Horses, reached one year, not in training	95	25	26,3	33	34,7	11	11,6	15	15,8
Competition horses	287	194	67,6	242	84,3	53	18,5	61	21,3
Companionship or exercise horses	66	45	68,2	46	69,7	37	56,1	56	84,8
Convalescents	22	0	0	13	59,1	0	0	13	59,1
Stallions	6	2	33,3	2	33,3	2	33,3	4	66,7
Total Group 2	557	297	53,3	366	65,7	132	23,7	183	32,9
Total Group 1	284	47	16,5	164	57,7	58	20,4	205	72,2
Total Horses	841	344	40,9	530	63,0	190	22,6	388	46,1

In Group 1, the 56 (19.7%) horses, of 284 that had limited amount of roughage, consumed an average of 4,1 kg roughage/day during summertime and during wintertime 105 (37.0%) horses, of 284 that had limited amount of roughage, consumed an average of 7,1 kg roughage/day.

Table 7c compares feeding occasions of roughage fed during summertime with behavioural disturbances and digestive related health problems between the total study population of 841 horses and the 28 horses showing behavioural disturbances and the 23 horses that had digestive related problems. For horses demonstrating behavioural disturbances (n=28), fewer feeding occasions appeared to led to more behavioural disturbance, however this difference did not reach significance (Fisher's: P=0.111). For horses with digestive related health problems (n=23) fewer feeding occasions led to more digestive related health problems (Fisher's: P=0.004).

7c. Feeding occasions of roughage fed summertime.

	Feeding three times or more inside summertime	Feeding less than three times inside summertime	Feeding three times or more outside summertime	Feeding less than three times outside summertime
Total Horses				
No	78	344	60	190
% of total study population	9,3	40,9	7,1	22,6
Horses showing behavioural disturbances				
No	4	24	0	28
% of horses showing behavioural dist.	14,3	85,7	0	100
% of total horses	5,1	7,0	0	14,7
Horses with digestive related health problems				
No	8	15	0	23
% of horses with digestive related problems	34,8	65,2	0	100
% of total horses	10,3	4,4	0	12,1

Table 7d compares feeding occasions of roughage fed during wintertime with behavioural disturbances and digestive related health problems between the total study population of 841 horses and the 28 horses showing behavioural disturbances and the 23 horses that had digestive related problems. For horses demonstrating behavioural disturbances (n=28), fewer feeding occasions led to more behavioural disturbance (Fisher's: $P=0.025$) and for horses with digestive related health problems (n=23), fewer feeding occasions led to more digestive related health problems (Fisher's: $P=0.035$).

Table 7d. Feeding occasions of roughage fed wintertime.

	Feeding three times or more inside wintertime	Feeding less than three times inside wintertime	Feeding three times or more outside wintertime	Feeding less than three times outside wintertime
Total Horses				
No	246	530	178	388
% of total study population	29,3	63,0	21,1	46,1
Horses showing behavioural disturbances				
No	8	20	1	27
% of horses showing behavioural dist.	28,6	71,4	3,6	96,4
% of total horses	3,3	3,8	0,6	7,0
Horses with digestive related health problems				
No	9	14	2	21
% of horses with digestive related problems	39,1	60,9	8,7	91,3
% of total horses	3,7	2,6	1,1	5,4

3.2.1.5 Feeding – concentrate on daily basis

Table 8 compares number of horses fed concentrate - combinations on daily basis and feeding locality during summer- (30/3-26/10) and wintertime (26/10-30/3) in each Group.

Table 8. *Concentrate fed summer- and wintertime.*

Concentrate fed on daily basis	Group 1		Group 2	
	No	% of 284	No	% of 557
<i>Number of horses fed concentrate</i>				
Summertime (30/3–26/10)	94	33,1	376	67,5
Wintertime (26/10–30/3)	267	94,0	535	96,1
<i>Feeding locality</i>				
Number of horses fed inside stable – Summertime	78	27,5	349	62,7
Number of horses fed outside – Summertime	27	9,5	37	6,6
Number of horses fed inside stable – Wintertime	251	88,4	529	95,0
Number of horses fed outside – Wintertime	29	10,2	16	2,9

Table 9 compares number of horses in Group 1 and Group 2, shown category-wise, regarding different kinds of concentrate-combinations fed on daily basis during summertime (30/3–26/10) and wintertime (26/10-30/3). Note that horses could be given different kinds of feed on several occasions during the same day.

Table 9. Type of concentrate-combinations fed summer- and wintertime.

	Total number of horses/ category	Oats summertime		Oats wintertime		Premix summertime		Premix wintertime		Minerals summertime		Minerals wintertime	
Categories		No	%	No	%	No	%	No	%	No	%	No	%
Mares with foal	81	37	45,7	75	92,6	7	8,6	9	11,1	37	45,7	42	51,9
Horses, reached one year, not in training	95	35	36,8	68	71,6	7	7,4	11	11,6	11	11,6	13	13,7
Competition horses	287	199	69,3	211	73,5	79	27,5	107	37,3	29	10,1	37	12,9
Companionship or exercise horses	66	46	69,7	65	98,5	10	15,2	10	15,2	38	57,6	57	86,4
Convalescents	22	0	0	22	100	0	0	0	0	0	0	13	59,1
Stallions	6	3	50	4	66,7	2	33,3	2	33,3	5	83,3	5	83,3
Total Group 2	557	320	57,5	445	79,9	105	18,9	139	25	120	21,5	167	30,0
Total Group 1	284	73	25,7	186	65,5	51	18,0	118	44,2	40	14,1	109	38,4
Total Horses	841	393	46,7	631	75,0	156	18,5	257	30,6	160	19,0	276	32,8

Table 10a compares number of horses in Group 1 and Group 2, shown category-wise, regarding feeding occasions of concentrate fed on daily basis during summertime (30/3–26/10) and wintertime (26/10–30/3).

Table 10a. *Feeding occasions (three times or more) of concentrate fed summer- and wintertime.*

	Total number of horses/ category	Feeding three times or more inside summer-Time		Feeding three times or more inside winter-time		Feeding three times or more outside summer-time		Feeding three times or more outside winter-Time	
		No	%	No	%	No	%	No	%
Categories									
Mares with foal	81	1	1,2	19	23,5	0	0	0	0
Horses, reached one year, not in training	95	14	14,7	38	40	0	0	0	0
Competition horses	287	214	74,6	239	83,3	0	0	0	0
Companionship or exercise horses	66	10	15,2	10	15,2	0	0	0	0
Convalescents	22	0	0	0	0	0	0	0	0
Stallions	6	2	33,3	2	33,3	0	0	0	0
Total Group 2	557	241	43,3	308	55,3	0	0	0	0
Total Group 1	284	13	4,6	77	27,1	5	1,8	2	0,7
Total Horses	841	254	30,2	385	45,8	5	0,6	2	0,2

Table 10b compares number of horses in Group 1 and Group 2, shown category-wise, regarding feeding occasions (less than three times) of concentrate fed on daily basis during summertime (30/3–26/10) and wintertime (26/10–30/3).

Table 10b. Feeding occasions (less than three times) of concentrate fed summer- and wintertime.

	Total number of horses/ category	Feeding less than three times inside summertime		Feeding less than three times inside wintertime		Feeding less than three times outside summertime		Feeding less than three times outside wintertime	
		No	%	No	%	No	%	No	%
Categories									
Mares with foal	81	10	12,3	52	64,2	26	32,1	6	7,4
Horses, reached one year, not in training	95	25	26,3	39	41,1	1	1,1	0	0
Competition horses	287	33	11,5	48	16,7	7	2,4	7	2,4
Companionship or exercise horses	66	37	56,1	56	84,8	1	1,5	1	1,5
Convalescents	22	0	0	22	100	0	0	0	0
Stallions	6	3	50	4	66,7	2	33,3	2	33,3
Total Group 2	557	108	19,4	221	39,7	37	6,6	16	2,9
Total Group 1	284	66	23,2	174	61,3	22	7,7	27	9,5
Total Horses	841	174	20,7	395	47,0	59	7,0	43	5,1

During both summer- and wintertime the horses in Group 1 were fed extra complements of concentrate daily in a blend of ingredients (oats, barley, premix, soya, alfalfa, beet pulp, vitamins, minerals and additional complements like bran, linseed, cooking oil, biotin, bioglucosamin, carrots, apples, wheat bran, ferrosyl, molasses, garlic, tokosel, salt, yeast, calcium, wheat germ oil). During summertime the ingredients above were represented in 23 different combinations and 77 (27.1%) of 284 horses consumed at average 2,5 kg concentrates/day. During wintertime the blend of ingredients above were represented in 50 different concentrate combinations and 119 (41.9%) of 284 horses consumed at average 2,3 kg concentrate/day.

Table 10c compares feeding occasions of concentrate fed during summertime with behavioural disturbances and digestive related health problems between the total study population of 841 horses and the 28 horses showing behavioural disturbances and the 23 horses that had digestive related problems. The number of feeding occasions had no significant effect on the prevalence of behavioural disturbances (Fisher's: $P=0.469$); however, for horses with digestive related health problems, fewer feeding occasions led to more digestive related health problems (Fisher's: $P=0.001$).

Table 10c. Feeding occasions of concentrate summertime.

	Feeding three times or more inside summertime	Feeding less than three times inside summertime	Feeding three times or more outside summertime	Feeding less than three times outside summertime
Total Horses				
No	254	174	5	59
% of total study population	30,2	20,7	0,6	7,0
Horses showing behavioural disturbances				
No	6	22	3	25
% of horses showing behavioural dist.	21,4	78,6	10,7	89,3
% of total horses	2,4	12,6	60,0	42,9
Horses with digestive related health problems				
No	9	14	0	23
% of horses with digestive related problems	39,1	60,9	0	100
% of total horses	3,5	8,0	0	39,0

Table 10d compares feeding occasions of concentrate fed during wintertime with behavioural disturbances and digestive related health problems between the total study population of 841 horses and the 28 horses showing behavioural disturbances and the 23 horses that had digestive related problems. The number of feeding occasions had no significant effect on the prevalence of behavioural disturbances (Fisher's: $P=0.418$); however, for horses with digestive related health problems, fewer feeding occasions correlate to more digestive related health problems (Fisher's: $P=0.004$).

Table 10d. Feeding occasions of concentrate fed wintertime.

	Feeding three times or more inside wintertime	Feeding less than three times inside wintertime	Feeding three times or more outside wintertime	Feeding less than three times outside wintertime
Total Horses				
No	385	395	2	43
% of total study population	45,8	47,0	0,2	5,1
Horses showing behavioural disturbances				
No	14	14	10	18
% of horses showing behavioural dist.	50,0	50,0	35,7	64,3
% of total horses	3,6	3,5	5,0	41,9
Horses with digestive related health problems				
No	8	15	0	23
% of horses with digestive related problems	34,8	65,2	0	100
% of total horses	2,1	3,8	0	53,5

3.2.1.6 Daily spent free time outside

The horses included in each Group were spending free time outside on daily basis regarding number of horses, type of area, social constellation, hours spent outside during summer- and wintertime and weather conditions or other reasons according to Table 11a.

Table 11a. Daily spent free time outside.

Daily spent free time outside	Group 1		Group 2	
<i>Number of horses</i>	No	% of 284	No	% of 557
Spending free time outside for 7 days a week	282	99,3	557	100
<i>Type of area</i>				
Paddock with grass on the ground	271	95,4	459	82,4
Paddock with no access to grass	11	3,9	94	16,9
Indoors in a manege or in a walker	0	0	4	0,7
<i>Social constellation</i>				
With a stable group of other horses of the same sex	57	20,1	108	19,4
With a stable group of other horses of different gender	191	67,3	210	37,7
In a group of horses with the same gender but where the other horses constant exchange	3	1,1	0	0
Kept alone all year around because of sexual maturity	4	1,4	4	0,7
Kept alone all year around because of risk of injuries	1	0,4	215	38,6
Kept alone because of other reasons	11	3,9	0	0
<i>Hours spent outside during summertime (30/3-26/10)</i>				
During summertime spending 24h/day outside daily	206	72,5	315	56,6
During summertime spending 12h/day or more outside daily	34	12,0	17	3,1
During summertime spending less than 12h/day outside daily	42	14,8	225	40,4
<i>Hours spent outside during wintertime (26/10-30/3)</i>				
During wintertime spending 24h/day outside daily	26	9,2	71	12,7
During wintertime spending 12h/day or more outside daily	58	20,4	0	0
During wintertime spending less than 12h-8h/day outside daily	130	45,8	209	37,5
During wintertime spending less than 8h-6h/day outside daily	58	20,4	185	33,2
During wintertime spending less than 6h/day outside daily	7	2,5	92	16,5
<i>Weather conditions or other reasons</i>				
Spending free time outside regardless weather conditions or slippery grounds	216	76,1	445	79,9
Kept indoors due to lack of access to paddocks or because the handlers could not manage to bring them in on time	0	0	0	0
Kept indoors due to extreme/bad weather conditions	63	22,2	96	17,2
Kept indoors due to slippery grounds	7	2,5	0	0
Kept indoors due to other reasons	5	1,8	16	2,9

3.2.1.6.1 Type of area

Table 11b compares type of area when spending free time outside regarding Group 1 and Group 2, shown category-wise.

Table 11b. Type of area when spending free time outside.

	Total number of horses/ category	Paddock with grass on the ground		Paddock with no access to grass		Indoors in a manege or in a walker	
Categories		No	%	No	%	No	%
Mares with foal	81	81	100	0	0	0	0
Horses, reached one year, not in training	95	95	100	0	0	0	0
Competition horses	287	189	65,9	94	32,8	4	1,4
Companionship or exercise horses	66	66	100	0	0	0	0
Convalescents	22	22	100	0	0	0	0
Stallions	6	6	100	0	0	0	0
Total Group 2	557	459	82,4	94	16,9	4	0,7
Total Group 1	284	271	95,4	11	3,9	0	0
Total Horses	841	730	86,8	105	12,5	4	0,5

3.2.1.6.2 Social constellation when spending free time outside

Table 11c shows type of social constellation when spending free time outside regarding Group 1 and Group 2, shown category-wise.

