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OCCUPATIONAL HEALTH AND SAFETY WHEN HANDLING FARM ANIMALS

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Abstract: In 2021, 12,088 accidents involving animals were reported to the Regional Branches and Local Units of KRUS in Poland: 10.2% more than in 2020. The most common causes of such accidents are poor housing conditions and a lack of knowledge about how to handle them, the latter of which is exacerbated by high employee turnover and a lack of adequate training. Employee training should cover animal welfare assessment, dealing with animals, the use of personal and collective protective equipment, as well as first aid and biological hazard assessment. To maintain a good standard of occupational safety on a farm, the conditions for rearing and breeding animals, and the rules of their operation, should be reviewed on an ongoing basis. Bulls, stallions, boars, rams and goats prone to kicking and biting are considered dangerous animals and special precautions should be taken when handling them. Only a good knowledge of basic animal behaviour, together with improved animal welfare, proper handling practices, and the use of appropriate containment equipment, will ensure safe handling of animals. Currently, all work with animals is governed by the Regulation of the Minister of Agriculture and Rural Development on Occupational Health and Safety when Handling Farm Animals dated 4 August 2017 (Journal of Laws of 2017, item 1692).

Key words: occupational health and safety, cattle, sheep, goats, horses.

INTRODUCTION

Wild animals, domestic and farm animals may pose a threat to human health and even life. However, although livestock handling is a dangerous occupation, few farmers and agricultural workers see animals as a source of risk of accident or injury. In agriculture, large numbers of accidents involving animals are reported every year, with 12 088 being reported to the Regional Branches and Local Units of KRUS (*Agricultural Social Insurance Fund*) in Poland in 2021: a 10.2% increase over 2020. Among all agricultural accidents, 11.8% (1130 victims) involved impacts, crushing and bites by animals.

Currently, all work with animals is governed by the Regulation of the Minister of Agriculture and Rural Development on Occupational Health and Safety when Handling Farm Animals dated 4 August 2017 (Journal of Laws of 2017, item 1692). Farmers and agricultural workers who deal with livestock perform a wide range of activities, such as feeding, milking, loading and unloading, grooming, moving animals, insemination, clipping, horse saddling, hoof correction, hoof cleaning, removal of horns in cattle, castration, sprout removal in piglets, piercing animals

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and assisting with births. It is hardly surprising that contact with animals has been rated as the first or second most common cause of injury on the farm, above contact with livestock housing disinfectants, and exposure to harmful gas admixtures in livestock buildings, animal allergens and zoonoses (Langley and Morrow 2010).

According to Nogalski et al. (2007), most serious injuries occur as a result of attacks by large animals (horses, cows, pigs). Although small animal attacks also occur, they do not usually cause injuries that require hospitalization and are often not recorded in the statistics. Nevertheless, due to the nature of their job, farmers and agricultural workers are more vulnerable to attacks by large animals. This number may increase in the near future due to the high turnover of employees, and the growing trend for holidays in agritourism farms and horse riding.

An analysis of the injuries caused by animals treated at Umeå University Hospital by Björnstig et al. (1991) showed that a third were caused by horses, most of which were related to fractures. In addition, accidents involving cattle entailed the highest costs of treatment and sickness benefit, while working with poultry was more associated with respiratory problems.

Animal behaviour can only be fully understood through its social, nutritional, motor and grooming aspects. Indeed, a good understanding of the natural behaviour of animals, as well as ensuring their welfare, providing appropriate equipment and encouraging proper care and handling, will significantly improve the safety associated with working with them.

OCCUPATIONAL HEALTH AND SAFETY WHEN HANDLING CATTLE

Although cattle possess well-developed sense organs, their dominant sense is sight. Cattle can see all around them, except for the area behind their croup; therefore, when approaching cattle from behind, you should give them a vocal warning in order to avoid being kicked. In addition, cattle see better at close range than at a distance, and can detect moving objects quicker than those standing still (Adamczyk 2015). As such, sudden human movements can provoke fear or aggression in cattle. It is also worth remembering that they are also careful when leaving the barn and moving into a more brightly-lit place. In addition, noises, screams and shouts also cause stress, and such behaviour should be avoided during handling and grazing. Cattle also have a well-developed sense of touch, and contact can be used to calm them down (Abramowicz et al. 2014).

