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EVALUATION REPORT 355

H.E. ANDERSON AV4-AM LIVESTOCK WATER MEDICATOR

A Co-operative Program Between

ALBERTA FARM MACHINERY RESEARCH CENTRE

PAMI
PRAIRIE AGRICULTURAL MACHINERY INSTITUTE

H.E. ANDERSON AV4-AM

MANUFACTURER

H.E. Anderson Co.,
P.O. Box 1006
Muskogee, Oklahoma
74401 U.S.A.

RETAIL PRICE: $965.00 (March 1984, f.o.b. Muskogee Oklahoma)

SUMMARY AND CONCLUSIONS:

Performance: The performance of the Anderson was *fair*. It was set to deliver 1.00 oz/gal(U.S.) (7.8 mL/L).[1] Observed medication ratios varied from 0 00 to 0.74 oz/gal (U.S.) (0.0 to 5.8 mL/L) at constant flow rates between 0.25 and 1.30 gal (U.S.)/min (1.0 to 5.0 L/min). At fluctuating flow rates between 0.40 and 1.04 gal (U.S.)/min (1.5 and 4.0 L/min), medication ratios varied from 0.58 to 0.83 oz/gal (U.S.) (4.5 to 6.5 mL/L).

Variations of supply line pressures resulted in medication ratios between 0.69 to 0.78 oz/gal (U.S.) (5.4 to 6.1 mL/L).

Safety and Durability: No safety or durability problems occurred during the test

Installation and Operation: Ease of installation and operation was considered good.

Operator Manual: The operator manual was clearly written and contained comprehensive installation and maintenance instructions.

RECOMMENDATIONS

No recommendations were required.

Senior Engineer -- G.M. Omichinksi
Project Engineer -- C. W. Chapman

THE MANUFACTURER STATES THAT

The manufacturer did not comment.

GENERAL DESCRIPTION

The Anderson is an automatic livestock water medicator designed for installation in a water supply line to provide a variable ratio of medication to livestock drinking water. It uses a water driven diaphragm pump to proportion the medication and has a 13 (U.S.) gal (50 L) mixing tank for the medicated water, and a separate container for the medication. Medication ratio is varied by a dial on the medicator. Detailed specifications are given in APPENDIX I.

SCOPE OF TEST[2]

The performance of the Anderson was determined at various pressures and over a wide range of constant and fluctuating flows[3], with the medicator set to deliver 1.0 oz/gal (U.S.) (7.8 mL/L), while using a standard medication solution. In addition, ease of installation and operation, power requirements, safety and suitability of the operator manual were evaluated.

1A conversion table is provided in APPENDIX IV.
2Prairie Agricultural Machinery Institute Detailed Test Procedure for Livestock Water Medicators.
3APPENDIX II.

RESULTS AND DISCUSSION

QUALITY OF PERFORMANCE

Accuracy: Observed medication ratios at constant and fluctuating flow rates are shown in FIGURE 1. Observed medication ratios were lower than the selected ratio for all constant and fluctuating flow rates. Similar variations occurred at other medication ratio settings.

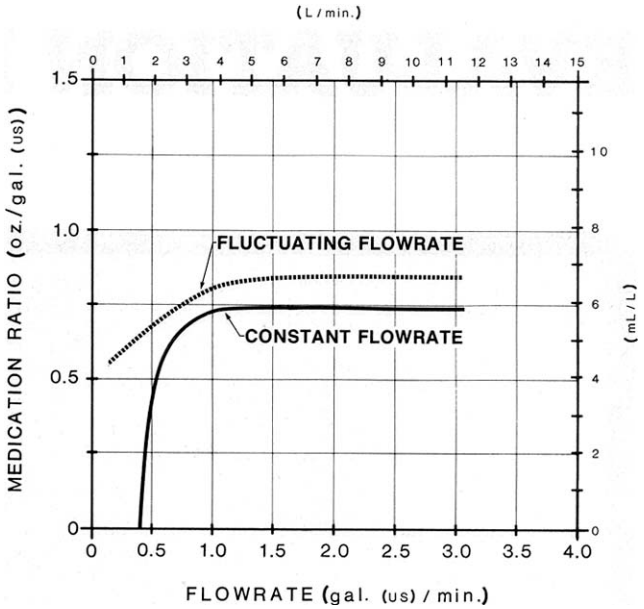

FIGURE 1. Medication ratios vs. flow rates.

Observed medication ratios for various pressures are shown in FIGURE 2 with the medicator set to deliver 1.0 oz/gal (U.S.) (7.8 mL/L). Observed medication ratios for the Anderson were lower than the selected ratio. The manufacturer's maximum pressure rating was 125 psi (850 kPa). The Anderson operated at a minimum pressure of 3 psi (20 kPa).