Table 11c. Type of social constellation when spending free time outside.

	Total number of horses/ category	With a stable group of other horses of the same sex		With a stable group of other horses of different gender		In a group of horses with the same gender but where the other horses constant exchange	
Categories		No	%	No	%	No	%
Mares with foal	81	32	39,5	49	60,5	0	0
Horses, reached one year, not in training	95	39	41,1	31	32,6	0	0
Competition horses	287	34	11,8	53	18,5	0	0
Companionship or exercise horses	66	3	4,5	63	95,5	0	0
Convalescents	22	0	0	13	59,1	0	0
Stallions	6	0	0	1	16,7	0	0
Total Group 2	557	108	19,4	210	37,7	0	0
Total Group 1	284	57	20,1	191	67,3	3	1,1
Total Horses	841	165	19,6	401	47,7	3	0,4

Table 11d relates to reasons why horses were kept alone when spending free time outside regarding Group 1 and Group 2, shown category-wise.

Table 11d. *Reasons why horses were kept alone when spending free time outside.*

Categories	Total number of horses/ category	Kept alone all year around because of sexual maturity		Kept alone all year around because of risk of injuries		Kept alone because of other reasons	
		No	%	No	%	No	%
Mares with foal	81	0	0	0	0	0	0
Horses, reached one year, not in training	95	0	0	14	14,7	0	0
Competition horses	287	0	0	200	69,7	0	0
Companionship or exercise horses	66	0	0	0	0	0	0
Convalescents	22	0	0	0	0	0	0
Stallions	6	4	66,7	1	16,7	0	0
Total Group 2	557	4	0,7	215	38,6	0	0
Total Group 1	284	4	1,4	1	0,4	11	3,9
Total Horses	841	8	1,0	216	25,7	11	1,3

In the category of horses that had reached one year but were not yet in training the horses that were kept alone outside because of risk of injuries had been kept like that since 2 years of age. In the category of competition the horses that had been kept alone outside because of risk of injuries had been kept like that since 2 years of age regarding 158 of 200 horses (79.0%) , since 3 years of age regarding 20 of 200 horses (10.0%) and since 4 years of age regarding 3 of 200 horses (1.5%). In the category of stallions the horse that was kept alone because of risk of injuries had been kept like that since 2 years of age.

3.2.1.6.3 Hours spent outside

Table 11e compares hours spent outside on daily basis during summertime (30/3-26/10) regarding Group 1 and Group 2, shown category-wise.

Table 11e. Hours spent outside on daily basis during summertime.

	Total number of horses/ category	Spending 24h/day outside		Spending 12h/day or more outside		Spending less than 12h/day outside	
		No	%	No	%	No	%
Mares with foal	81	77	95,1	4	4,9	0	0
Horses, reached one year, not in training	95	80	84,2	1	1,1	14	14,7
Competition horses	287	79	27,5	0	0	208	72,5
Companionship or exercise horses	66	53	80,3	12	18,2	1	1,5
Convalescents	22	22	100	0	0	0	0
Stallions	6	4	66,7	0	0	2	33,3
Total Group 2	557	315	56,6	17	3,1	225	40,4
Total Group 1	284	206	72,5	34	12,0	42	14,8
Total Horses	841	521	62,0	51	6,1	267	31,7

Table 11f compares hours spent outside on daily basis during wintertime (26/10-30/3) regarding Group 1 and Group 2, shown category-wise.

Table 11f. Hours spent outside on daily basis during wintertime.

	Total number of horses/ category	Spending 24h/day outside		Spending 12h/day or more outside		Spending less than 12-8h/day outside		Spending less than 8-6h/day outside		Spending less than 6h/day outside	
		No	%	No	%	No	%	No	%	No	%
Mares with foal	81	32	39,5	0	0	47	58,0	2	2,5	0	0
Horses, reached one year, not in training	95	35	36,8	0	0	38	40,0	22	23,2	0	0
Competition horses	287	0	0	0	0	55	19,2	140	48,8	92	32,1
Companionship or exercise horses	66	3	4,5	0	0	51	77,3	12	18,2	0	0
Convalescents	22	0	0	0	0	13	59,1	9	40,9	0	0
Stallions	6	1	16,7	0	0	5	83,3	0	0	0	0
Total Group 2	557	71	12,7	0	0	209	37,5	185	33,2	92	16,5
Total Group 1	284	26	9,2	58	20,4	130	45,8	58	20,4	7	2,5
Total Horses	841	97	11,5	58	6,9	339	40,3	243	28,9	99	11,8

3.2.1.6.4 Weather conditions or other reasons – Group 1 and Group 2

Worth noticing regarding both Group 1 and Group 2 is that the circumstances described in Table 11a above regarding horses kept indoors due to different reasons never occurred due to lack of access to paddocks or because the handlers could not manage to bring them in on time. Further in Group 2 no horse was kept indoors due to slippery grounds or bad weather.

Table 12a compares number of horses being kept indoors due to lack of access to paddocks, extreme/bad weather conditions, slippery grounds or other reasons.

Table 12a. Number of horses being kept indoors due to weather conditions or other reasons.

Categories	Total number of horses/ Category	Kept indoors due to extreme/bad weather conditions		Kept indoors due to slippery grounds		Kept indoors due to other reasons	
		No	%	No	%	No	%
Mares with foal	81	36	44,4	0	0	6	7,4
Horses, reached one year, not in training	95	8	8,4	0	0	0	0
Competition horses	287	47	16,4	0	0	7	2,4
Companionship or exercise horses	66	2	3,0	0	0	1	1,5
Convalescents	22	0	0	0	0	0	
Stallions	6	3	50,0	0	0	2	33,3
Total Group 2	557	96	17,2	0	0	16	2,9
Total Group 1	284	63	22,2	7	2,5	5	1,8
Total Horses	841	159	18,9	7	0,8	21	2,5

Table 12b describes number of occasions/year horses in Group 1 and Group 2, shown category-wise, was kept indoors due to extreme/bad weather conditions, slippery grounds or other reasons.

Table 12b. Number of occasions/year horses were kept indoors due to weather conditions or other reasons.

Categories	Total number of horses/ category	Number of occasions/year horses were kept indoors					
		1-5 times a year		10-12 times a year		25 times a year	
		No	%	No	%	No	%
Mares with foal	81	32	39,5	6	7,4	0	0
Horses, reached one year, not in training	95	3	3,2	5	5,3	0	0
Competition horses	287	15	5,2	11	3,8	0	0
Companionship or exercise horses	66	2	3,0	1	1,5	0	0
Convalescents	22	0	0	0	0	0	0
Stallions	6	3	50,0	2	33,3	0	0
Total Group 2	557	55	9,9	25	4,5	0	0
Total Group 1	284	55	19,4	8	2,8	3	1,1
Total Horses	841	110	13,1	33	3,9	3	0,4

3.2.1.6.5 Paddock-area and horse density – Group 1 and Group 2

In Group 1, there are at most 7 paddocks/farm and on average there was 2,7 paddocks/farm. There are at most 10 horses/farm and on average 3,6 horses/farm. At minimum there was 1 paddock/farm and 1 horse/farm. The largest average paddock-area at a farm was 90000 m²/paddock, the smallest 345 m²/paddock and on average the paddocks were 13682 m²/paddock. The smallest available average paddock-area/horse was 480 m² and the largest average paddock-area/horse was 52500 m².

In Group 2, there are at most 12 paddocks/farm and at average there were 7,5 paddocks/farm. There were at most 77 horses/farm and on average 25,8 horses/farm. At minimum there was 1 paddock/farm and 11 horses/farm. The largest average paddock-area at a farm was 162500 m²/paddock, the smallest 525 m²/paddock and on average the paddocks were 18383 m²/paddock. The smallest available average paddock-area/horse was 131 m² and the largest average paddock-area/horse was 24286 m².

3.2.2 Behavioural and Health Problems

3.2.2.1 Injuries occurring when spending free time outside in a paddock, indoors in housing or during transport the last year.

Table 13 compares number of injured horses in each Group when spending free time outside, indoors in housing or during transport the last year.

***Table 13.** Number of injured horses when spending free time outside, indoors in housing or during transport the last year.*

Area where injury took place	Group 1		Group 2	
	No	%	No	%
No injury	267	94,0	511	91,7
Injured when spending free time outside	13	4,6	43	7,7
Injured when spending time indoors in housing	3	1,1	1	0,2
Injured during transport	1	0,4	2	0,4
Total	284	100	557	100

Table 14 compares type of injuries and number of injured horses occurring in each Group when spending free time outside, indoors in housing or during transport the last year.

***Table 14.** Type of injuries and number of injured horses.*

Type of injuries	Group 1			Group 2		
	Number of injured horses	% of 284	% of injuries	Number of injured horses	% of 557	% of injuries
Splinter- or cutwounds	5	1,8	29,4	20	3,6	43,5
Bone fractures	4	1,4	23,5	0	0	0
Sprain	1	0,4	5,9	9	1,6	19,6
Sinew injury	0	0	0	9	1,6	19,6
Other type of injury	7	2,5	41,2	8	1,4	17,4
Total	17	6,0	100	46	8,3	100

In Group 1, the other types of injuries referred to in Table 14 were for example large intestine injury, kickwounds and blisters on the genitals. The 17 injuries of concern were in 11 (64.7%) of 17 cases diagnosed by a veterinarian. In Group 2 the other type of injuries referred to in Table 14 was for example wasp- or sting bite, nerve injury or unknown. The injuries of concern were in 2 (11.8 %) of 17 cases diagnosed by a veterinarian. In Group 1, 8 (47.1%) of 17 occasions of injuries took place from April to October and 4 (23.5%) of 17 occasions from November to March. Ten (58.8%) of 17 horses were convalescent during a time of 0-2 months and 2 (11.8%) of 17 horses had to rest for 5-6 months. One (5.9%) of 17 horses never recovered from its injuries and had to be put to sleep.

In Group 2, 2 (4.3%) out of a total of 46 injured horses were represented in the category of mares with foal and located at the same farm and the injuries occurred during August. In the category of competition injuries occurring when spending free time outside in a paddock among an amount of 43 (93.5%) of 46 injured horses, located at three different farms and the injuries took place from November to March and once in July.

Table 15 shows what specifically caused the injuries of concern in each Group described in Table 14 and total number of injuries. Note that some horses could have been injured on several occasions.

Table 15. *Causes of injury and total number of injuries.*

Cause of injury	Group 1			Group 2		
	Total number of injuries	% of 284	% of total number of injuries	Total number of injuries	% of 557	% of total number of injuries
Another horse	5	1,8	23,8	8	1,4	17,8
Got stuck in fences	3	1,1	14,3	6	1,1	13,3
Slippery grounds, strange objects	4	1,4	19,0	29	5,2	64,4
Other causes	9	3,2	42,9	2	0,4	4,4
Total	21	7,5	100	45	8,1	100

In Group 1, the other causes of injuries referred to in Table 15 were for example eating a lot of concentrate on a short period of time, gone through the ice in a marsh or by rolling.

In Group 2, the other causes of injuries referred to in Table 15 were for example wasp- or snakebite.

3.2.2.2 Behavioural disturbances

Table 16a compares type of behavioural disturbances and number of horses showing behavioural disturbances in each Group.

Table 16a. Behavioural disturbances.

Type of behavioural disturbances	Group 1			Group 2		
	Number of horses showing behavioural disturbances	% of 284	% of the 21 horses showing behavioural disturbances	Number of horses showing behavioural disturbances	% of 557	% of the 7 horses showing behavioural disturbances
No behavioural disturbances	263	92,6		550	98,7	
Wood-chewing	10	3,5	47,6	2	0,4	28,6
Weaving	3	1,1	14,3	2	0,4	28,6
Crib-biting	2	0,7	9,5	3	0,5	42,9
Box-walking	3	1,1	14,3	0	0	0
Other types	3	1,1	14,3	0	0	0

In Group 1, the other types of behavioural problems referred to in Table 16 were for example staring into the wall constantly or biting against the bars. For 10 (3.5%) of 284 horses the behavioural disturbances had not arisen during the time the horse had been housed on the actual farm and for 2 (0.7%) of 284 horses the behavioural disturbance did actually arise when the horse were housed on the farm in the present study. For 8 (2.8%) of 284 horses the frequency of the behavioural disturbance declined after being housed on the farm in the present study, for 7 (2.5%) of 284 horses the frequency was unchanged and for 1 (0.4%) of 284 horses it increased. The actual 21 horses showing behavioural disturbances were housed on 11 different farms. On 4 farms there was only one horse showing behavioural disturbances, on 4 farms there were 2 horses with behavioural disturbances and at 3 farms there were 3 horses with behavioural disturbances.

In Group 2, the 7 horses showing behavioural disturbances were located at 6 different farms. Of these 4 horses were in the category of companionship or exercise (they showing crib-biting and weaving), 2 horses were in the category of convalescents (they showed wood-chewing) and one in the category of competition (showing crib-biting). Regarding the 4 horses in the category of companionship or exercise the horses were located at different farms which contained between 14 and 31 horses in that category. The behavioural disturbances had not in any case arisen during the time the horses had been housed on the actual farm in this study, instead the frequency of the behavioural disturbance declined for 3 horses and was unchanged for one showing weaving. Regarding the 2 horses in the category of convalescents the horses were located at the same farm which contained 9 horses in that category and the behavioural disturbances did actually arise when the horses were housed on the farm present in the study. Regarding the one horse in the category of competition the farm contained 77 horses in that category. The behavioural disturbance had not arisen during the time the horse had been housed on the actual farm in this study, instead it declined.

Table 16b compares level of social contact with the frequency of behavioural disturbances between the total study population of 841 horses and the 28 horses showing behavioural disturbances. The data collected from this study indicate that less social contact does not preclude horses to behavioural disturbances; however, there were too few animals that were demonstrating behavioural disturbances to make statistical comparisons between the categories of social contact.