Farm workers are more likely to be injured by dairy cattle than by beef cattle, due to their greater contact with people. However, accidents to workers involving beef cattle cause significantly more serious injuries (Solomon 2002; Svendsen et al. 2014).

If large animals such as cattle or horses run away, e.g. from pasture, the slaughterhouse or taming, they should not be chased, as this mimics the natural predator behaviour. Escaping cattle tend to run blindly, and can injure people and destroy property. In such cases, keep calm and wait for 30 minutes after locating the cattle: it takes 20 minutes for the animal's heart rate to return to normal. After this time, you can safely lead it back; however, the animals often return of their own accord. Panicking animals can harm themselves or other animals, they can injure or even kill people, and they can destroy objects. Always keep a distance when you come into contact with animals and be able to escape if necessary (Lindahl et al. 2012; Svendsen et al. 2014).

Working with bulls is especially dangerous. Appropriate containment equipment should be provided on the farm. The bulls must have a nose ring, which is used to guide them with a special pole, minimum 1.4 m long. The most experienced male worker should always be appointed to handle the bull. Keep in mind that even a gentle owner-raised bull is always dangerous. The cowshed should be designed in such a way that there is never any direct contact with the bull during work (feeding, grooming, etc.). Females with newborn calves are more difficult to handle

than bulls and are more likely to attack humans. Dry cows tend to show more aggressive behaviour after returning from pasture to the barn.

Cattle experiencing pain due to injury or inflammation (e.g. mastitis) tend to kick towards the side. Therefore, be especially careful when approaching an animal and remember that cows can kick both forwards and sideways (sideways); ideally, you should approach injured cows from the opposite side of the painful part. When milking, most injuries and accidents occur when cleaning the udder or putting on and taking off the milking clusters. Therefore, to reduce the risk of an accident, cows should be monitored and possible threats should be read from their behaviour (Casey et al. 1997; Browning et al. 1998; Solomon, 2002; Gay and Grisso 2012; Lindahl et al. 2012).

Another dangerous situation is driving cattle to pasture. The animals may be impatient and confused during this activity. Therefore, the routes along which the animals move to pasture play an important role. During oestrus, the cows are restless and often jump at each other; as such, they can pose a threat to any workers attending them. In such cases, keep a respectable distance from the side of the cow and stay at shoulder height (Arnold 1985).

Livestock buildings should be spacious and well lit. The farm should have a station for carrying out procedure or a permanent restraint: such equipment reduces the risk of injury and accidents for employees. It should also be remembered that cattle are herd animals and isolation causes stress, resulting in potential danger for the handler. The herd should not contain aggressive animals that cause the most injuries to humans (Zhang et al. 2012).

Mishandling of cattle causes financial losses related to reduced milk production, poorer weight gain and poorer meat quality. Therefore, breeders should try to minimize stress on animals and prevent injuries and accidents for workers. Only actions aimed at improving animal welfare make it possible to achieve the goals set by the breeder.

OCCUPATIONAL HEALTH AND SAFETY WHEN HANDLING HORSES

Horses are large, unpredictable animals, and as such, daily handling and work can be a dangerous activity, with many injuries being recorded in the horse farming and breeding sector (Lindahl et al. 2022). When working with horses, it is important to understand their psychology and know how to react to dangerous situations. Most importantly, similar situations can cause different reactions in horses.

The horse is a social animal and feels safe in the company of others. They are generally timid, and sensitive to sound, movement, smell and touch. It must be remembered that like cows, the sudden emergence of an employee in the blind zone can scare the horse, and it is necessary to signal your presence with your voice when approaching from behind.

