

Readability of Identipet™ (Destron) FDX-A microchips with different scanners

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Introduction / Background

Different generations of Identipet™ microchips have different serial numbers. The first few numbers of the unique number of the microchip indicate the series. Identipet™ (Destron) FDX-A microchips with the series identifications "7F", "200", "400" and "500" have been implanted into animals in South Africa since the introduction of Identipet™ microchips in 1990.

It is essential that a scanner can read all different series of a microchip brand; e.g. if Identipet's (Destron) FDX-A microchips should be read, then a scanner must be able to read all microchips of the series "7F", "200", "400" and "500". Failing to read all series will prevent the identification of animals that were microchipped some years ago; and this would defeat the objective of animal identification by implanting microchips.

Aim

The aim of the present study was to determine the readability of implanted Identipet™ FDX-A microchip of different series by different Identipet™ Scanners and by the Virbac BackHome Scanner.

Materials and Methods

Microchips and Scanners

The 10 microchip scanners of four different types, which were used in the present study, are listed in Table 3.1. The serial numbers of the 10 scanners were recorded.

Table 3.1: Microchip scanners used in the present trial.

Number of scanner	Distributor	Scanner type
1	Identipet™	Identipet™ (Destron) MPR Reader
2	Identipet™	Identipet™ (Destron) MPR Reader
3	Identipet™	Identipet™ (Destron) Pocket Reader
4	Identipet™	Identipet™ (Destron) Pocket Reader
5	Identipet™	Identipet™ (Destron) IDI Reader
6	Virbac	Virbac BackHome Scanner
7	Virbac	Virbac BackHome Scanner
8	Virbac	Virbac BackHome Scanner
9	Virbac	Virbac BackHome Scanner
10	Virbac	Virbac BackHome Scanner

All scanners were fully charged or fitted with new batteries according to the specifications of the distributor before the onset of the trial.

Microchips used were Identipet™ (produced in USA by Destron) 11 mm implantable glass microchips fitted with Destron's patented polypropylene anti-migration cap. The different series of microchips used in the trial are listed in Table 3.2.

Table 3.2: Identipet™ microchips used in the present trial.

Microchip series	Number of microchips implanted		Total
	Boergoat does	Castrated merino rams	
200	5	10	15
400	5	10	15
500	5	10	15
7F	0	2	2
Total	15	32	47

The serial numbers of all microchips used in the study were recorded before the onset of the trial.

Animals

Fifteen boergoat does and 32 castrated merino rams were used in the trial. The boergoats were all none pregnant, 10-11 months old and had a body condition score of 2.5-3. The rams were 8-9 months old and had a body condition score of 3-3.5. The rams were shorn some 3 months ago; the average hair length, measured on the back between the two shoulder blades was 29 ± 2.8 mm (mean \pm standard deviation) with a range of 24 to 33 mm.

Procedures

Boergoats and merino sheep were treated as two separate groups. One microchip was implanted in each animal according to Table 2 above. Microchips were implanted subcutaneous between the two shoulder blades with an Identipet™ multidose implanting gun. The ear tag of each animal was recorded together with the microchip number.

After implanting all microchips the animals were brought into a small holding pen. From there they were removed one by one and it was attempted to read the microchip with one of the ten scanners used. After reading the microchip each animal was released into a paddock. After reading the

microchip number of all the animals they were brought back from the paddock into the holding pen and the procedures were repeated with the second scanner. The reading was repeated until all ten scanners were used on all animals.

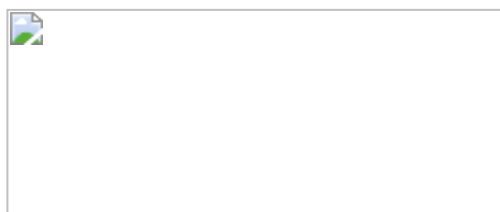
To read the microchips, the operator started with the scanner at the base of the neck and moved backwards over the midline until about 10 cm caudal of the shoulder blades. If the microchip number was not yet recognised the scanner was shifted slightly to the one side and moved forward until the base of the neck was reached again, from there it was moved to the other side of the midline and moved backwards again. If the microchip was recognised while moving the scanner for the first three times over the area of implantation it was recorded as an easy reading (Table 3.3). In cases where the microchip was not yet recognised the reading attempt was continued over the area of implantation for a total time of 30 seconds. While searching for 30 seconds without success, the scanner's reading cycle, ending with the message "Tag not found" in the case of the Virbac BackHome Scanners or "No ID found" in the case of the Identipet™ Scanners, was repeated three times.

Table 3.3: Classification of microchip scanning results.

Description of microchip reading	Reading score
Recognition of microchip number within the first three movements of the scanner over the area of implantation.	Easy
Recognition of microchip number within 30 seconds of moving the scanner over the area of implantation.	Poor
Microchip number not recognised within 30 seconds of moving the scanner over the area of implantation.	Negative

The searching pattern during the attempted reading is shown in Figure 3.1. First the scanner was moved from front to back, then from left to right and finally again from front to back until the 30 seconds were over.

Figure 3.1: Pattern of moving the scanner over the site of implantation in an attempt to read the microchips. Left diagram: movements from front to back; right diagram: movements from left to right.



Because of the way the Virbac BackHome Scanners are held in the hand during scanning and because of the relative small scanning head the wool of the sheep was slightly compressed when scanning with these scanners. The reduction of the distance to the skin due to the compression of the wool was estimated to be between 25 and 30%. With the larger scanners from Identipet™ that are held away from the comparatively large scanning head it was not possible to compress the wool during scanning.