Table 16b. *Social contact and behavioural disturbances.*

	Daily opportunity to spend time with other horses and actively touch each other	Daily touch other horses through bars	Daily visual contact with other horses	Housed all alone
Total Horses				
No	623	186	30	2
% of total study population	74,1	22,1	3,6	0,2
Horses showing behavioural disturbances				
No	23	0	4	1
% of horses showing behavioural dist.	82,1	0	14,3	3,6
% of total horses	3,7	0	13,3	50,0

Table 16c compares type of area and time budget when spending free time outside with the frequency of behavioural disturbances between the total study population of 841 horses and the 28 horses showing behavioural disturbances. The data collected from this study indicate that less time spent in paddocks with grass on the ground does not appear to correlate to increased behavioural disturbance. Further, there may be seasonal differences in the way time spent outside affects horses' behaviour; however, there were too few animals that were demonstrating behavioural disturbances to make statistical comparisons between the housing types.

Table 16c. Free time spent outside and behavioural disturbances.

	Paddock with grass on the ground	Paddock with no access to grass	Indoors in a manege or in a walker	Spending 24h/day Outside		Spending 12h/day or more outside		Spending less than 12h/day outside	
Total Horses				summer	winter	summer	winter	summer	winter
No	730	105	4	521	97	51	58	267	681
% of total study population	86,8	12,5	0,5	62,0	11,5	6,1	6,9	31,7	81,0
Horses showing behavioural disturbances									
No	26	2	0	21	2	0	2	7	24
% of horses showing behavioural dist.	92,9	7,1	0	75,0	7,1	0	7,1	25,0	85,7
% of total horses	3,6	1,9	0	4,0	2,1	0	3,4	2,6	3,5

Subjective opinion of horse-keepers on behavioural disturbances

When the horse-keepers reported that one or more of the horses showed behavioural disturbances, the horse-keeper was asked to give their opinion on any aspect of the problem. The response given are summarised below.

In Group 1, the subjective opinion of horse-keepers housing horses which showed behavioural disturbances are shared below. One horse-keeper with three horses showing wood-chewing shared that the frequency of the behavioural disturbance decreased with a satisfied horse and increased with competition preparations and acupuncture treatment. The horse-keeper believed that one measure to decrease wood-chewing could be to use tar or stop-bite. Another horse-keeper with two horses showing crib-biting shared that the frequency decreased if the horse did not have anything inside the box to clutch its teeth against, decreased with increased activity and with increased time spent outside daily. Additionally one horse-keeper with three horses housed on the same farm, of which two showed weaving and one crib-biting, believed that there had to be a hereditary disposition for behavioural disturbances. The horse-keeper shared that the frequency decreased with increased amount of roughage given, time spent outside daily together with other horses, calm housing, settled routines, bedding with straw and varying exercise.

In Group 2, the subjective opinion of the horse-keepers housing horses showing weaving were that the horses showed weaving when they were kept indoors alone and that the frequency of weaving declined with settled daily routines and more free time spent outside daily together with other horses. The subjective opinion of the 3 horse-keepers housing horses that showed crib-biting were that the frequency of the crib-biting declined with bedding with straw, a larger feed of roughage, no sugar or beet pulp in the feed and if the horse did not have anything inside the box to clutch its teeth against. One horse that was initially housed in a box with three covered walls in a corner of the stable was moved to a box with a window, open walls and next to the stable door (where there was more stimulation) and the frequency of the behavioural disturbance declined.

3.2.2.3 Health related problems the last year-general

Table 17a compares type of health related problems and total number of health related problems showed in each Group the last year. Note that some horses in Group 1 show several health related problems.

Table 17a. Health related problems.

	Group 1			Group 2		
Type of health related problem	Total number of health related problems	% of 284	% of total number of health related problems	Total number of health related problems	% of 557	% of total number of health related problems
Respiratory related problems	14	4,9	26,4	16	2,9	42,1
Leg related problems	15	5,3	28,3	3	0,5	7,9
Hoof problems	17	6,0	32,1	0	0	0
Digestive related problems	4	1,4	7,5	19	3,4	50,0
Other types of health related problems	3	1,1	5,7	0	0	0
Total	53	18,7	100	38	6,8	100

In Group 1, the other types of health related problems referred to in Table 17a were skin problems and cancer. In Group 1, a total of 48 (16.9%) out of 284 horses had health related problems the last year, showing a number of 53 diagnoses ie some horses had more than one diagnosis. Of the 48 horses showing health related problems 26 (54.2%) were diagnosed by a veterinarian and 34 (70.8%) were convalescent during a time of 0-2 months, 4 (8.3%) horses for around 6 months, 2 (4.2%) horses for more than 12 months and 5 (10.4%) horses never recovered. The actual 48 horses with health related problems were housed on 29 different farms and represented with one horse with health problems/farm at 18 farms, 2 horses with health problems at the same farm on 6 farms, 3 horses with health problems at the same farm on 2 farms and 4 horses with health problems at the same farm on 3 farms.

In Group 2, a total of 38 (6.8%) out of 557 horses had health related problems the last year. In 2 (5.3%) of these 38 cases the horses were diagnosed by a veterinarian. The horses were located at 5 (17.9%) out of a total of 28 different farms and represented with 25 horses in the category of companionship or exercise (showing lameness, respiratory- and digestive related problems), 2 horses in the category of convalescents (showing respiratory- and digestive related problems) and 11 horse in the category of mares with foal (showing digestive related problems referred to as colic). Regarding the 25 horses in the category of companionship or exercise the horses were located at different farms which contained between 3 and 8 horses in the current category. Regarding the 2 horses in the category of convalescents they were located at different farms which contained 7 to 8 horses in the current category. Regarding the 11 horses in the category mares with foal the farm contained 11 horses in the current category.

Table 17b compares type of area and time budget when spending free time outside with the frequency of hoof/leg related health problems between the total study population of 841 horses and the 35 horses that had hoof/leg related problems. Note that data is missing for 2 of the 35 horses in this matter. Less time spent in paddocks with grass on the ground does not appear to correlate to increased hoof/leg related health problems; however, there were too few animals with hoof/leg related health problems to make statistical comparisons between the housing types.

Table 17b. Free time spent outside and hoof/leg related problems.

	Paddock with grass on the ground	Paddock with no access to grass	Indoors in a manege or in a walker	Spending 24h/day Outside		Spending 12h/day or more outside		Spending less than 12h/day outside	
Total Horses				summer	winter	summer	winter	summer	winter
No	730	105	4	521	97	51	58	267	681
% of total study population	86,8	12,5	0,5	62,0	11,5	6,1	6,9	31,7	81,0
Horses with hoof/leg related health problems									
No	31	2	0	16	3	2	2	15	26
% of horses with hoof/leg problems	88,6	5,7	0	45,7	8,6	5,7	5,7	42,9	74,3
% of total horses	4,2	1,9	0	3,1	3,1	3,9	3,4	5,6	3,8

Table 17c compares free time spent outside and respiratory related health problems between the total study population of 841 horses and the 30 horses that had respiratory related problems. Less time spent outside during summertime does not lead to increased respiratory related health problems ($\chi^2 = 56.3$, $P < 0.001$). Less time spent outside during wintertime, however, correlates to increased respiratory related health problems ($\chi^2 = 15.1$, $P < 0.001$).

Table 17c. Free time spent outside and respiratory related problems.

	Spending 24h/day outside		Spending 12h/day or more outside		Spending less than 12h/day outside	
Total Horses	Summer	Winter	summer	winter	summer	Winter
No	521	97	51	58	267	681
% of total study population	62,0	11,5	6,1	6,9	31,7	81,0
Horses with respiratory related health problems						
No	19	0	11	7	0	23
% of horses with respiratory related problems	63,3	0	36,7	23,3	0	76,7
% of total horses	3,6	0	21,6	12,1	0	3,4

3.2.2.3.1 Hoof/leg related health problems

Table 18 specifies hoof/leg related problems the last year regarding the 35 (40.7%) of 86 horses showing hoof/leg related problems.

Table 18. Hoof/leg related problems.

Type of hoof/ leg related problem	Group 1		Group 2	
	No	% of hoof/leg problems	No	% of hoof/leg problems
Hoof problem				
Hoof problems in general	2	6,3	0	0
Hoof cracks	2	6,3	0	0
Hoof abscesses	2	6,3	0	0
Thrush	2	6,3	0	0
Hoof bone fracture	1	3,1	0	0
Laminitis	8	25,0	0	0
Leg problem				
Osteochondritis	4	12,5	0	0
Swollen legs	3	9,4	0	0
Knee problems	2	6,3	0	0
Osteoarthritis	1	3,1	0	0
Hock fracture	1	3,1	0	0
Ligament injury	1	3,1	0	0
Lameness	3	9,4	3	100
Total	32	100	3	100

Table 19 shows what specifically caused the hoof/leg related problems of concern regarding the actual 35 horses described in Table 18.

Table 19. Causes of hoof/leg related problems.

Cause of hoof/leg problem	Group 1		Group 2	
	No	% of causes	No	% of causes
Another horse	2	6,3	0	0
Dry/slippy grounds	2	6,3	0	0
Management	6	18,8	3	100
Unknown causes	22	68,8	0	0
Total	32	100	3	100

In Group 1, 14 (43.8%) of the 32 horses showing hoof or leg related problems were convalescent during a time of 0-2 months, 3 (9.4%) during around 6 months, 1 (3.1%) for more than 12 months and 1 (3.1%) never recovered.

3.2.2.3.2 Respiratory related health problems

Table 20 specifies respiratory related problems the last year regarding the 30 (34.9%) of 86 horses showing health related problems.

Table 20. Respiratory related problems.

Type of respiratory related problem	Group 1		Group 2	
	No	% of respiratory related problems	No	% of respiratory related problems
Coughed	11	78,6	8	50,0
Asthma	1	7,1	0	0
Sensitive against dust	1	7,1	0	0
Hissed from the respiratory passage and showed loss of capacity	1	7,1	0	0
Unknown types	0	0	8	50,0
Total	14	100	16	100

Table 21 shows what specifically caused the respiratory related problems of concern regarding the 30 horses described in Table 20.

Table 21. Causes of respiratory related problems.

Cause of respiratory related problem	Group 1		Group 2	
	No	% of causes	No	% of causes
Dusty indoor housing or mouldy roughage	9	64,3	0	0
Pollen allergy	0	0	8	50
Unknown causes	5	35,7	8	50
Total	14	100	16	100

In Group 1, 11 (78.6%) out of the 14 horses showing respiratory related problems were convalescent during a time of 0-2 months, 1 (7.1%) during around 6 months and 1 (7.1%) never recovered.

3.2.2.3.3 Digestive related health problems

Table 22 specifies digestive related problems the last year regarding the 4 (8.3%) of 48 horses in Group 1 showing health related problems. Data belonging to the part on causes of digestive related health problems were not complete or answers not given in full detail from horse-keepers neither on individual basis from Group 1 nor category-wise from Group 2.

Table 22. *Digestive related problems.*

Type of digestive related problem	Group 1		Group 2	
	No	% of digestive related problems	No	% of digestive related problems
Colic	0	0	11	57,9
Croup paralysis	1	25	0	0
Ileus	1	25	0	0
Allergy	1	25	0	0
Not gain weight	1	25	0	0
Unknown	0	0	8	42,1
Total	4	100	19	100

In Group 1, 3 (75.0%) of the 4 horses showing digestive related problems were convalescent during a time of 0-2 months.

3.3 Additional comments

Data belonging to the part on weaning, wind-sucking and causes of digestive related problems were not complete or answers were not given in sufficient detail from horse-keepers neither on individual basis from Group 1 nor category-wise from Group 2. Therefore results from that part are not presented.

The questions regarding amount of kg roughage and amount of kg concentrate given per day could only be asked at the individual level ie for Group 1 horses only. Therefore results from that part are not presented.

As mentioned earlier, to enable comparison of results the one horse in the category weaned foal was included in the category mares with foal.

4. Discussion

4.1 Overall – related to stakeholder concerns

In the introduction, the major concerns of the people and organisations replying to the suggested changes in the regulations so that horses were given daily opportunity to spend free time outside in a paddock were outlined. In the main, these were that this would lead to an increase risk of injuries, especially at times with slippery grounds, or that there was a lack of access to paddocks in which to turn the horses out. The groups commenting on the proposal also expressed concern regarding horses being compelled to spend too long time outside in paddocks on muddy grounds and during that time not being fed regularly. The results of this study imply that these concerns were not justified in this area of Sweden since most horses go outside anyway and so a change in the regulations would have few consequences for horse-keepers.

Data collected regarding injuries arising during the last year showed that only 56 out of a total of 841 horses included in the present study had injuries originated from spending free time outside in a paddock of which 4 (on individual basis) and 29 horses studied category-wise were caused by slippery grounds or strange objects, like sticks. Conclusion can be made that there is little risk of injury when horses spent free time outside in a paddock. On the other hand, only 63 horses had any injury at all, so even though injuries in the paddock were rare, they did account for 88% of all injuries recorded in this study.

Worth noticing as well regarding both studied groups is that not one single horse out of 841, of which approximately half the number were competition horses, was kept indoors due to lack of access to paddocks or because the handlers could not manage to bring them in on time. Additional, regarding the horses in Group 2, not one horse out of 557 was kept indoors due to slippery grounds or bad weather. Conclusions can therefore be made that even in this aspect the misgivings which concerned above all competition horses and riding schools, having insufficient access to paddocks in which to turn the horses out, turned out to be unjustified. This is moreover confirmed by the Swedish Board of Agriculture's (SBA rapport 1998:23) report concluding that 98% of the horse-keepers give their horses opportunity to spend free time outside daily. In neither the present study nor SBA's study (SBA rapport 1998:23) are riding schools included in the study population but competition horses are.

Furthermore, 87% of the horses spent free time outside daily in paddocks with grass on the ground and during that time 30% of the horses were fed roughage regularly outside during summertime and 67% during wintertime. This implies that the misgivings also in this part, regarding horses being compelled to spend too long time outside in paddocks on muddy grounds and during that time not being fed regularly, was not supported. In addition this study showed that only 35 out of a total of 841 horses had hoof/leg related problems of some sort. Of these only 2 cases were caused by dry or slippery grounds. It is therefore unlikely that concerns in this area are justified.