In addition, you should warn the horse upon entering a stall: the horse will react to your presence by, for example, pointing his ears towards you. When handling horses, avoid approaching without warning from behind, as the surprised animal may kick; ideally, you should always approach the horse from the front. Do not stand directly in front of the horse as the animal cannot see what is happening below its head and may get scared if any movement is made in this area. It is also dangerous to stand behind the rump, as this area is also invisible to the horse, and any noise risks inviting a kick. The safest position is to stand to the side, at the height of the horse's neck. In addition, when entering a stall, you should make the horse give you ample space, and not push you to the edge of the area. Thompson et al. (2011) emphasise that good horse handling skills combined with the use of personal protective equipment improve safety during horse-human contact.

Certain activities place farmers and employees at greater risk of injury or accidents while working with horses. These include assisting with veterinary procedures and childbirth, care and hygiene procedures (cleaning, hoof correction), semen collection, loading and transport of

animals, dressing wounds, preparation feed, feeding and manure removal (Löfqvist and Pinzke 2011; Löfqvist 2012; Długosz et al. 2018; Bergman et al. 2020).

Employees and riders must be guided by the principle of limited trust, and pay particular care when dealing with horses. They should avoid mistreating the animals and appearing nervous in their presence, and to engage in constant, daily contact with foals and young horses to develop obedience and trust in humans. During contact with horses, it is necessary to constantly observe them to ensure that they do not exhibit any undesirable behaviour that may be dangerous to humans. In the event that horses bite and kick each other, you should intervene only when you are not in danger and the organisation of the stable enables you to do so (Löfqvist and Pinzke 2011). Aggressive animals should be removed from the farm.

The horse handler should be equipped with stiff toecap boots to avoid crush injuries to the foot from the horse. Also, when leading the horse, walk alongside, on the left, halfway between the horse's head and shoulder blade.

OCCUPATIONAL HEALTH AND SAFETY WHEN HANDLING PIGS

Pigs learn easily and remember what they learn, and depending on previous experiences, they may be trusting or fearful of employees. Pigs are also able to distinguish between friends and strangers (Brajon et al. 2015). Their main form of communication is through smell.

Accidents involving pigs may occur when working with animals in heat, when handling sows in the postpartum period (presence of offspring), during feeding and veterinary runs, and when pigs are driven, loaded and unloaded onto means of transport. Pig production technology has recently undergone significant mechanization. However, while this means that a lot of work is done using machines, which is safer for farmers and agricultural workers, the more intensive level of production entails higher concentrations of animals in small livestock spaces, resulting in greater exposure to high concentrations of bioaerosols and irritating gases when handling them (Buczyńska and Szadkowska-Stańczyk 2010). According to Romaniuk and Karbowy (2008), workers on large-scale animal farms often demonstrate lower respiratory function due to such occupational exposure.

Most accidents associated with pigs occur on small family farms where safe working conditions are not respected and the infrastructure is in poor condition. The risk of injury or accident is further increased by poor environmental conditions in the pig housing area, such as residual faeces, spilled water or wet food; safety can also be influenced by the condition of pens and corridors, the floor surfaces and loading ramps, and the choice of machinery and equipment.

Pigs are very strong, fast and agile. Feeding sows that are protecting their piglets pose a great risk to workers. During zootechnical and veterinary procedures, sows should be placed in a special pen and piglets should be separated from their mothers (Zwicker et al. 2012). In addition, both boars and sows have sharp tusks or *sabres* which can be dangerous weapons in an emergency. Due to the size of adults, injuries most commonly occur to the lower limbs, and possibly the femoral artery.

During contact with animals (e.g. when chasing them away), workers should be equipped with appropriate protective clothing. It is also necessary to equip them with appropriate equipment to contain pigs (e.g. a taming loop, a driving plate).

OCCUPATIONAL HEALTH AND SAFETY WHEN HANDLING SHEEP AND GOATS

Like bulls, stallions and boars, rams and bucks prone to kicking and biting are considered dangerous animals and special precautions should be taken when handling them. As such, they should be immobilized during nursing and veterinary procedures, for example with a restraint.

