エンリッチド・肥育牛
Improved Beef Rearing

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I will give the next talk but as I am also acting as chairperson, let me begin by introducing myself. After graduating from Kyoto University, I studied at Tohoku University, then at the Tokyo University of Agriculture and Technology. Now I am back at Tohoku University where I work as an Associate Professor in the Laboratory of Animal Welfare, which is sponsored by Ishii Corporation.

[Slide 1] Today I would like to talk to you about improved beef rearing, or in other words enriched fattening of cattle that pays attention to the animals' physical and mental health.

[Slide 2] As Professor Chiba was explaining a little earlier, calves are born in May or June in the pastureland areas deep in the mountains, and they spend about half a year there grazing on pasture until early November. In the winter, they cannot feed on pasture because snow settles on the ground and the grass stops growing. Instead they are reared in cattle sheds until the following May. Then once again they are let out into the high mountain pastureland until November, and then they come back to the cattle sheds for the winter again, then a third summer and autumn of pasturage until shipment. This method therefore employs a mixture of pasture rearing and cattle shed rearing.

The cattle are reared in pastureland in this way, and they are kept in cattle sheds in this kind of enclosure. Now I'd like to talk about the various rearing policies and about the relationship between these policies and animal welfare.

[Slide 3] This subject has been introduced many times already, so there is little more that I can add here, but in the study of animal welfare and livestock rearing, to employ the five freedoms shown on this slide is equivalent to implementing a policy on livestock management. The five freedoms are "freedom from hunger and thirst", "freedom from discomfort", "freedom from pain, disease and injury", "freedom of normal behavior", and "freedom from fear and suffering".

[Slide 4] With regard to pasturage and the five freedoms, we heard earlier how these five freedoms are realized in the case of cattle grazing on pastureland. [Slide 5] This is an outline of the pastureland. The distance from here to here [pointing to the slide] is a little less than 2km. The total area of this zone is 257ha and the total area of this other zone is 260ha, and there are also some other smaller zones. The cattle are put out to pasture in these zones, where they can move around freely. This area is grassland, and the side marked in a rather pale color, is forest. Even in the forest, various grasses are growing, although the overall volume is not very great. In places where ample food is available, the cattle can graze where they like and eat plenty of grass. As was mentioned earlier, since drinking water tanks are installed, the cattle have no problem in getting enough water.

[Slide 6] Next, from the standpoint of freedom from discomfort, is pastureland an appropriate raising environment or not? As you have seen, under pasturage, the cattle are left outside in a severe natural environment, so they have to face some tough environmental conditions, although we don't know what the cattle think about this. Under this environment, they are often exposed to the hot summer sun, as well as to occasional typhoons and heavy rain, but actually cattle are quite capable of adjusting themselves to these elements.

[Slide 7] One of our students studied how cattle move around in the pastureland I was talking about earlier by collecting information on their location using GPS devices attached to the animals' collars. From the results of his research, we can see that the cattle adapt themselves to their environment. For instance, when the weather is good, they frequent open places like this, and when the weather turns severe, with high wind or heavy rain, or becomes too hot, they go into the forest and graze on the grasses there. In much the same way as with pigs, which were the subject of some earlier talks, cows are able to cope well with the changing conditions.

[Slide 8] But although cattle can act by adapting to the environment, we still have to check up on them properly to prevent injuries and disease and also provide them with appropriate treatment. Earlier, Professor Chiba explained that we check the animals' weight on a monthly basis. But in addition to that, we take the opportunity to see them once or twice a week, and at that time we do a brief health check by confirming that they are not walking with a limp and that they generally look healthy. In addition, since they are living in pasturage, we carry out parasite removal as well. This kind of rearing management and hygiene management is specified in the action plan as shown here.

[Slide 9] Regarding freedom of normal behavior in pastureland, as you can imagine, cattle have the kind of freedom of normal behavior I have just described [Slide 10].