In Sweden it has been forbidden since 2007 to build stalls when building new housing systems (DFS 2007:6) but according to this study this seems to be a minor problem when only 3.1% of the horses included in this study population were kept in a stall compared to 96.7% that were either housed in a box or on free-range outdoors. In the SBA study (SBA rapport 1998:23) it is concluded that 28.0% of the horses were kept in a stall compared to 95% in a box or on free-range outdoors (both conditions could be present in the same housing system). It can therefore be concluded that the housing practices between 1996 and 2004 has made great progress towards conditions more adjusted to meet the needs of horses normal level of movement.

4.2 Overall – hypotheses

The aim of this study was to investigate whether lack of daily free spent time outside in a paddock affects the occurrence of behavioural disturbances (like wood-chewing, wind-sucking, crib-biting, weaving, box-walking) and the health of the horse (in particular problem related to the hooves and legs, to the respiratory system and to the digestive system). More specifically, the concerns were risk of increasing behavioural disturbances and health related problems with decreasing social contact, decreasing free time spent outside, decreased amount of roughage and time budget for feeding given.

With regard to behavioural disturbances, 3.3% of the horses showed behavioural disturbances. The most common were wood-chewing, performed by 1.4% of the horses. Followed by 0.6% of the horses showing either weaving or crib-biting. Box-walking was only performed by 0.4% of the horses in the present study. The prevalence of behavioural disturbances in the present study could be considered as low in comparison with a study by Nicol (1995b) which compared 13 different horse populations on international level, showing that the average prevalence of behavioural disturbances were 21.4% of which 11.78% were wood-chewing, 4.13% were crib-biters, 3.25% were weavers and 2.20% were box-walkers.

With regard to the health problems, 10.2% of the horses included in the present study had health related problems the last year. The majority of horses had respiratory related health problems, shown by 3.6% of the study population, followed by 2.7% of horses with digestive related health problems. Problems concerning the hooves or legs were the cause of health related problems in 2.0% of cases respectively. These figures supports those by Attrell (1994), suggesting that two of the most common health problems and causes of euthanasia among horses are colic and chronic coughing, but contradicts with a Swedish study by Egenvall (2006) which states joint problems as the most common cause of mortality among horses followed by lameness, hooves-, digestive- and respiratory-problems.

For the majority of horses, there was social contact, and they did get to go outside and did get roughage in their diet, so it is perhaps not surprising that the findings mentioned above

supports our overall hypothesis. The different points in the specific hypotheses are discussed below.

4.3 Specific - hypotheses

4.3.1 Social contact and spending free time outside

The first hypothesis to be studied related to the risk of increasing the frequency of behavioural disturbances with decreasing the possibility for social contact between horses. All except 2 of the 284 horses in Group 1 and all of the 557 horses in Group 2 had daily opportunities to spend time with other horses, although the level of contact differed from complete, to only being able to contact via bars or with only visual contact. Only 2 horses out of the total study population were housed all alone. The simple reason for housing them all alone was because there was no other horse present on that particular farm. One of them performed behavioural disturbances. This was a warmblood gelding that showed wood-chewing although the owner said that the behavioural disturbance did not arise when the horse was housed all alone on the specific farm in the present study. The second hypothesis to be studied related to the risk of increasing the frequency of behavioural disturbances with decreasing the time budget given for spending free time outside in a paddock containing grass. All but 2 of the 284 horses in Group 1 and all 557 horses in Group 2 were regularly spending free time outside for 7 days a week and most of the horses spent time outside in paddocks with grass on the ground.

Regarding both the first and second hypothesis, the majority of horses included in the total study population in the present study were given the opportunity for complete contact with other horses and opportunities to spend free time outside in paddocks with grass on the ground. This could relate to the low (3.3%) frequency of behavioural disturbances in general in the study population, if compared to figures shown by Nicol (1995b) who reported that the average prevalence of behavioural disturbances, for 13 equine populations on international level (Borroni and Canali 1993, 1994; McGreevy 1995a,b; Luescher 1998; Redbo 1998), were 21.4%. Specifically Borroni and Canali (1994) reported an average prevalence of behavioural disturbances of 5.7%, McGreevy (1995b) 36.7%, Luescher (1998) 8.5% and Redbo (1998) 8.0%. Further both McGreevy (1995a,b) and Redbo (1998) suggests that more regularly spent free time outside the stable, in a paddock, decreases the prevalence of behavioural disturbances.

In the present study 13.3% of horses that had restricted contact to only visual contact showed behavioural disturbances compared to only 3.7% of horses with complete free contact which supports another Swedish study done by Redbo (1998) who showed that increased social contact between horses gave less prevalence of behavioural disturbances. Furthermore this is supported by McGreevy (1995a,b) who showed that stable design which allowed contact thru bars gave less prevalence of behavioural disturbances compared to housing horses in traditional closed boxes. This was further tested experimentally by Cooper (2000) and Mills (2005) who concluded that weaving and box-walking was significantly reduced when stabled horses were given increased social contact with other horses.

On the other hand, among the horses showing behavioural disturbances 82.1% had completely free contact with other horses and 92.9% spent time outside in paddocks with grass on the ground. The results of this study indicate that neither less social contact nor being kept in paddocks with grass on the ground appears to correlate to increased behavioural disturbances. However, the former may be influenced by the fact that very few horses out of the total sample population were housed with little or no social contact. Luescher (1998) reported that horses performing weaving and box-walking were turned out at average more regularly

during the year than horses not performing these behavioural disturbances and that crib-biting horses were turned out singly for 7 days a week. McGreevy (1995b) proposes that attempts to eradicate an established behavioural disturbance by increasing the time a horse spends out of the stable may have little effect on behavioural disturbances performed inside the stable. This is in keeping with the fact that once established behavioural disturbances can become dissociated from their initiating cause and harder to disrupt with time (Cooper 1996; Cooper and Ödberg 1991; Kiley-Worthington 1987). Furthermore, Luescher (1998) proposed that increased amount of turnout time, for horses showing behavioural disturbances, probably reflects an attempt to treat the problems. Further, as presented in the present study, less time spent outside during summertime does not appear to correlate with increased behavioural disturbance as opposed to less time spent outside during wintertime which correlates to increased behavioural disturbance. It is unclear whether there may be some carryover effects from the winter influencing measurements in the summer.

From the questions to the horse-keeper, it seems that for only a small percentage, 0.6%, (5 horses) of the horses showing behavioural disturbances had the behavioural disturbance either arisen or increased when the horse was housed on the particular farm in this study. The majority had the behavioural disturbances already before coming to the present farm. In fact, for 2.4% (20 horses) of the horses showing behavioural disturbances, the frequency of behavioural disturbances was claimed to have declined or was unchanged. These figures are supported by Cooper (2000), Redbo (1998), McGreevy (1995a) and Krzak (1991) showing that increased social contact and exercise decreased the prevalence of behavioural disturbances. In summary it can therefore be suggested that increasing the time budget given for social contact and increasing the daily free time spent outside in paddocks with grass on the ground may decrease both the arising and performance of behavioural disturbances.

4.3.2 Feeding occasions

The third hypothesis to be studied related to the risk of increasing the frequency of behavioural disturbances and digestive related health problems with decreasing the feeding occasions given for feeding roughage and increasing the feeding occasions given for feeding concentrate. All but 2 of the 284 horses in Group 1 and all 557 horses in Group 2 were fed roughage on daily basis during wintertime.

Regarding behavioural disturbances and roughage fed during summer- and wintertime the present study showed that the horses fed more than three times per day showed fewer behavioural disturbances than those horses fed less than three times daily. These results confirm conclusions made in other studies Redbo (1998) and Kiley-Worthington (1983) who showed that wood-chewing and crib-biting were strongly influenced by the amount of roughage given daily and concluded that the lack of high-fibre forage predisposed horses to start chewing on wood material. Which support Houpt (1981) who as early as 1981 concluded that loss of grazing time leads to wood-chewing.

McGreevy (1995a,b) found a positive association between behavioural disturbances and a roughage ration less than 6.8 kg/day and also concluded that feeding roughage more than 3 times/day decreases the prevalence of behavioural disturbances. It can therefore be suggested that increasing the occasions given for feeding roughage decreases the frequency of behavioural disturbances.

Regarding digestive related health problems and roughage fed during summer- and wintertime the present study showed that the horses fed roughage on more occasions per day had more digestive related health problems than those horses fed on fewer occasions per day. Although,

in the present study answers, regarding how much roughage the horses consumed at each feeding occasion, was not given in sufficient detail from horse-keepers. Regarding both behavioural disturbances and digestive related health problems in relation to concentrate feed the present study showed that the horses fed concentrate on fewer occasions per day showed behavioural disturbances and digestive related health problems to a higher degree. Although again, no analysis was carried out of how much concentrate each horse was given at each feeding occasion, so it could be worth considering that the horses fed concentrate on fewer occasions per day might have got a higher amount of concentrate at each occasion. This might indicate that it is not the number of feeding occasions that affects the frequency of behavioural disturbances and digestive related health problems but the amount of concentrate given. This confirms Redbo (1998) who found that horses fed a higher amount of concentrate/day showed a higher prevalence of behavioural disturbances and discusses whether this is due to a factor inherent to the concentrate or to the fact that horses getting more concentrate also get less roughage. This relation has also been proposed in other studies Cooper (2000), Nicol (1995b) and Willard (1977). It remains to investigate the problem of discerning between roughage-inherent factors (eg digestive-effects of fibres) or time-budget factors.

4.3.3 Hoof/leg related health problems

The fourth hypothesis related to the risk of increasing the frequency of hoof/leg related health problems increasing with less time given for free time spent outside and if horses are kept on muddy grounds. As the present study shows, the majority of horses in the total study population were kept outside in paddocks with grass on the ground regularly for 7 days a week and 4.2% of the horses had hoof/leg related health problems. An alternative way to present this is to say that even among the horses that had hoof/leg related problems 88.6% were kept outside in paddocks with grass on the ground. Regarding the time budget for spending free time outside, the majority of horses with hoof/leg related problems spent 24h/day outside during summertime but less than 12h/day outside during wintertime. Less time spent in paddocks with grass on the ground does not appear to correlate to increased hoof/leg related health problems. Further, less time spent outside during summertime does not appear to correlate with increased hoof/leg related health problems, as opposed to less time spent outside during wintertime which appears to correlate with increased hoof/leg related health problems. The present study showed that among the horses with hoof/leg related problems 11.4% had hoof abscesses and thrush, which could be directly related to keeping horses on muddy grounds (Casey 2002). Laminitis, on the other hand, which is strongly related to keeping horses on grassland (Casey 2002) was shown by 22.9% of the horses with hoof/leg related problems. In summary it can be said that the hoof/leg related problems shown by the horses were linked to problems occurring when horses are kept on grassland to a higher extent than they were linked to problems occurring for horses on muddy grounds. It can therefore be suggested that the total frequency of hoof/leg related health problems would probably have been much higher if most of the total study population had been kept outside on muddy grounds.

4.3.4 Respiratory related health problems

Related to the final hypothesis, which proposed an increasing risk of respiratory related health problems with decreasing free time spent regularly outside breathing fresh air and/or when the amount of time spent inside the stable increases. As the present study shows all except 2 horses in the total study population were kept outside regularly all year around and the frequency of respiratory related health problems were 3.6%. Less time spent outside during summertime does not appear to correlate to increased respiratory related health problems, as

opposed to less time spent outside during wintertime which appears to correlate to increased respiratory related health problems. On the other hand, among the horses that had respiratory related problems most of the horses with problems spent more than 12h/day outside during wintertime. Contrary to the prediction, the frequency of respiratory related problems was lower among those horses spending more time inside the stable. But, further conclusions can be made if the types of respiratory related problems is analysed. The present study showed that among the horses with respiratory related problems 73.3% coughed, had asthma, were sensitive to dust or showed loss of performance capacity which could be closely associated with housing and presence of dust in the air (Halliway 1993). This might suggest that the housing and management forms of the actual horses with respiratory related problems did not provide excellent ventilated housings or excellent roughage. Furthermore, this is supported by the horse-keepers, housing the horses with respiratory related health problems, who reported that regarding 30% of the horses the causes of the respiratory related problems were due to dusty indoor housing or mouldy roughage. Therefore suggestions can be made that the respiratory related problems shown by the horses were to a higher extent linked to problems occurring when horses were kept inside stables and not being able to breathe fresh air.

4.4 Comments on methodology

The form of methodology used in the present study included dividing the horses into two Groups. Group 1 where the horses were studied on individual basis and Group 2 where the horses were studied category-wise. This was due to the time aspects needed for the project though it was carried out by an animal welfare inspector at the same time working for the supervising authority. The selection method was random and the response rates in both Groups were representative and sufficient enough to enable comparison between the two Groups. Furthermore, the reliability regarding the answers from the horse-keepers was probably very high when the project was done related with the supervising authority's work.

Fisher's Exact Tests and Chi-Square Goodness-of-Fit tests (with test proportions adjusted for category sample size within entire test population) were conducted on counts and significant values are reported although no full statistical analyses are reported.

4.5 Comparison of results and final comments

The greater part of the questions in the checklist (appendix 3) were framed in the same way as in the Swedish Board of Agriculture's (SBA) national horse project questionnaire (appendix 4) to enable comparisons of results on a national basis. The SBA study (SBA rapport 1998:23) was accomplished by 212 of the 288 supervising authorities during 1996-1997. Each authority collected data from 35 horse-keepers, giving data on 4604 farms, representing all parts of Sweden. All kinds of horse-keepers, except riding schools, were inspected. In the present study only a few points of contacts with the SBA's study (SBA rapport 1998:23) has been made. An elaborate comparison of the studies would probably present lots of interesting data.