Dwyer (2017) notes that goats are energetic, impulsive and more aggressive than rams, and as such, workers should exercise particular care when working with these animals, particularly when they prioritize their herd and during mating (during heat). Sheep and goat behaviour is negatively influenced by heat stress, fatigue, thirst, hunger, difficulty moving, pain, fear and anxiety; these factors may increase the risk of injury to workers, as may a lack of proper skills and fatigue on the part of the worker.

Sheep can be unpredictable and can cause human injury during *inter alia* shearing, daily handling, lifting sheep, preventive treatments and transport. When working with goats and sheep, avoid painful handling methods, such as lifting and pulling them by the horns, wool, or a single leg. Restraining methods that cause severe pain and fear should also not be used. For example, when chasing sheep in an open space, e.g. from a pasture, they should be left freely for 30 minutes to calm down before starting any treatments. The amount of contact the sheep has had with humans determines how closely they can be approached without reaction; in addition, the closer the worker gets, the faster the sheep will move away. If the worker moves away from the front of the animal, the sheep will move backwards. On the other hand, if the worker moves forward to the left, when facing the animal, the animal will move to the right.

CONCLUSION

The most common causes of accidents involving animals are poor housing conditions and a lack of knowledge about proper handling methods. In addition, the behaviour of employees towards animals has a significant impact on the behaviour of the animals themselves. The likelihood of an accident is also increased by high employee turnover and the lack of adequate training, the latter being an essential element in preventing injuries and accidents while handling animals. Such training should include the assessment of animal welfare, dealing with animals, the use of individual and collective protective equipment, first aid and methods for assessing biological hazards. To maintain a high standard of worker safety on a farm, it is necessary to verify the conditions of rearing and breeding animals and the rules of their operation on an ongoing basis. In addition, only trained adults should perform hazardous work involving bulls, stallions, boars, rams and goats prone to kicking and biting. Such persons should also undergo specific training for a given animal species.

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BEZPIECZEŃSTWO I HIGIENA PRACY PRZY OBSŁUDZE ZWIERZĄT GOSPODARSKICH

Streszczenie. W 2021 r. w Polsce zgłoszono do Oddziałów Regionalnych i Placówek Terenowych KRUS 12 088 wypadków. Było to o 10,2% więcej niż w 2020 r. Najczęstszymi przyczynami wypadków z udziałem zwierząt są złe warunki w pomieszczeniach inwentarskich oraz brak wiedzy pracowników

na temat właściwego postępowanie ze zwierzętami. Duża rotacja pracowników i brak odpowiednich szkoleń są jednymi z przyczyn wzrastającej liczby wypadków. Szkolenia pracowników powinny obejmować ocenę dobrostanu zwierząt, zasady postępowania z nimi, zasady stosowania środków ochrony indywidualnej oraz zbiorowej, zasady udzielania pierwszej pomocy oraz metody oceny zagrożeń biologicznych. Z uwagi na bezpieczeństwo pracy ludzi w gospodarstwie rolnym konieczne jest weryfikowanie na bieżąco warunków chowu i hodowli zwierząt oraz zasad ich obsługi. Buhaje, ogiery, knury, tryki oraz kozły wykazujące skłonności do kopania i gryzienia uznaje się za zwierzęta niebezpieczne i przy ich obsłudze należy zachować szczególne środki ostrożności. Tylko znajomość podstawowych zachowań zwierząt, poprawa ich dobrostanu, właściwe praktyki obchodzenia się z nimi oraz używanie właściwego sprzętu do poskramiania umożliwią bezpieczne dla człowieka obchodzenie się ze zwierzętami. Obecnie przy pracy ze zwierzętami obowiązuje rozporządzenie Ministra Rolnictwa i Rozwoju Wsi z dnia 4 sierpnia 2017 r. w sprawie bezpieczeństwa i higieny pracy przy obsłudze zwierząt gospodarskich (DzU z 2017 r., poz.1692).

Słowa kluczowe: bezpieczeństwo, higiena pracy, bydło, owce, kozy, konie.