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SOME PRELIMINARY RESULTS FROM INVESTIGATIONS WITH GRAIN AND STRAW FROM FIELDS TREATED WITH WEEDKILLERS

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In earlier experiments it was found that straw untreated as well as straw treated with NaOH could act as part of compound feed for rabbits (Jensen and Fris Jensen, 1986). Since those experiemnts were carried out use of weedkillers shortly before harvest has been used to a relatively great extent.
Reports from farmers seem to establish that utilization of straw from such fields has a negative effect on animal production. To test this statement some experiments were carried out during the growing period as well as reproduction, and the products: Round-Up, Reglone, and Cerone were used.

MATERIALS AND METHOD

The experiment was carried out with rabbits of the breed WHITE DANISH LANDRACE and the animals were from the closed line that had stayed on the station for many years. A part of the experiment comprised a growing period until the weight of 2.75 kg; a total amount of 888 rabbits was used. For the reproduction period 80 does were started and data collected for four litters.

During the growing period number of dead rabbits was recorded, but due to the relatively low number, no autopsy of the dead rabbits was carried out. When the rabbits started in the experiment on the 39th day the weight was recorded, and when the rabbits were close to the slaughter weight selected the live weight and age were recorded. The compound feed was fed ad libitum and given as 5 mm pellets; the feed intake was measured. The grain and straw of barley were harvested from the same field of which one part was treated with Round-Up, another with Round-Up and Cerone, and a third part was not at all treated with either of the two substances.

Both grain and straw were milled before mixed in the compound feed, the composition of which is shown in Table 1. The compound feeds were used in the growing period as well as in the reproduction period.

During the growing period the rabbits were housed in a special section of the station in cages of galvanized wire netting, and each cage equiped with water nipple and a silo for feed.

The product Round-Up is used with 3 l per ha. as weed killer in grain crops 10-12 days before harvest, and the active substance in the product is Glyphosat. The product Cerone is used with ½ l per ha. in grain crops in the month of June to inhibit the growth of the straw, and the active substance is etephon.

The reproduction took place in a special section of the station, and the does were housed in cages made of galvanized wire netting, had water nipples and feed silos. The kindlings were in nests next to the cage of the doe thus only allowing her to enter the nest once a day - in the morning. In the section with the breeding animals a light schedule of minimum 14 hours light was used which also was the case in the section with the growing rabbits. Both sections of the station had natural ventilation and no extra heating.

RESULTS

The results from both the growing period and the reproduction period including weight of the youngs are shown in the following tables.

From the results of Table 1 can be seen that the energy content (Scandinavian Feed units, (FU)) of the three compounds are almost the same and close to the calculated amount; the content of protein was somewhat higher than calculated, and the same picture was found for fibre of which the control diet had a somewhat lower content than that of the two other diets. The analysis of the straw showed a content of 22 mg glyphosat per kg.

Table 1 Composition of the compound feed, g/kg

Treatment	Control	Round-Up	Round-Up + Cerone
Barley, grain	210	210	210
Barley, straw	250	250	250
Oats	250		
Grass meal	80		
Soyabean oil meal	160		
Molasses, beat	30		
Vitamin and Minerals	20		
Composition, calculated, dry matter, g/kg			
Crude protein	150		
Crude fat	23		
Crude fibre	152		
Energy, FU/100 kg compound	79		
Composition, analysed, dry matter, g/kg			
Dry matter	880	880	880
Crude protein	189	176	181
Crude fat	30	28	28
Crude fibre	176	193	190
NFE	539	543	540
Energy, FU/100 kg compound	82	80	80
Glyphosat in grain, mg/kg	0	4.2	3.5

No coccidiostat or other feed additives was used.

The mortality in the growing period was low and no differences were observed due to treatment.

It took approximately the same time to reach the weight for slaughter and the small differences in weight increase per day

were not statistically significant, thus the small decrease in growth for the group with both Round-Up and Cerone is not significant.

Treatment of grain and straw with the two products in question did not influence the feed intake so when both were measured by amount and by energy measured by FU no difference was found between the control group and the experimental groups.

Table 2 Results from the growing period

Treatment	Control	Round-Up	Round-Up + Cerone
Rabbits started, number	297	299	292
Rabbits slaught.,number	287	292	289
Mortality, %	3.4	2.3	1.0
Age at start, days	39	39	39
Age at slaughter, days	92	92	93
Weight at start, kg	0.83	0.82	0.83
Weight at slaughter,kg	2.74	2.73	2.74
Average, daily weight gain,g	36.4	36.2	35.8
Feed intake per day, g	130	131	130
Feed convers.,kg/kg increase	3.57	3.62	3.61
Feed convers.,FU/kg increase	2.94	2.91	2.92
Glyphosat, mg/rabbit/day	0.0	0.8	0.6

Table 3 Results from the reproduction period

Does at start, number	25	26	29
Does dead, number	2	2	1
Matings, number	52	62	72
Kindlings, number	50	54	66
Castings, number	0	2	0
Non-fertile, number	2	6	6
Non-fertile, %	3.8	9.7	9.1
Time from 1.to 2.litter, days	92	84	87
Time from 2.to 3.litter, days	97	71	80
Time from 3.to 4.litter, days	65	78	74

Almost the same amount of does was started in the 3 groups. The mortality during the experimental period was very low - 5 does of a total number of 80. The number of kindlings was

somewhat low in the two experimental groups due to a great number of non-fertile does within those groups. The length of time from the first to the fourth litter was approximately equal in the three groups.