To enable comparison on international basis it is interesting to compare the results of the present study by starting out from Nicol's (1995b), who has provided a comparison over five different cross-sectional studies providing information on 13 different equine populations (Borroni and Canali 1993, 1994; McGreevy 1995a,b; Luescher 1998; Redbo 1998) including 11797 horses which enables comparisons on an international level. The five surveys all included detailed questions of similar kinds as in this present study regarding housing, diet, exercise and amount of time horses spent outside their stables, and nature and degree of social contact between horses. The five surveys also asked horse-keepers to report prevalence of

crib-biting, weaving, box-walking and wood-chewing on their farms. They were in three studies done by postal questionnaire and in one study by direct interview, which also favours comparison with the present study. The five surveys included types of horses all represented in the present study such as dressage horses, event horses, endurance horses, thoroughbreds, standardbreds, quarter horses, arabs, ponies and warmbloods.

Borroni and Canali (1993, 1994) reported a prevalence of 5.7% of behavioural disturbances among 1180 thoroughbred horses reared in the north and centre of Italy, of which 1.1% showed weaving, 2.5% showed crib-biting and 1.3% box-walking. McGreevy (1995a) reported a prevalence of 1.6% of horses box-walking among 2946 studied thoroughbred horses in Britain. McGreevy (1995b) reported a total prevalence of 36.7% of behavioural disturbances among 1750 horses, in the categories of dressage, eventing and endurance competition-horses in Britain, of which 16.6% horses showed wood-chewing, 8.8% weaving, 7.4% crib-biting and 4.0% box-walking. Luescher (1998) reported a total prevalence of 8.5% of behavioural disturbances among 764 horses (207 thoroughbreds, 153 standardbreds and 404 pleasure horses) in southwestern Ontario, Canada, of which 2.2% showed weaving, 4.3% crib-biting and 2.0% box-walking. Redbo (1998) reported a total prevalence of 8.0% of behavioural disturbances, among 5241 horses (4597 Swedish trotters and 644 thoroughbreds) in Sweden, of which 6.3% showed wood-chewing, 0.7% either weaving or crib-biting and 0.4% box-walking.

The present study population showing a prevalence of at average 3.3% of behavioural disturbances, and specifically 1.4% horses wood-chewing, 0.6% horses showing either weaving or crib-biting and 0.4% horses box-walking are comparable to those reported by Borroni and Canali (1993, 1994), McGreevy (1995a), Luescher (1998) and Redbo (1998). McGreevy (1995b) discusses that the prevalence of wood-chewing may have been overestimated because of its expense to the owner and the question was included in the survey to minimise underreporting of early oral-based behavioural disturbances. Further McGreevy (1995b) concludes that there are differences in management between the horses trained for different disciplines. Endurance horses are ridden for more than three hours daily and being kept outside on grassland. Eventers are given restricted amount of roughage and dressage horses are restricted to being kept outside on grassland. In addition, the prevalence of behavioural disturbances was lowest among the endurance horses and highest among the dressage horses. However, maybe it is worth considering that the study by McGreevy (1995b) was a mail survey with a self-administered questionnaire which might not have given reliable data to a full extent, compared to the other surveys administered by postal questionnaires combined with pilot field studies to test the validity of the responses or direct interviews.

Although the present study selected the horse-keepers randomly the frequency of behavioural disturbances and health problems were low. To get a more comprehensive picture of the causes of these problems, a larger number of horses with the specific problems of concern need to be studied, for example using the case-control design. Analyses could for example enhance parameters of why horses kept on muddy ground do not get hoof problems, horses kept inside the stable most of the time do not have respiratory related health problems and horses kept under the best available forms of management like being kept outdoors most of the time in paddocks with grass on the ground still show behavioural disturbances. Studies effective in establishing cause and effect relationship, where horses are followed individually over time, could be an important source of information. Further, it could be of interest to test whether the use of housing that allows a greater degree of social contact can prevent the onset of weaving behaviour in horses.

Furthermore, there is an interest to find out whether it is a fact that horse-keepers keep horses with behavioural disturbances isolated from other horses by fear of contamination of the unwanted behaviour, as suggested by McGreevy (1995b) and Luescher (1998). In addition, Borroni and Canali (1993) reported that stallions showed a significantly higher prevalence of behavioural disturbances (19.6%) compared with mares (8.6%) and discusses the differences in management (stallions spends only a few hours outside daily in grassless paddocks which are located in an isolated area of the farm and additionally stallions have almost always restricted contact with other horses) as possible explanations for development of behavioural disturbances.

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1.Appendix 1a (Group 1, individual-level questionnaire)

A-del Indvidenkät, upp till 10 hästar (fylls alltid i)

Datum: _____ Närvarande: _____

Fastighetsbeteckning: _____ Adress: _____

Ansv. djurh.: _____ Telefon: _____

1.1 Allmän del

<i>1.1.1 a) Namn</i> <i>1.1.1 b) Typ</i>	<i>1.1.1 c) Kön</i> <i>1.1.1 d) Födelseår</i>	<i>1.1.1 e) Häst-kategori</i>	<i>1.1.2 a) Är hästen sjuk/skadad vilket medför att den ej behandlas som vanligt?</i> <i>1.1.2 b) Under hur lång tid har hästen ej behandlats som vanligt?</i>
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Kod:

1.1.1 b: ponny=pon 1.1.1 c: hingst=h 1.1.1 e: sto m föl / fölmärr=smf
 kallblod=kall sto=s föl=fol
 halvblod=halv valack=v unghäst=ett
 fullblod=full hästar i tävlingsträning=tavl

trav/varmblod=trav
 islandshäst=isl
 övriga=ovr

sällskap/motionshästar=sallsk
 övriga, ange typ

1.1.3 a) <i>Uppställningsform?</i>	1.1.4 a) <i>I vilken form har hästen social kontakt med andra hästar?</i>
1.1.3 b) <i>Hur länge har hästen varit uppstallad i detta stall?</i>	1.1.4 b) <i>Hur ofta har hästen social kontakt med andra hästar?</i>
1.1.3 c) <i>Hur länge har hästen varit uppstallad i denna uppställningsform?</i>	
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Kod:

- 1.1.3 a): - a) spilta
 - b) box
 - c) lösdrift inomhus (hästar har ej möjlighet att vistas ute)
 - d) lösdrift utomhus/ej gräs (hästar har möjlighet att vistas ute)
 - e) lösdrift utomhus/gräs (hästar har möjlighet att vistas ute)

- 1.1.4 a): - a) visuellt
 - b) vidröra gn galler
 - c) vistas tillsammans o vidröra aktivt, ex klia
 - e) ensam

- 1.1.4 b): - dagligen

- aldrig

Avvänjning

1.1.5 <i>Vilken metod användes för att vänja av fölet från modern?</i>	1.1.6 <i>Vid vilken ålder avvandes fölet från modern? (månader)</i>	1.1.7 <i>Hur hölls fölet efter att avvänjningen var klar?</i>
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Kod:

- 1.1.5: - a) stall/box- avvand (abrupt avvänjning med komplett separation och isolering från artfränder som vanligtvis medför en lång period av att vara instängd i stallet).
- b) lösdrift inomhus (abrupt avvänjning där en liten grupp föl hålls tillsammans inomhus i en lösdrift)
- c) lösdrift utomhus (abrupt avvänjning där en grupp föl hålls tillsammans i en lösdrift med möjlighet att vistas utomhus, dock ej på gräsbevuxet underlag)
- med nanny-mare
- d) lösdrift utomhus (abrupt avvänjning där en grupp föl hålls tillsammans i en lösdrift med möjlighet att vistas utomhus, dock ej på gräsbevuxet underlag)
- utan nanny-mare
- e) paddock (abrupt avvänjning där en grupp föl hålls tillsammans på gräsbevuxet underlag)
- med nanny-mare
- f) paddock (abrupt avvänjning där en grupp föl hålls tillsammans på gräsbevuxet underlag)
- utan nanny-mare
- g) successiv avvänjning
- 1.1.7: - a) på stall/lösdrift inomhus (ej möjlighet att vistas ute)
- b) lösdrift inomhus (hästar har ej möjlighet att vistas ute)

- c) i egen box på stall nattetid/utomhus dagtid tillsammans med andra hästar i rasthage
- d) lösdrift utomhus/ej gräs (hästar har möjlighet att vistas ute)
- e) lösdrift utomhus/gräs (hästar har möjlighet att vistas ute)

Utfodring (def sommarhalvår=sommartid=30/3-26/10)

1.1.8 Sort o Kg grovfoder/dag - sommarhalvår (s) vinterhalvår (v) def. fritt: s, (bete ?), v	1.1.9 Utfodringar grov/dag a) totalt b) inne c) ute - sommarhalvår (s) - vinterhalvår (v) def. fritt: s, (bete ?), v	1.1.10 Sort o Mängd kraftfoder/dag - sommarhalvår (s) - vinterhalvår (v) def. fritt: s, (bete ?), v	1.1.11 Utfodringar kraft/dag a) totalt b) inne c) ute - sommarhalvår (s) - vinterhalvår (v) def. fritt: s, (bete ?), v
1	a) b) c)		a) b) c)
2	a) b) c)		a) b) c)
3	a) b) c)		a) b) c)
4	a) b) c)		a) b) c)
5	a) b) c)		a) b) c)
6	a) b) c)		a) b) c)
7	a) b) c)		a) b) c)
8	a) b) c)		a) b) c)
9	a) b) c)		a) b) c)
10	a) b) c)		a) b) c)

Kod: 1.1.8: - a) hö

- b) hösilage

- c) ensilage

- d) halm

1.1.10: - a) havre

- b) korn

- c) färdigfoder, ange märke

- d) soja

- e) lucern

- f) betfor

- 1.1.13 c: - a) brist på rasthagar motsv - d) dåligt väder
 - b) skaderisk föreligger pga halt underlag - e) extrema väder förhållanden
 - c) skaderisk beroende på annat, ange vad - f) förhinder att hämta in hästen i tid

Utevistelse forts.

1.1.14 a) <i>I vilken form går hästen tillsammans med andra hästar i rasthage motsv?</i> 1.1.14 b) <i>Om nej, varför går hästen ensam?</i> 1.1.14 c) <i>Vid vilken ålder började man ha hästen ensam i hage motsv? (år)</i>
1. a) b) c)
2 a) b) c)
3 a) b) c)
4 a) b) c)
5 a) b) c)
6 a) b) c)
7 a) b) c)
8 a) b) c)
9 a) b) c)
10 a) b) c)

- Kod: 1.1.14 a): - a) tillsammans med hästar av samma kön med stabil sammansättning av individer
 - b) tillsammans med hästar av samma kön med nya individer som kontinuerligt sätts till/byts ut i gruppen
 - c) könsblandad grupp med stabil sammansättning av individer
 - d) könsblandad grupp med nya individer som kontinuerligt sätts till/byts ut i gruppen
 - e) ensam

- 1.1.14 b): - a) könsmogen
 - b) börjat tävla/skaderisk
 - c) annat, ange orsak.

Tabell 1.2 Skador uppkomna under det senaste året vid vistelse i rasthage motsv, under uppställning samt vid transport.

<i>Häst nr</i>	<i>1.2.1 Var uppkom skadan?</i>	<i>1.2.2 a) Typ av skada? 1.2.2 b) Diagnos ställd av vet?</i>	<i>1.2.3 Skade månad</i>	<i>1.2.4 Skadeorsak</i>	<i>1.2.5 Konvalescenstid?</i>

Kod:

- 1.2.1: - a) i rasthage motsv
 - b) då hästen tagit sig ut, rymt ur rasthage
 - c) under vistelse i aktuell uppställningsform
 - d) under transport
 - e) under träning

- 1.2.2 a: - a) benbrott/fraktur
 - b) vrickning
 - c) senskada
 - d) hovböld
 - e) stick/skär skada
 - f) annat, ange:

- 1.2.4: - a) halkskada pga isigt underlag
 - b) halkskada pga lerigt/slippery underlag
 - c) fastnat i stängsel
 - d) beroende på främmande föremål, vilken typ av föremål
 - e) skadad av annan häst
 - f) vid i/urlastning
 - g) gn mänsklig hantering
 - h) vet ej

- i) övrigt

Beteendestörningar och Hälsa

1.1.15 <i>Har hästen ngn form av beteendestörning?</i> <i>se B-del Individenkät</i>	1.1.16 <i>Har hästen hov/ben-, luftvägs-, digestionsproblem under det senaste året?</i> <i>se B-del Individenkät</i>
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2. Appendix 1b (Group 1, special questions)

B-del Individenkät

Datum: _____ Närvarande: _____
Fastighetsbeteckning: _____ Adress: _____
Ansv. djurh.: _____ Telefon: _____

1.2 Beteendestörningar

<i>Häst nr</i>	<i>1.2.1 a) Vilken typ av beteendestörning uppvisar hästen? 1.2.1 b) När utvecklade hästen bet.st.?</i>	<i>1.2.2 Uppkom bet.st. under tiden hästen stått uppstallad i detta stall?</i>	<i>1.2.3 a) Har frekvensen av bet.st. ändrats under tiden hästen stått uppstallad i detta stall? 1.2.3 b) Vad tror Du kan vara orsaken?</i>

Kod:

- 1.2.1: - a) wood-chewing
- b) krubb-bitning
- c) luftsnappning
- d) vävning
- e) boxvandring
- f) hagvandring
- g) övrigt, ange typ.