[Slide 11] As for the fifth item on the list, "freedom from fear and suffering", to what kinds of situations does this apply? How we treat the cattle is stated in the stipulation. [Slide 12] In pasturage, the cattle are left out on their own most of the time and the occasions when cattle and people come into contact are very few and far between. But when we carry out weight checking or health monitoring, we gather the cattle into an enclosure and drive them into a checking passage, where we examine them. This stipulation states how the cattle are to be treated in the passage. We should not hurry them or force them to run through the exit, and we should be mindful not to scare the animals and to reduce any factors that cause them fear or stress. It is difficult to bear these things in mind all the time so Professor Shusuke Sato and his team are conducting workshops for the supervisors. Also, at the end of last month, I heard that the staff from Tohoku University attended an animal welfare seminar.

[Slide 13] Cattle rearing that employs pasturage in this way is acceptable from an animal welfare perspective and we are also paying attention to animal welfare as I have just explained. Next, let me talk about rearing in cattle sheds. In sharp contrast with pasturage, the cattle are kept in cattle sheds during the wintertime, which is where different kinds of problem occur. Regarding rearing in cattle sheds from the perspective of welfare and freedom, let us first look at food and water. Since the cattle are kept in cattle sheds where grass does not grow naturally, they are provided with grass that was harvested during the summer and stored. In order to fatten the cattle, as was explained earlier, it is usually necessary to give them a lot of grain to make them fat enough. But as cattle are animals that naturally eat grass, consuming grain places a burden on their metabolism and too much can cause them to develop disease. The Japanese Shorthorns that we are rearing have an advantage in that they can get fat even if they are fed on preserved grass. So at the Field Science Center, we feed them mainly preserved grass and provide grain only as a backup, thereby providing them with healthy feed. For winter rearing as well, we have installed automatic watering equipment that allows water to flow out when the part [of the apparatus shown here] is pressed. Since insects tend to get into the part, we have to clean it periodically.

As for the provision of an appropriate rearing environment, this is also stated in the stipulations. As Ohara-san has already explained in her talk, in conventional cattle rearing, a lot of attention has been paid to such rearing environments and to the avoiding of injury and disease which impact on productivity. Examples are; providing heat and air, and ventilation to remove bad smells. Likewise, paying attention to light,

sound and the rearing area as general management tasks, as well as calling the vet when animals get sick and taking disease prevention measures. Another major difference from pasturage is that in cattle shed rearing the animals are not left on their own. So if something untoward happens, it quickly attracts the attention of staff, and we can also check on the animals' health during feeding. It is also beneficial that we can go and see them immediately at anytime.

[Slide 14] The biggest issue with respect to cattle shed rearing concerns the animals' freedom to express normal behavior. Unlike with pasturage, the cattle are kept in enclosed spaces where they are never able to express normal behavior. Under these circumstances, how to stimulate them into such behavior presents a problem. As was mentioned earlier, broiler chickens exhibit pecking and roosting behavior, while pigs dig the ground and take mud baths, and we can stimulate them into expressing such behavior.

[Slide 15] In the case of cattle in cattle sheds, the cattle perform various kinds of behavior toward each other. This was explained earlier, but the slide shows a list of normal behavior. In the case of cattle, normal behavior includes eating, resting, defecating scratching the ground, exploring, playing, and performing social activities with their friends, as well as productive behavior. These things are listed as normal behavior. Now, let me explain why these things are necessary.

[Slide 16] Since Professor Sato has already explained this, I will keep my explanation simple. Animals behave in order to adapt to the surrounding environment, or in other words, they are capable of adaptation. But when they are kept enclosed, they are often unable to perform their normal behavior. We can't know if they feel this as pain, but they certainly exhibit symptoms that indicate pain and they show the signs of stress.

Another vital point is, as Professor Sato explained, that animals have an internal need to perform important behavior. Such behavior includes pecking for chickens and digging the ground for pigs. In the case of cattle, tongue play, in which they move their tongues in a certain way, is an important behavior. When cattle can't do this due to the constrictions of their feeding or rearing environment, they appear to feel stress and frustration, which eventually translates into lower productivity, lower physical functioning, lower immunity and poorer appetite. This in turn reduces their learning ability and results in lower overall productivity on the animal side. These two points are the most important points concerning normal behavior.