It was planned to have the first kindling born at an average age of the does, but due to some moulting in the control group the kindlings were somewhat delayed.

Table 4 Weight and age of does

Age at first kindling, days	206	180	167
Weight at 3 months, kg	2.76	2.76	2.82
6 months, kg	4.13	4.00	4.13
9 months, kg	4.49	4.31	4.42

On the other hand the 3-months-weight of the does was the same in all three groups and remained equal at the age of 6 and 9 months.

As to the four litters the group "Round-Up" had fewer youngs at birth whereas no difference was found between control group and the group with both Round-Up and Cerone in which the intake of glyphosat was almost the same as that of the group with Round-Up alone.

Table 5. Number of youngs born and weaned; and weight at 0, 14, and 28 days of age

In total			
Litter size at birth, number	9.0	7.6	8.9
Litter size at wean. number	7.0	6.4	7.1
Youngs at birth, total	449	412	587
at weaning, total	349	348	458
1.litter			
Youngs born/litter,number	8.2	7.7	8.2
weaned/litt.number	6.5	6.4	6.4
2.litter			
Youngs born/litter,number	9.7	7.6	9.8
weaned/litt.number	7.3	6.2	7.5
3. and 4.litter			
Youngs born/litter,number	9.8	7.6	9.2
weaned/litt.number	7.6	6.8	7.3

The litter size at weaning in relation to litter size at birth was approximately the same of all three groups which is also shown through the number of total youngs born and weaned.

Table 6 Weight at 0, 14, 28, and 38 days of age, g

Weight,	0 days,	60	60	58
	14 days,	205	211	193
	28 days,	506	461	457
	38 days,	859	806	817

The weight at birth was nearly the same in the three groups, but at 28 days of age the two experimental groups reached only 91.1 and 90.3 % of the weight of the control group. In the last 10 days before weaning at 38 days of age, the two experimental groups had some compensatory growth so the weight reached 93.8 and 95.1 % respectively of that of the control group.

CONCLUSION

From the preliminary investigations on the effect of the two products on reproduction and growth of the youngs it seems that some negative effect on fertility was found, but the negative effect was not further aggrevated in the groups which got grain and straw treated with both Round-Up and Cerone; the same tendency can be seen as to the weight of the groups at 28 days of age.

When looking at the figures of survival until weaning there seems to be no effect of the treatment of the grain and straw.

REFERENCES

Jensen, N.E. and Fris Jensen, J., 1986. Use of alkali-treated straw in compound feed for Rabbits.
Rabbit Production Systems including welfare. - A seminar in the Community programme for the coordination of agricultural research, 6th-7th November 1986, Turin,ITALY. Edited by Teresa Auxlia. Published by the Commission of the European Communities, 1987.

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Reports from farmers seem to establish that utilization of straw from such fields has a negative effect on animal production. To test this statement some experiments were carried out during the growing period as well as reproduction, and the products: Round-up, Reglone, and Cerone were used.
During the growing period no negative effects on growth, feed conversion, and mortality have been found; in the reproduction period conception rate decreased within the test group, and further the average number of youngs per litter decreased.
The experiments are part of a programme including swine and cattle, and in the programme rabbits are used as model animal especially in relation to reproduction; the programme is still running.

EINIGE VORLÄUFIGE ERGEBNISSE VON VERSUCHEN MIT KORN UND STROH AUS UNKRAUTSMITTELBEHANDELTEN FELDEN

In früheren Untersuchungen fand man, dass sowohl unbehandeltes Stroh als auch Stroh, das mit NaOH behandelt worden war, in einer Futtermischung für Kaninchen angewandt worden konnten. Nach der Durchführung dieser Versuche ist der Brauch des Unkrautsmittels kurz ehe die Ernte in einem verhältnismässigen grossen Umfang gewachsen.
Berichte von Landwirten scheinen nachzuweisen, dass die Ausnützung des Strohs von solchen Felden eine negative Wirkung auf die Tierproduktion haben konnte. Um diese Äusserung nachzuprüfen, wurden einige Versuche durchgeführt während sowohl die Zuwachsperiode als auch die Reproduktion der Tiere, und die Mittel: Round-up, Reglone und Cerone wurden gebraucht.
Während die Zuwachsperiode fand man keine negativen Wirkungen auf das Wachstum, den Futterumsatz und die Sterblichkeit der Tiere; während der Reproduktionsperiode fiel die Befruchtungszahl binnen die Versuchsgruppe, und auch die Durchsschnittszahl von jungen Tieren pro Wurf fiel.
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