1.2.3 a): a) ökat

- b) minskat
- c) oförändrad

1.3 Hälsa

Tabell 1. 3 Har hästen haft besvär med något av följande under det senaste året?
(Se vidare respektive tabell)

<i>häst nr</i>	<i>1.4 Hälta</i>	<i>1.5 Mugg (hudinfl i karled)</i>	<i>1.6 Strålröta</i>	<i>1.7 Fång</i>	<i>1.8 Luftvägs- problem</i>	<i>1.9 Digestions- problem</i>	<i>1.10 Övrigt, ange typ</i>

Tabell 1.4 - Besvär under det senaste året:

Häst nr	Kod	1.4.1 a) Av djh beskrivna symptom: b) tänkbara orsaker?	1.4.2 Vidtagna åtg av djh:	1.4.3 Diagnos ställd av vet.?	1.4.4 Behandling ordinerad av vet:	1.4.5 Konvalescent, hur länge ? (månader)
		a) b)				
		a) b)				
		a) b)				
		a) b)				
		a) b)				
		a) b)				
		a) b)				
		a) b)				
		a) b)				

Kod:

1.4 = hälta

1.5 = mugg

1.6 = strålröta

1.7 = fång

kod: 1.4.1:-a) pga torrt underlag

-b) pga lerigt underlag

-c) beroende på främmande föremål

-d) dammig miljö(dålig vent)/mögligt foder

-e) skadad av annan häst

1.8 = luftvägsproblem (hosta, andfädd, missljud från strupe...) -f) allergisk
 1.9 = digestionsproblem (kolik, diarre..) -g) gn mänsklig hantering
 1.10 = övrigt, ange typ. -ö) övrigt

Tabell 1.4 - Besvär under det senaste året:

Häst nr	Kod	1.4.1 a) Av djh beskrivna symptom: b) tänkbara orsaker?	1.4.2 Vidtagna åtg av djh:	1.4.3 Diagnos ställd av vet.?	1.4.4 Behandling ordinerad av vet:	1.4.5 Konvalescent, hur länge ?
		a) b)				
		a) b)				
		a) b)				
		a) b)				
		a) b)				
		a) b)				
		a) b)				
		a) b)				
		a) b)				

Kod:

1.4 = hälta
 1.5 = mugg
 1.6 = strålröta
 1.7 = fång

1.8 = luftvägsproblem (hosta, andfädd, missljud från strupe...)

1.9 = digestionsproblem (kolik, diarre..)

1.10 = övrigt, ange typ.

3. Appendix 2a (Group 2, category-wise questionnaire)

A-del Anläggningsenkät (fylls alltid i)

Datum: _____ Närvarande: _____

Fastighetsbeteckning: _____ Adress: _____

Ansv. djurh.: _____ Telefon: _____

2.1 Allmän del

2.1.1 Antal hästar totalt:

2.1.2 Antal hästar/kategori	2.1.3 Uppställningsform/ kategori: <i>(om samma kat går i olika uppställn.former, fyll i två formulär)</i>	2.1.4 a). I vilken form har hästarna social kontakt med andra hästar? 2.1.4 b) Hur ofta har hästarna social kontakt med andra hästar?
2.1.2 a) = sto m föl/fölmärr:		
2.1.2 b) = avvanda föl < 1 år:		
2.1.2 c) = ettåringar/unghästar: <i>ex. föl fött april -03 kallas ettåringar efter nyår-03. "alla föl fyller år på nyårsafton"</i>		
2.1.2 d) = hingstar		
2.1.2 e) = hästar i tävlingsträning:		
2.1.2 f) = sällskaps/motions hästar		
2.1.2 g) = övriga, ange typ: ex ridskolehästar, konvalecenter		

Kod:

2.1.3; - a) spilta

- b) box

- c) lösdrift inomhus (hästar har ej möjlighet att vistas ute)

- d) lösdrift utomhus/ej gräs (hästar har möjlighet att vistas ute)

- e) lösdrift utomhus/gräs (hästar har möjlighet att vistas ute)

- 2.1.4 : - a) visuellt
 - b) vidröra gn galler
 - c) vistas tillsammans o vidröra aktivt ex klia

Avvänjning

Hästkategori	2.1.5 Vilken metod användes för avvänjning av fölen?	2.1.6 Vid vilken ålder avvandes fölen?	2.1.7 Hur hölls fölen efter att avvänjningen var klar?
Sto m föl/ Fölmärr			
Avvanda föl < 1 år			
Ettåringar/ Unghästar			
Hingstar			
Hästar i tävlings- träning			
Sällskaps/ motions hästar			
Övriga			

Kod:

2.1.5.: - a) stall/box- avvand (abrupt avvänjning med komplett separation och isolering från artfränder som vanligtvis medför en lång period av att vara instängd i stallet).

- b) lösdrift inomhus (abrupt avvänjning där en liten grupp föl hålls tillsammans inomhus i en lösdrift)
- c) lösdrift utomhus (abrupt avvänjning där en grupp föl hålls tillsammans i en lösdrift med möjlighet att vistas utomhus, dock ej på gräsbevuxet underlag)
- med nanny-mare (valack)
- d) lösdrift utomhus (abrupt avvänjning där en grupp föl hålls tillsammans i en lösdrift med möjlighet att vistas utomhus, dock ej på gräsbevuxet underlag)
- utan nanny-mare (valack)
- e) paddock (abrupt avvänjning där en grupp föl hålls tillsammans på gräsbevuxet underlag)
- med nanny-mare (valack)
- f) paddock (abrupt avvänjning där en grupp föl hålls tillsammans på gräsbevuxet underlag)
- utan nanny-mare (valack)
- g) successiv avvänjning

2.1.7.: - a) på stall/lösdrift inomhus (ej möjlighet att vistas ute)

- b) lösdrift inomhus (hästar har ej möjlighet att vistas ute)
- c) ensam i box nattetid/tillsammans med andra hästar i hage dagtid

- d) lösdrift utomhus/ej gräs (hästar har möjlighet att vistas ute)
- e) lösdrift utomhus/gräs (hästar har möjlighet att vistas ute)

Utfodring

Hästkät.	2.1.8 Vilken typ av grovfoder ges varje kategori? (s,b,v) <i>def fritt: s, (bete),v</i>	2.1.9 Utfodringar grov/dag (s,b,v) a) totalt b) inne c) ute	2.1.10 Vilken typ av kraftfoder ges varje kategori: (s,b,v) <i>def. fritt: s, (bete),v</i>	2.1.11 Utfodringar kraft/dag (s,b,v) a) totalt b) inne c) ute
Sto m föl/ Fölmärr				
Avvanda föl < 1 år				
Ettåringar/ Unghästar				
Hingstar				
Hästar i tävlings- träning				
Sällskaps/ motions hästar				
Övriga				

Kod: 2.1.8: - a) hö

- b) hösilage

- c) ensilage

- d) halm

2.1.10: - a) havre

- b) korn

- c) färdigfoder, ange märke

- d) soja

- e) lusern

- f) betfor

- g) vitaminer

- h) mineraler

- i) övrigt = vete, kraftt grov, melass, olja, turbo, racing, kraftt sport, kalk, kli, morötter, belinda. topspeed.

Utevistelse

Def. på sommarhalvår = sommartid 30/3 – 26/10

Hästkät.	2.1.12 a) <i>Var vistas kat. då de hålls fritt utanför stallet?</i> 2.1.12 b) <i>Vilket är underlaget?</i> 2.1.12 c) <i>Hur stor är ytan?</i>	2.1.13 a) <i>Hur många dgr/v vistas kat. i rasthage motsv?</i> - sommarhalvår (s) - vinterhalvår (v) - bete (b) 2.1.13 b) <i>Hur många h/dag vistas kat. i rasthage motsv?</i> - sommarhalvår (s) - vinterhalvår (v) - bete (b)	2.1.13 c) <i>Om Du vanligtvis brukar sätta ut kat. vad påverkar dig att ej göra det en speciell dag?</i> 2.1.13 d) <i>Hur ofta inträffar c)?</i>
Sto m föl/ fölmärr			
Avvanda föl < 1 år			
Ettåringar/ Unghästar			
Hingstar			
Hästar i tävlings- träning			
Sällskaps/ motions hästar			
Övriga			

2.1.12 a: - a) i rasthage med gräs 2.1.12 b: - a) till större delen grässvål

- b) i rasthage utan gräs - b) lera/sand/grus

- c) inomhus i ridhus/manege

- d) i skrittmaskin

2.1.13 c): - a) brist på rasthagar motsv

- b) skaderisk föreligger pga halt underlag

- c) skaderisk beroende på annat, ange vad

- d) dåligt väder

- e) extrema väder förhållanden

- f) ägaren har förhinder att hämta in hästen i tid
- g) övrigt: ex. då hästarna avmaskas

Utevistelse forts.

Hästkät.	<p>2.1.14 a) <i>I vilken form går kat. tillsammans med andra hästar i rasthage motsv?</i></p> <p>2.1.14 b) <i>Om hästarna ej vistas tillsammans, varför går vissa / enstaka hästar ensamma?</i></p> <p>2.1.14 c) <i>Vid vilken ålder började man ha vissa/enstaka hästar ensamma i hage motsv (år)?</i></p>
Sto m föl/ fölmärr	
Avvanda föl < 1 år	
Ettåringar/ Unghästar	
Hingstar	
Hästar i tävlings- träning	
Sällskaps/ motions hästar	
Övriga	

Kod:

2.1.14 a): - a) tillsammans med hästar av samma kön med stabil sammansättning av individer

- b) tillsammans med hästar av samma kön med nya individer som kontinuerligt sätts till/byts ut i gruppen

- c) könsblandad grupp med stabil sammansättning av individer

- d) könsblandad grupp med nya individer som kontinuerligt sätts till/byts ut i gruppen

- e) ensam

2.1.14 b): - a) könsmogen

- b) börjat tävla/skaderisk

- c) annat, ange orsak. Ex: trivs ej med andra hästar, hingst kan gå ensam vintertid men tillsammans med ston sommartid.

Tabell 2.2 Skador uppkomna under det senaste året vid vistelse i rasthage motsv, under uppställning samt vid transport.

Häst kat.	2.2.1 Var skadar sig kat. oftast?	2.2.2 Vanligaste förekommande typ av skada?	2.2.3 Vanligaste skademånad? Ranka alt.	2.2.4 Vanligaste skadeorsak?	2.2.5 Är skadan vanligt återkommande, kat. mässigt? Skaderisk hög/viss häst benägen att skada sig?
Sto m föl/fölmärr					
Avvanda föl < 1 år					
Ettåringar/Unghästar					
Hingstar					
Hästar i tävlings-träning					
Sällskaps/motions hästar					
Övriga					

Kod:

2.2.1: - a) i rasthage motsv

- b) då hästen tagit sig ut, rymt ur rasthage

- c) under vistelse i aktuell uppställningsform

- d) under transport

- e) under träning

2.2.2: - a) benbrott

- b) vrickning

- c) senskada

- d) hovböld - e) stick/skär skada

- f) annat, ange: 1 häst har haft nervskada i nacken

2.2.4: - a) halkskada pga isigt underlag

- b) halkskada pga lerigt/slippery underlag

- c) fastnat i stängsel

- d) beroende på främmande föremål, vilken typ av föremål

- e) skadad av annan häst - f) vid i/urlastning

- g) gn mänsklig hantering - h) vet ej

2.2.5: - a) aldrig

- b) vid enstaka tillfällen, antal hästar ?, (max 1 ggr / individ)

- c) vanligt förekommande, antal hästar ? (flera ggr på flera hästar varje år)

- d) återkommande problem

Beteendestörningar och Hälsa

Förekommer beteendestörningar hos ngn individ på anläggningen? ja/nej

Förekommer hälsoproblem i form av hov/ben- , luftvägs- eller digestionsproblem hos ngn individ på anläggningen? ja/nej

Om ja, på ngn av ovanstående se vidare B-del Anläggningsenkät

4. Appendix 2b (Group 2, special questions)

B-del Anläggningsenkät

Datum: _____ Närvarande: _____

Fastighetsbeteckning: _____ Adress: _____

Ansv. djurh.: _____ Telefon: _____

2.2 Beteendestörningar

Häst kat.	2.2.1 a) Vilken typ av bet.st. förekommer? 2.2.1 b) Hur många ind/kat uppvisar bet.st.?	2.2.2 Uppkommer vanligtvis bet.st. under tiden kat. hållits i detta stall?	2.2.3 a) Hur har frekvensen av bet.st. ändrats under tiden kat. hållits i detta stall? 2.2.3 b) Vad tror Du kan vara orsaken?
Sto m föl/ fölmärr			
Avvanda föl < 1 år			
Ettåringar/ Unghästar			
Hingstar			
Hästar i tävlings- Träning			
Sällskaps/ motions hästar			
Övriga			

Kod:

- 2.2.1 a: - a) wood-chewing
 - b) krubb-bitning
 - c) luftsnappning
 - d) vävning
 - e) boxvandring
 - f) hagvandring
 - g) övrigt, ange typ.

- 2.2.3: a) ökat
 b) minskat
 c) oförändrad

2.3 Hälsa

Tabell 2.3 I vilken utsträckning har något av nedanstående problem förekommit bland anläggningens individer, under det senaste året?

(se vidare respektive tabell)

<i>Häst kat.</i>	<i>2.4 hälta</i>	<i>2.5 mugg</i>	<i>2.6 strålröta</i>	<i>2.7 Fång</i>	<i>2.8 luftvägs problem</i>	<i>2.9 digestions problem</i>	<i>2.10 Övrigt</i>
Sto m föl/ fölmärr							
Avvanda föl < 1 år							
Ettåringar/ Unghästar							
Hingstar							
Hästar i tävlings- träning							
Sällskaps/ motions hästar							
Övriga							

Tabell 2.3: - a) aldrig

- b) vid enstaka tillfällen, antal hästar ?, (max 1 ggr / individ)
- c) vanligt förekommande, antal hästar ? (flera ggr på flera hästar varje år)
- d) återkommande problem

Tabell 2.4 - Besvär under det senaste året:

<i>Häst kat.</i>	<i>Kod</i>	<i>2.4.1 a) Av djh beskrivna symptom: b) tänkbara orsaker?</i>	<i>2.4.2 Vidtagna åtg av djh:</i>	<i>2.4.3 Diagnos ställd av vet.?</i>	<i>2.4.4 Behandling ordinerad av vet:</i>	<i>2.4.5 Konvalescent, hur länge ? (månader/utdö md)</i>
		a) b)				
		a) b)				
		a) b)				
		a) b)				
		a) b)				
		a) b)				
		a) b)				
		a) b)				
		a) b)				

Kod:

2.4 = hälta

2.5 = mugg

2.6 = strålröta

2.7 = fång

2.8 = luftvägsproblem (hosta, andfädd, missljud från strupe...)

2.9 = digestionsproblem (kolik, diarre..)

2.10 = övrigt, ange typ.