[Slide 17] Bearing these things in mind, I conducted an experiment in which I added rearing environment enrichment to provide an environment that stimulated the cattle's normal behavior and I placed recently weaned cattle and fattening-stage cattle into this environment. How I did this was, for example, allowing the freedom to engage in attacking behavior, I carried out an experiment in which I did not try to control such attacking behavior. When cattle are kept as a group, there are always individuals that are weak and that tend to be bullied as well as those that act as bullies. I set up place separation boards of this size, so that when a bully attempted to bully a weak individual, the latter could slip away through a narrow gap and hide behind a board. When this happened, the stronger bully did not bother to chase the weak individual through the narrow gap to continue the bullying.

I created an environment in which weak individuals could escape immediately if they were being bullied. Also, I created an environment in which cattle could scratch their own bodies with a brush. As a result, although the precise results differed according to the breed of cattle, the amount of behavior exhibited when comfortable and sleep (which serves as an index of comfort) increased. Moreover, the blood cortisol level, which is an index of physiological stress, declined. The cattle became friendlier to each other and the number of fights was reduced. In this experiment, when the environment was more comfortable for the cattle, this was reflected in their productivity. When cattle are kept for nine months during their fattening period in an environment where they can scratch their body with a brush or their head with a bamboo broom, and where artificial turf is provided to help them scratch their body,

we obtained some amazing results. For instance, the price of their meat in the market increased, as did the price of their dressed carcasses.

In short, the various aspects of freedom of normal behavior are not well known, but when we provide an enriched environment with reference to the two points introduced earlier, this has an actual effect on productivity. Apart from that, the final results will depend on the cost of the materials utilized in order to provide the enrichment. For the Shorthorn cattle at Tohoku University we introduced brushes which the cattle began to use immediately on the day after they were installed. Some of the animals continued to use these brushes for four or five months and even stroked them. So I would guess that these cattle will produce good meat.

In cattle shed rearing, where the animals are reared as a group in a narrow space, the group structure is important. Also, there are numerous aspects in which people are involved, so how people interact with the cattle becomes very important. Consequently, people have to pay attention to animal welfare.

[Slide 18] Finally, and I am sorry that the text of this slide is a bit mixed up, as Professor Sato was explaining earlier, animal welfare that considers the animals' situation and keeps them in a physically and mentally healthy condition can be compatible with fattening regimes depending on how it is carried out. From a management standpoint, it all depends on the cost. I suggest that the pasturage and cattle shed rearing method discussed today and rearing methods that emphasize animal welfare can be combined.

That concludes my speech. Thank you very much for listening.

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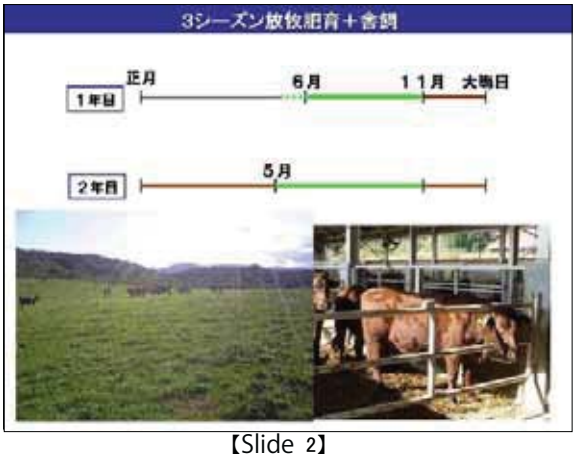

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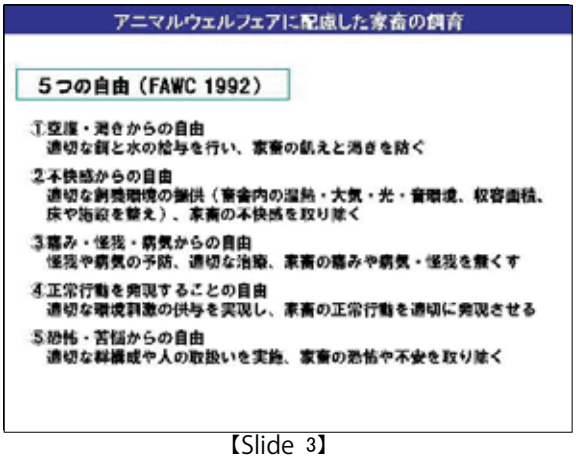