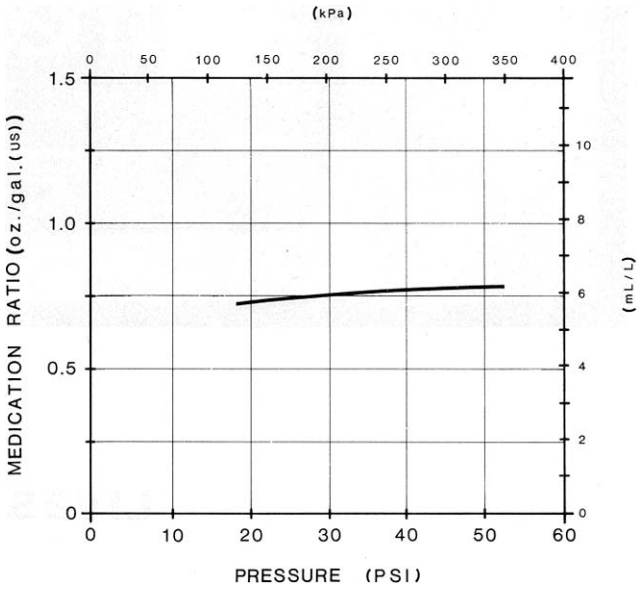

FIGURE 2. Medication ratios vs. pressure.

Maximum Flow: The maximum obtainable water flow at 30 psi (205 kPa) through the Anderson was 6.1 gal (U.S.)/min (23.3 L/min), when connected to a 33 ft (10 m) length of 0.5 in (12 mm) diameter hose. At this flow rate, the observed medication ratio was 0.83 oz/gal (U.S.) (6.5 mL/L).

EASE OF INSTALLATION

The Anderson was equipped with a 0.75 in (19 mm) NPT male inlet and 0.75 in (19 mm) NPT female outlet for installation to the water supply line and 5 ft (1.5 m) length of plastic tubing, complete with strainer, for supplying the medication. A medication container was not supplied. The manufacturer recommended that if the water supply contained suspended solids that a filter be installed in the water supply line. The medicator should be protected from freezing.

EASE OF OPERATION

The Anderson was difficult to prime.

Medication flow was easy to monitor. The medication ratio could be adjusted from 0.25 to 1.3 oz/gal (U.S.) (2.0 to 10.2 mL/L) by means of a dial on the medicator or by diluting the medication.

Maintenance: The manufacturer recommended the med icator be inspected and cleaned every six months.

POWER REQUIREMENTS

The Anderson was water powered and no other power source was required.

OPERATOR SAFETY

The Anderson was safe to operate if the manufacturer's recommendations were followed. No safety problems were evident.

OPERATOR MANUAL

The operator manual was well written and illustrated. It contained useful information on installation, operation and maintenance. No medication mixing instructions were included in the manual. A complete parts list was included.

DURABILITY RESULTS

The intent of the test was evaluation of functional performance. An extended durability test was not conducted. No mechanical problems occurred during testing.

APPENDIX I

SPECIFICATIONS

MAKE:	H.E. Anderson
MODEL:	HV4-AM
SERIAL NO.:	CL062B

OVERALL DIMENSIONS:

-- height	30.5 in	(760 mm)
-- width	16.2 in	(405 mm)
-- length	28.4 in	(710 mm)
-- total weight	50.1 lbs	(22.78 kg)

WATER LINE CONNECTION:

	INLET	OUTLET
-- size	0.75 in (19 mm)	0.75 in (19 mm)
-- type	male N.P.T,	male N.P.T.

MEDICATION HOSE:

-- tength	5 ft	(1.54 m)
-- diameter	0.5 in	(12 mm)
-- mixing tank	13.0 gal(U.S.)	(50.0 L)

APPENDIX II

Fluctuating flows occur when a nipple or water bowt system is used. In the evaluation of livestock medicators fluctuating flows were obtained by continuously cycling three water bowl valves on and off. Reported values for fluctuating flows are the average flows, or the total volume of water delivered divided by the duration (time) of the test.

APPENDIX III

MACHINE RATINGS

The following rating scale is used in Machinery Institute Evaluation Reports:

Excellent	Fair
Very good	Poor
Good	Unsatisfactory

APPENDIX IV

CONVERSION TABLE

Inches (in) x 25.400	= Millimetres (mm)
Pounds Force/Square Inch (psi) x 6.890	= Kilopascal (kPa)
Gallons (U.S.) x 3.785	= Litres (L)
Gallons (U.S)/minute x 3.785	= Litres/minute (L/min)
Ounces/gallons (U.S.) x 7.810	= Millilitre/litre (mL/L)

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