Tabell 2.4 - Besvär under det senaste året:

Häst kat.	Kod	2.4.1 a) Av djh beskrivna symptom: b) tänkbara orsaker?	2.4.2 Vidtagna åtg av djh:	2.4.3 Diagnos ställd av vet.?	2.4.4 Behandling ordinerad av vet:	2.4.5 Konvalescent, hur länge ?
		a) b)				
		a) b)				
		a) b)				
		a) b)				
		a) b)				
		a) b)				
		a) b)				
		a) b)				

Kod:

2.4 = hälta

2.5 = mugg

2.6 = strålröta

2.7 = fång

2.8 = luftvägsproblem (hosta, andfädd, missljud från strupe...)

2.9 = digestionsproblem (kolik, diarre..)

2.10 övrigt, ange typ.

5. Appendix 3 (checklist which included questions related to the Swedish Lw of Protection of Animals).

INVENTERING HÄSTHÅLLNING – CHECKLISTA

Inspektionen utförd av ; datum; klockslag;.....
Närvarande;.....

Grundfakta

Fastighetsbeteckning;..... Fastighetsägare;.....
Besöksadress;..... Telefon;.....
Postnummer / Ort;.....

Djurägare;..... Djurhållare/ansv. skötare;.....
Adress;..... Adress;.....
Telefon;..... Telefon;.....
Personnr;.....

Anlitad veterinär;

Tillstånd

1. Förekommer tillståndspliktig / anmälningspliktig verksamhet på anläggningen? ☐ Ja ☐ Nej
- om ja, finns ett sådant tillstånd / har anmälan gjorts ? ☐ Ja ☐ Nej
- år;.....
- organisationsnr;.....

Allmänt om verksamheten

2. Huvudsaklig verksamhet;
- ridskola ☐ antal lektionsdagar / vecka och häst;.....
- turridning ☐ antal lektionstimmar / dag och häst;.....
- trav / galoppträning ☐
- utbildnings / försäljningsstall ☐
- stuteri / uppfödning ☐
- ridning / körning / tävling ☐
- privat ☐
- inackordering ☐
- annat ☐
3. Antal hästar;.....
- varav föl (< 1 år);.....
- varav unghästar (1 – 3 år);.....
- vuxen häst (3 – 15 år);.....
- äldre häst (>15 år);.....
4. Finns hästpass ? ☐ Ja ☐ Nej
5. Typ av hästar;
- ponnyer ☐
- kallblod ☐
- halvblod ☐
- trav / varmblod ☐
- galopp / fullblod ☐
- islandshästar ☐
- övriga; ☐

Stall

6. Stallet byggt år;.....
-ombyggt / tillbyggt år;.....
7. Är stallet förprovat? ☐ Ja ☐ Nej
8. Finns stallplats till alla hästar ? ☐ Ja ☐ Nej
- antal tillgängliga stallplatser;.....
- antal hästar;.....
- om nej, finns tillgång till ligghall i enlighet med föreskrift ? ☐ Ja ☐ Nej
- om nej, finns tillgång till annat skydd och torr och ren liggplats i enlighet med föreskrift? ☐ Ja ☐ Nej
9. Uppställningsform;
- spilta ☐
- box ☐
- flerhästarsbox ☐
- lösdrift ☐
10. Har spiltor och boxar mått i enlighet med föreskrift ? ☐ Ja ☐ Nej
- spiltbredd;.....(m)
- spiltlängd;.....(m)
- antal;.....
-ponny A ☐ ponny B ☐ ponny C ☐ ponny D ☐ liten häst ☐ stor häst ☐ > 1.70 m mankhöjd ☐

- boxbredd;.....(m)
- boxlängd;.....(m)
- antal;.....
- ponny A ☐ ponny B ☐ ponny C ☐ ponny D ☐ liten häst ☐ stor häst ☐ > 1.70 m mankhöjd ☐

- lösdrift;.....
- antal;.....
11. Är boxdörrarnas bredd / höjd i enlighet med SJV allm.råd ? ☐ Ja ☐ Nej
- bredd;.....(m) - höjd;.....(m) map
12. Finns avskiljningsanordning mellan boxar och spiltor ? ☐ Ja ☐ Nej
- materiel;.....
-öppningarnas storlek;.....
- är avskiljningsanordningen utan skador ☐ Ja ☐ Nej
- avstånd mellan tak och skiljevägg;.....
- avstånd mellan golv och skiljevägg;.....
- är ovanstående mått i enlighet med föreskrift ? ☐ Ja ☐ Nej
13. Är uppbindningen i spiltor i enlighet med föreskrift ? ☐ Ja ☐ Nej
- utformning;.....
14. Finns utrymme i enlighet med föreskrift för djur som behöver särskild vård ? ☐ Ja ☐ Nej
(gäller endast stall med bundna eller gruppållna hästar, utgångsdjur)
15. Finns strö i godtagbar mängd samt kvalitet i spiltor och boxar ? ☐ Ja ☐ Nej
- typ av strö;.....
- typ av ströbädd; växelströbädd ☐ permanent djupströbädd ☐
16. Hur ofta sker utgödsling;
- < 1 ggr / dag ☐
- ≥ 1 ggr / dag ☐
17. Hur förvaras strömedel ?

18. Är takhöjden i enlighet med föreskrift ? ☐ Ja ☐ Nej
 - takhöjd;.....(m)
 - mkh;.....(m)
 - olika i olika delar av byggnaden ☐ Ja ☐ Nej
 - takhöjd;.....(m)
 - pga;.....
19. Är stallgångar samt resterande golv i enlighet med föreskrifter och allmänna råd ? ☐ Ja ☐ Nej
 - gångarnas bredd;.....(m)
 - ytmateriel;.....
 - är gångarna halkfria; ☐ Ja ☐ Nej
20. Är stalldörrarnas bredd / höjd i enlighet med allmänna råd ? ☐ Ja ☐ Nej
 - bredd;.....(m) - höjd;.....(m) map total höjd
21. Är fönster, lampor och elledningar försedda med lämpliga skydd i enlighet med föreskrift ? ☐ Ja ☐ Nej
 - fönsterskydd;.....
 - lampskydd;.....
 - ellednings / dos skydd;.....
22. Finns tillräckligt ljusinsläpp av dagsljus via fönster ? ☐ Ja ☐ Nej
 - antal fönster;.....
23. Finns tillräckligt artificiellt ljus i stallet ? ☐ Ja ☐ Nej
 - antal armaturer;.....
 - finns nattbelysning ? ☐ Ja ☐ Nej
24. Stallet är;
 - isolerat ☐
 - oisolerat ☐
25. Stallets ventilationstyp;
 - naturlig ventilation
 - genom tryckskillnad ☐
 - genom skorstenseffekten ☐
 - mekanisk ventilation
 - genom neutraltryck ☐
 - genom undertryck ☐
 - genom övertryck ☐
26. Fungerar ventilationen ? ☐ Ja ☐ Nej
27. Förekommer kondens på tak, väggar eller fönster ? ☐ Ja ☐ Nej
28. Har hästarna tillgång till vatten i enlighet med föreskrift ? ☐ Ja ☐ Nej
 - automatiska vattenkoppar ☐ Ja ☐ Nej
 - vattenflöde;(liter / min)
 - manuell vattning, (hink) ☐ Ja ☐ Nej
 - hur ofta;(ggr / dag)
29. Är vattenkvalité kontrollerad ? ☐ Ja ☐ Nej
 - vattenkälla;
30. Hur ofta utfodras hästarna med (under icke betessäsong) ;
 - grovfoder;.....(ggr/dag)
 - fodermedel;.....
 - kraftfoder;.....(ggr/dag)
 - fodermedel;.....

31. Är foderkvalité kontrollerad ?

☐ Ja ☐ Nej

32. Förvaras foder på ett godtagbart sätt ?

- ja ☐
- nej, åtkomligt för hästarna ☐
- nej, åtkomligt för skadedjur ☐
- nej, fuktigt ☐
- annat sätt ☐

Övrigt

33. Sammanfattande bedömning av stallmiljön;

- råder god ordning i stallet ?
- förvaras redskap, skottkärror etc. på ett ur säkerhetssynpunkt godtagbart sätt ?
- är stallet i övrigt fritt från föremål som kan skada en häst ?
- hur ofta görs storrengöring i stallet ?
- annat;.....
-
-

☐ Ja ☐ Nej

☐ Ja ☐ Nej

☐ Ja ☐ Nej

34. Stallmiljön sammanfattningsvis;

- godtagbar ☐
- godtagbar, mindre måttavvikelser ryms inom 13§ SJVFS 2003:6 ☐
- ej godtagbar, smärre brister ☐
- ej godtagbar, grava brister ☐

anmärkningar / övrigt;.....
.....
.....
.....

Gödselhantering

35. Typ av gödselvårdsanläggning;

- betongplatta ☐
- hårdgjord yta ☐
- sluten behållare ☐
- saknas ☐

36. Lagringskapacitet;

- area;.....(m²)
- stödmur ☐
- antal tömningar / år;.....
- spridningsareal;.....
- gödselkontrakt ☐

anmärkningar / övrigt;.....
.....
.....
.....

Djurhälsa

37. Hästarnas hull;
- normalt ☐
- enstaka under medelgott ☐
- under medelgott ☐
- mycket under medelgott ☐
- över medelgott ☐
- enstaka över medelgott ☐
- många över medelgott ☐
38. Hur ofta verkas hovarna;
- var 6:e vecka eller oftare ☐
- var 7:e – 9:e vecka ☐
- var 10:e – 12:e vecka ☐
- 2 – 4 ggr / år ☐
- 1 ggr / år ☐
39. Var hovskicket vid inspektionstillfället godtagbart ? ☐ Ja ☐ Nej
40. Finns det gemensamma avmaskningsrutiner för hästarna i stallet ? ☐ Ja ☐ Nej
- avmaskningsmedel;.....
- intervall;.....
41. Finns gemensamma vaccinationsrutiner för hästarna i stallet ? ☐ Ja ☐ Nej
- vaccination mot;.....
- intervall;.....
42. Var hästarna vid inspektionstillfället tillfredställande rena ? ☐ Ja ☐ Nej
- alla rena ☐
- enstaka nedsmutsade ☐
- många nedsmutsade ☐
43. Allmänt intryck av hästarna;
- välskötta ☐
- undermåligt skötta ☐

anmärkningar / övrigt;.....
.....
.....
.....

Bete, rasthagar och motion

(med bete avses sommarhage, där hästarna helt eller till stor del erhåller sin näring från betet under vegetationsperioden. Med rasthage avses övriga hagar oavsett årstid).

Bete

44. Går hästarna på bete under sommaren ? ☐ Ja ☐ Nej
- hur lång period;.....
45. Finns tillgång till ligghall eller annat skydd på betet ? ☐ Ja ☐ Nej
- vad;.....
46. Staketets materiel i beteshagar;
- trästaket ☐
- plast / metallrör ☐
- eltråd / elband ☐
- ståltråd utan el ☐
- stenvmur ☐
- taggråd ☐
- annat..... ☐
47. Är staketet på betet i enlighet med föreskrift ? ☐ Ja ☐ Nej
48. Beteshagens yta;.....(ha)
- typ av terräng;.....
49. Hästbeläggning;.....
50. Är beteshagen i godtagbart skick avseende markförhållanden ? ☐ Ja ☐ Nej
51. Förekommer i beteshagen skräp eller främmande föremål som utgör skaderisk ? ☐ Ja ☐ Nej
- vad;.....
52. Vilket vattentillförselsystem nyttjas i beteshagen;
- automatiskt ☐
- antal vattenkoppar;.....
- manuellt ☐
- hur ofta;.....
53. Hur ofta ges hästarna tillsyn under betessäsongen ?
.....(ggr / dag)

Sammanfattande bedömning av beteshagar

54. Är beteshagen godtagbar ur djurskyddssynpunkt ? ☐ Ja ☐ Nej
55. Är beteshagen godtagbar ur miljöskyddssynpunkt ? ☐ Ja ☐ Nej

anmärkningar / övrigt;.....
.....
.....

Rasthage

56. Har samtliga hästar tillgång till daglig utevistelse i rasthage ?

☐ Ja ☐ Nej

57. Hur många timmar per dag är hästarna i rasthagen ?

- < 1 h ☐
- 1 – 3 h ☐
- 4 – 8 h ☐
- 9 – 12 h ☐
- > 12 h ☐

58. Staketets materiel i rasthage;

- trästaket ☐
- plast / metallrör ☐
- eltråd / elband ☐
- ståltråd utan el ☐
- stenmur ☐
- taggråd ☐
- annat..... ☐

59. Är staketet i rasthagen i enlighet med föreskrift ?

☐ Ja ☐ Nej

60. Rasthagens yta;(ha)

- typ av terräng;.....

61. Hästbeläggning;

62. Vad består marken i rasthagen av:

- till större delen grässvål ☐
- delvis upptrampad ☐
- helt upptrampad ☐
- sand / grus ☐
- annat..... ☐

63. Är rasthagen i godtagbart skick avseende markförhållanden ?

☐ Ja ☐ Nej

64. Förekommer i rasthagen skräp eller föremål som utgör skaderisk ?

☐ Ja ☐ Nej

- vad;.....

65. Är rasthagen dränerad i enlighet med föreskrift ?

☐ Ja ☐ Nej

- hur;.....

66. Finns tillgång till skydd mot väder och vind i rasthagen ?

☐ Ja ☐ Nej

- vad;.....

67. Vilket vattentillförselsystem nyttjas i rasthagen;

- automatiskt ☐
- antal vattenkoppar;..... ☐
- manuellt ☐
- hur ofta;..... ☐

68. Finns tillgång till foder i rasthagen ?

☐ Ja ☐ Nej

- hur ofta;(ggr / dag)

- typ av foder;.....

- genom;

- häckutfodring ☐
- markutfodring ☐
- i ligghall ☐
- annat ☐

Sammanfattande bedömning av rasthagar

69. Är rasthagen godtagbar ur djurskyddssynpunkt ? ☐ Ja ☐ Nej

70. Är rasthagen godtagbar ur miljöskyddssynpunkt ? ☐ Ja ☐ Nej

anmärkningar / övrigt;.....
.....
.....