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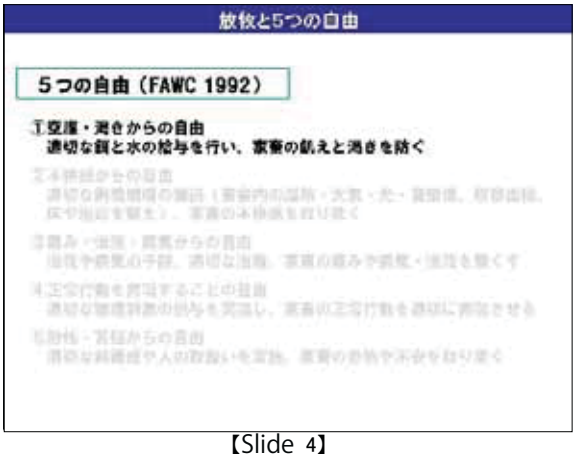

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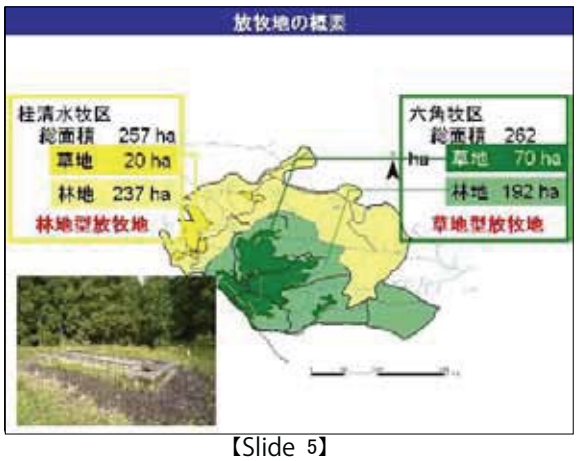

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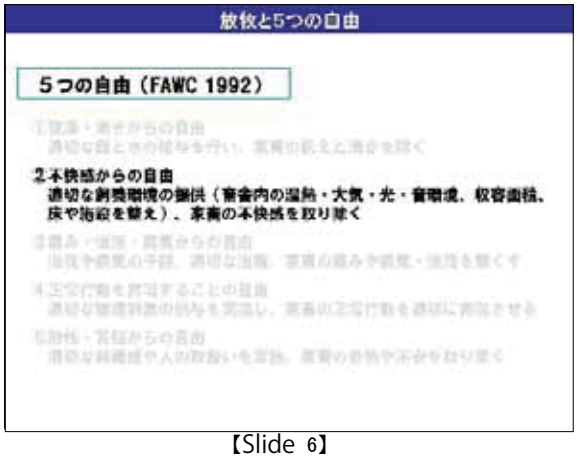

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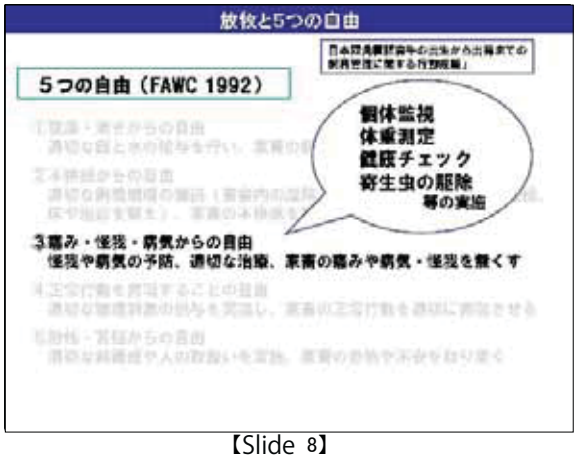