Results

The scanning results are summarised in Tables 4.1 and 4.2.

Table 4.1: Scanning results of microchips implanted in boergoat does. Five scanners from Identipet™ and five scanners from Virbac were used to scan a total of 15 microchips.

Reading score	Identipet™ Scanners				Virbac Scanners			
	Microchip series				Microchip series			
	200	400	500	Over All	200	400	500	Over All
Easy	25	25	25	75	2	24	21	47
Poor	0	0	0	0	7	1	3	11
Negative	0	0	0	0	16	0	1	17
Total	25	25	25	75	25	25	25	75

Table 4.2: Scanning results of microchips implanted in merino rams. Five scanners from Identipet™ and five scanners from Virbac were used to scan a total of 32 microchips.

Reading score	Identipet™ Scanners					Virbac Scanners				
	Microchip series					Microchip series				
	200	400	500	7F	Over All	200	400	500	7F	Over All
Easy	49	49	50	9	157	3	30	34	0	67
Poor	1	1	0	1	3	4	12	7	0	23
Negative	0	0	0	0	0	43	8	9	10	70
Total	50	50	50	10	160	50	50	50	10	160

Across all microchip series implanted in boergoats the Identipet™ Scanners could recognise 100% (75 of 75) easily. Across all microchip series implanted in boergoats the Virbac Scanners recognised 63% (47 of 75) easily, 15% (11 of 75) poorly and 23% (17 of 75) not at all. The most difficult to read were the microchips of the "200"-series where 8% (2 of 25) were recognised easily, 28% (7 of 25) were recognised poorly and 64% (16 of 25) were not recognised at all.

Across all microchip series implanted in merino rams the Identipet™ Scanners could recognise 98% (157 of 160) easily and 2% (3 of 160) poorly. Across all microchip series implanted in merino rams the Virbac Scanners recognised 42% (67 of 160) easily, 14% (23 of 160) poorly and 44% (70 of 160) not at all. Non of the microchips of the "7F"-series were recognised. Apart of the "7F" series the most difficult to read were again the microchips of the "200" series where 6% (3 of 50) were recognised easily, 8% (4 of 50) were recognised poorly and 86% (43 of 50) were not recognised at all.

Over all the Identipet™ Scanners could recognise 99% (232 of 235) of the microchips easily and 1% (3 of 235) poorly. Over all the Virbac Scanners recognised 49% (114 of 235) easily, 14% (34 of 235) poorly and 37% (87 of 235) not at all. Non of the microchips of the "7F"-series were recognised. Of the "200", "400" and "500"-series respectively 7% (5 of 75), 72% (54 of 75) and 73% (55 of 75) were recognised easily, 15% (11 of 75), 17% (13 of 75) and 13% (10 of 75) were recognised poorly and 79% (59 of 75), 11% (8 of 75) and 13% (10 of 75) were not recognised at all.

Discussion

The "7F"-series is the oldest series of microchips and it was therefore not possible to trace more than two new microchips to be implanted for the trial. Since the sample size is so small, the results of the readability of this series must be interpreted with caution. However, when Identipet™ was introduced in South Africa in 1990, there were many microchips of this series implanted into animals of which many are likely to still be alive.

The animals used should allow extrapolating the results on dogs and cats. The fine skin and short hair of young boer goats can be compared with the skin and hair coat of a shorthaired dog. The longer dense hair of sheep increases the reading distance from the microchip to the scanner. The reading distance used in the merino rams is comparable to the necessary reading distance in obese dogs or in dogs with long hair.

The Virbac BackHome Scanner fits nicely into one hand and is easy to manipulate. The relative small LCD display is, however, designed for usage in a well-illuminated practice environment. During part of the trial, when the light was not very good (cloudy weather, standing under a roof) it was difficult to read the numbers. In this respect the larger LCD display of the Identipet™ Scanners was superior. The readability is further increased by an active illumination of the panel during reading in the case of the Identipet™ Pocket Reader.

All Identipet™ Scanners used could read all microchip with ease. The 1% of microchips that read poorly in the trial were still much easier to locate than most of the microchips that read poorly with the Virbac Scanners. In the 3 cases where a microchip read poorly with an Identipet™ Scanner the scanner had to be moved over the implantation area for 4 or 5 times, and per definition of the trial, all microchips not read within 3 movements over the area were classified as poorly readable. With the Virbac Scanners some of the microchips classified as poorly readable could only be recognised if the exact spot where the microchip was implanted was massaged with the reading head.

The Virbac Scanner appears to be very handy in a clinic scenario (and is probably designed for this) where the location of a microchip is exactly known. In any situation where the microchip location is not known and in any situation where large areas of skin have to be scanned to search for a possible microchip the larger reading head of Identipet™ Scanners used would be superior to search for a microchip. A further advantage is the longer reading distance at which the microchips used can be recognised with Identipet™ Scanners.

Should the same scanners be used to read the same type of microchips in large animals like horses (implantation usually in the ligament of the neck) or in wildlife (implantation e.g. in the horn of a rhino, under the skin of an elephant, ...) the difference between the two scanners would likely to be even more outspoken.

All results and most conclusions drawn from this trial can only be applied on the readability of Identipet™ FDX-A (Destron) microchips. It is not possible from the trial to determine which type of scanner that would be superior to read other types of microchips. It might well be that completely different results would be obtained if an attempt was made to read different brands of microchips available on the market.

Since the Virbac Scanner also failed to read microchips from the newer generations (11% and 13% for the "400" and the "500"-series respectively) it can be concluded that Virbac BackHome Scanners are not suitable to reliably read Identipet™'s FDX-A (Destron) microchips.