Motion

71. Hur ofta motioneras hästarna på annat sätt än i rasthage;
- dagligen ☐
- 4 - 6 ggr / vecka ☐
- 2 - 3 ggr / vecka ☐
- mindre eller 1 ggr / vecka ☐
- aldrig ☐

72. Hur många timmar / motionstillfälle motioneras hästen / hästarna;
- < 1 h ☐
- 1 - 2 h ☐
- 2 - 3 h ☐
- 3 - 4 h ☐
- > 4 h ☐

73. Vilken typ av motion erbjuds hästen vid motionstillfällena ?
- skogspromenad (lätt arbete) ☐
- tävlingsträning (hårt arbete) ☐

Övrigt:

.....
.....
.....
.....
.....

Lämnade bilagor

- ☐ Hästpass, Jordbruksverket
- ☐ Förprovning och besiktning av djurstallar, Jordbruksinformation 3 - 2000
- ☐ Brandskydd, Lantbrukets Brandskyddskommitté
- ☐ SJVFS 2003:6

Avlopp i stallbyggnad

Fatighetsbeteckning;.....
Antal hästar;.....

1. Typ av avlopp;

- enskilt ☐
- kommunalt ☐
- saknas ☐

2. Anslutet till avloppet;

- spolspilta ☐
- stallvask ☐
- golvbrunn ☐
- wc ☐
- tvättmaskin ☐
- dusch ☐
- kök/disk ☐
- annat ☐

3. Finns slamavskiljare ?

☐ Ja ☐ Nej

- antal kammare;.....

4. Finns efterbehandling ?

☐ Ja ☐ Nej

- infiltration ☐
- markbädd ☐
- minireningsverk ☐
- annat ☐

5. Utsläpp till;

- öppet dike ☐
- täckt dike ☐
- gödselanordning ☐
- annat ☐

6. Avloppet anlagt år;.....

7. Finns tillstånd från kommunen ?

☐ Ja ☐ Nej

Planlösning i stallbyggnad

6. Appendix 4 (Swedish Board of Agriculture's national horse project questionnaire).



Djurhälsoenheten
Veterinärinsp. Katharina Gielen Kläboe
Veterinärinsp. Helena Torkelsson

1996-08-22

Blanketten skickas till länsveterinären för vidarebefordran till Statens jordbruksverk, djurhälsoenheten

PROJEKTINRIKTAD TILLSYN AV HÄSTAR/HÄSTHÅLLNING

Kommun Kommunkod.....
Inspektör Besöksdatum

GRUNDFAKTA

Fastighetsbeteckning.....
Besöksadress.....
Postnummer..... Ort.....
Fastighetsägare Tele.....
Djurägare*

(*om många olika djurägare anges ansvarig skötare eller motsvarande)

TILLSTÅND

1. Förekommer tillståndspliktig verksamhet på anläggningen?

1 ☐ Ja

2 ☐ Nej

2. Om ja på fråga 1; finns ett sådant tillstånd?

1 ☐ Ja

2 ☐ Nej

Postadress
551 82 Jönköping

Besöksadress
Valgatan 8

Telefon
038-15 50 00

Telefax
038-19 05 46

Telex
709 91 SJV-S

Postgiro
15 68 6-1

ALLMÄNT OM VERKSAMHETEN

3. Antal hästar:

- ☐ 1
☐ 2-3
☐ 4-9
☐ 10-30
☐ 31-100
☐ >100

4a). Stallet byggt år:

4b). Stallet senast ombyggt/tillbyggt:

5. Är stallet förprovat?

- ☐ Ja
☐ Nej

6. Huvudsaklig verksamhet:

- ☐ Ridskola
☐ Turridning
☐ Trav-/galoppträning
☐ Utbildnings-/försäljningsstall
☐ Stuteri/uppfödning
☐ Ridning/körning
☐ Sällskap
☐ Annat

7. Typ av hästar, huvudsakligen: (flera alternativ kan anges)

- ☐ Ponnyer
☐ Kallblod
☐ Trav- och galopphästar
☐ Varmblodiga ridhästar
☐ Islandshästar
☐ Övriga ange

8. Ingår i urvalskategori:

- ☐ Lantbruksregistret
☐ Annat register
☐ Egen kännedom

Kommentar:

STALL

9. Finns stallplats till alla hästar?

- 1. ☐ Ja
- 2. ☐ Nej

10. Om nej: finns det tillgång till ligghall i enlighet med föreskrift?

- 1. ☐ Ja
- 2. ☐ Nej

11. Om nej: finns det tillgång till annat skydd och en torr och ren liggplats i enlighet med föreskrift?

- 1. ☐ Ja
- 2. ☐ Nej

12. Stallet är:

- 1. ☐ isolerat
- 2. ☐ oisolerat

13. Uppstallningsform: (flera alternativ möjliga)

- 1. ☐ Spilta
- 2. ☐ Enhästbox
- 3. ☐ Flerhästarsbox

14. Har boxar och spiltor mått i enlighet med föreskrift?

- 1. ☐ Ja
- 2. ☐ Nej
- 3. ☐ Enstaka ej föreskriftsenliga mått

15. Är takhöjden i enlighet med föreskrift?

- 1. ☐ Ja
- 2. ☐ Nej

16. Är gångarnas bredd i enlighet med föreskrift?

- 1. ☐ Ja
- 2. ☐ Nej

17. Är gångarna halkfria?

- 1. ☐ Ja
- 2. ☐ Nej

18. Finns avskiljningsanordning mellan boxar och spiltor som skyddar hästarna från att skada varandra(t.ex. galler)?

- 1. ☐ Ja
- 2. ☐ Nej

19. Är boxdörrarnas bredd i enlighet med föreskrift?

- 1. ☐ Ja
- 2. ☐ Nej
- 3. ☐ Enstaka ej föreskriftsenliga

20. Är staldörrarnas höjd och bredd i enlighet med föreskrift?

- 1. ☐ Ja
- 2. ☐ Nej
- 3. ☐ Enstaka ej föreskriftsenliga

21. Finns det tillräckliga ljuskällor i form av fönster och artificiellt ljus i stallet?

- 1. ☐ Ja
- 2. ☐ Nej

22. Är fönster, lampor, elledningar m.m. försedda med lämpliga skydd i enlighet med föreskrift?

- 1. ☐ Ja
- 2. ☐ Nej

23. Är uppbindningen i spiltor anordnad i enlighet med föreskrift?

- 1. ☐ Ja
- 2. ☐ Nej

24. Har stallet godtagbar ventilation? (subjektiv bedömning)

- 1. ☐ Ja
- 2. ☐ Nej

25. Finns det strö i godtagbar mängd och av godtagbar kvalitet i boxar och spiltor?

- 1. ☐ Ja
- 2. ☐ Nej

26. Finns det utrymme i enlighet med föreskrift för djur som behöver särskild vård? (gäller endast stall för bundna eller gruppållna hästar)

- 1. ☐ Ja
- 2. ☐ Nej

27. Sammanfattande bedömning av stallet:

- 1. ☐ Godtagbart
- 2. ☐ Ej godtagbart, smärre brister
- 3. ☐ Ej godtagbart, grava brister

Kommentar:

.....

.....

.....

.....

BETE, RASTHAGAR OCH MOTION (Med bete avses sommarhage, där hästarna helt eller till stor del erhåller sin näring från betet under vegetationsperioden. Med rasthage avses övriga hagar oavsett årstid.)

28. Har samtliga hästar tillgång till daglig utevistelse hela året?

1. ☐ Ja
2. ☐ Nej

BETE

29. Går hästarna på bete under sommaren?

1. ☐ Ja
2. ☐ Nej, (om nej, fortsatt till fråga 34)

30. Om ja; hur lång period?

1. ☐ < 3 veckor
2. ☐ 3-8 veckor
3. ☐ 2-4 månader
4. ☐ > 4 månader

31. Finns det tillgång till ligghall eller annat skydd på betet?

1. ☐ Ja
2. ☐ Nej

32. Staketets material i beteshagar:

1. ☐ Trästaket
2. ☐ Plast/metallrör
3. ☐ Eltråd/elband
4. ☐ Ståltråd utan el
5. ☐ Stenmur
6. ☐ Taggtråd
7. ☐ Annat

33. Är staketet på betet i enlighet med föreskrift?

1. ☐ Ja
2. ☐ Nej
3. ☐ Ej bedömt (p.g.a. finns på annan plats)

RASTHAGE

34. Staketets material i rasthage:

- 1. ☐ Trästaket
- 2. ☐ Plast/metallrör
- 3. ☐ Eltråd/elband
- 4. ☐ Ståltråd utan el
- 5. ☐ Stenmur
- 6. ☐ Taggtråd
- 7. ☐ Annat

35. Är staketet i rasthagen i enlighet med föreskrift?

- 1. ☐ Ja
- 2. ☐ Nej

36. Är rasthagens storlek godtagbar? (ur djurskyddssynpunkt)

- 1. ☐ Ja
- 2. ☐ Nej

37. Är rasthagens storlek godtagbar? (ur miljöskyddssynpunkt)

- 1. ☐ Ja
- 2. ☐ Nej

38. Vad består ytan i rasthagen av:

- 1. ☐ till större del grässvål
- 2. ☐ delvis upptrampad
- 3. ☐ helt upptrampad
- 4. ☐ sand/grus
- 5. ☐ Annat

39. Är rasthagen dränerad i enlighet med föreskrift?

- 1. ☐ Ja
- 2. ☐ Nej

40. Finns det tillgång till skydd mot väder och vind i rasthagen?

- 1. ☐ Ja
- 2. ☐ Nej

41. Finns det tillgång till vatten i rasthagen?

- 1. ☐ Ja
- 2. ☐ Nej

42. Har hästarna tillgång till foder i rasthagen?

- 1. ☐ Ja
- 2. ☐ Nej (om nej, fortsätt till fråga 44)

43. Hur utfodras hästarna i rasthagen?

- 1. ☐ Häckutfodring
- 2. ☐ Markutfodring
- 3. ☐ I ligghall
- 4. ☐ Annat

44. Hur många timmar per dag är hästarna i rasthagen?

- 1. ☐ < 1 timme
- 2. ☐ 1-3 timmar
- 3. ☐ 4-8 timmar
- 4. ☐ 9-12 timmar
- 5. ☐ > 12 timmar

MOTION

45. Hur ofta motioneras hästarna på annat sätt än i hage?

- 1. ☐ Dagligen
- 2. ☐ 4-6 ggr/vecka
- 3. ☐ 2-3 ggr/vecka
- 4. ☐ ≤ 1 ggr/vecka
- 5. ☐ Aldrig

46. Hur många timmar per dag arbetas hästen/hästarna?

- 1. ☐ < 1 tim
- 2. ☐ 1-2 tim
- 3. ☐ 2-3 tim
- 4. ☐ 3-4 tim
- 5. ☐ > 4 tim
- 6. ☐ inget arbete

Kommentar:

.....

.....

Övriga rutiner

47. Har hästarna tillgång till vatten i enlighet med föreskrift?

- 1. ☐ Ja
- 2. ☐ Nej

48. Är vattnet av godtagbar kvalitet?

- 1. ☐ Ja
- 2. ☐ Nej
- 3. ☐ Vet ej (ej bakteriologiskt undersökt)

49. Hur ofta utfodras hästarna?

- 1. ☐ 1 gg/dygn
- 2. ☐ 2 ggr/dygn
- 3. ☐ 3 ggr/dygn
- 4. ☐ 4 ggr/dygn
- 5. ☐ ≥ 5 ggr/dygn
- 6. ☐ Fri tillgång till foder kontinuerligt

50. Förvaras foder på ett godtagbart sätt?

- 1. ☐ Ja
- 2. ☐ Nej, åtkomligt för hästarna
- 3. ☐ Nej, åtkomligt för skadedjur
- 4. ☐ Nej, fuktigt
- 5. ☐ Nej, av annan anledning

51. Förvaras strömedel på ett godtagbart sätt?

- 1. ☐ Ja
- 2. ☐ Nej

52. Förvaras gödsel på ett godtagbart sätt? (ur djurskydds- och miljösynpunkt)

- 1. ☐ Ja
- 2. ☐ Nej

53. Hästarnas hull:

- 1. ☐ Normalt
- 2. ☐ Enstaka under medelgott
- 3. ☐ Under medelgott
- 4. ☐ Mycket under medelgott
- 5. ☐ Över medelgott
- 6. ☐ Enstaka över medelgott
- 7. ☐ Mycket över medelgott

54. Verkas hovarna regelbundet?

- 1. ☐ Ja
- 2. ☐ Nej

55. Om ja; hur ofta?

- 1. ☐ Var 6:e vecka eller oftare
- 2. ☐ Var 7:e-9:e vecka
- 3. ☐ Var 10:e-12:e vecka
- 4. ☐ 2-4 ggr/år
- 5. ☐ 1 ggr/år

56. Var hovskicket godtagbart vid besöket?

- 1. ☐ Ja
- 2. ☐ Nej

57. Finns det gemensamma avmaskningsrutiner för hästarna i stallet?

- 1. ☐ Ja
- 2. ☐ Nej

58. Finns det gemensamma vaccinationsrutiner för hästarna i stallet?

- 1. ☐ Ja
- 2. ☐ Nej

59. Hästarnas renhet:

- 1. ☐ Alla rena
- 2. ☐ Enstaka smutsiga
- 3. ☐ Många smutsiga

Kommentar:

.....

.....

.....

60. Allmänt intryck av hästarna:

- 1. ☐ Mycket välskötta
- 2. ☐ Utan anmärkning
- 3. ☐ Dåligt skötta

61. Hästhållningen sammanfattningsvis:

- 1. ☐ Godtagbar
- 2. ☐ Ej godtagbar, smärre brister
- 3. ☐ Ej godtagbar, grava brister

Kommentar:

.....
.....
.....
.....

Åtgärder som måste vidtas:

.....
.....
.....
.....
.....

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