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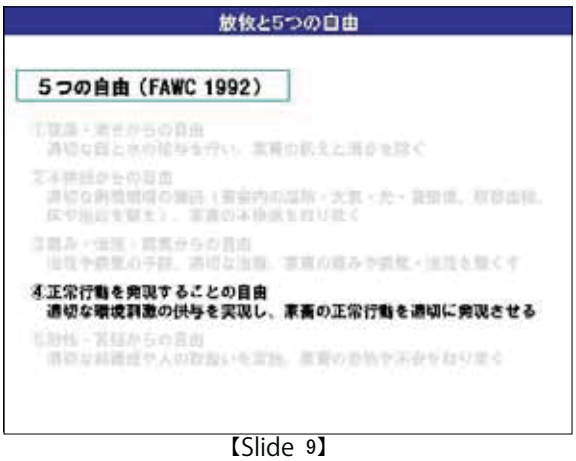

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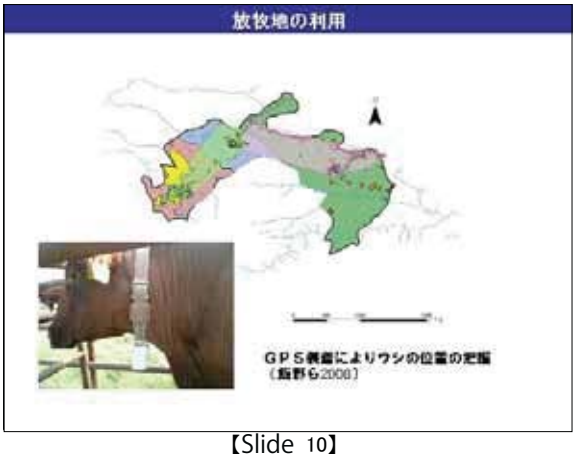

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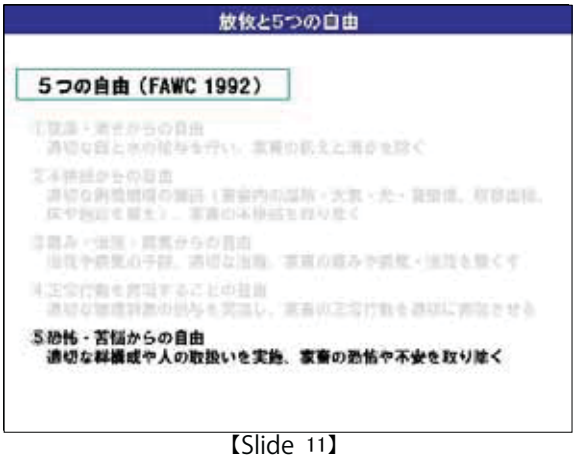

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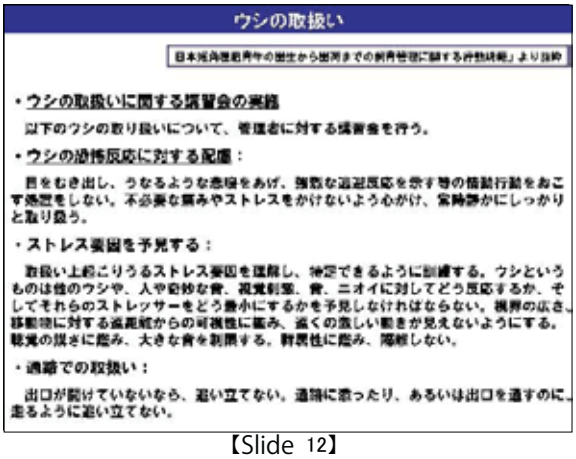

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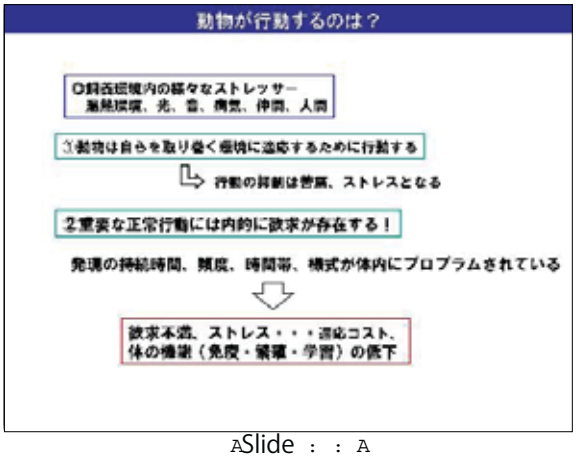

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