

Summaries of Official Spectrophotometric Methods

3) Agricultural supplies analysis

Introduction

As introduced in Application Note 49, there are many spectrophotometric analyses designated as Official Analytical methods. The methods for agriculture are important in maintaining the efficiency of this industry and the cover these product areas:

- Animal feeds formulated commercially to close quality control
- Effluent control and analysis.
- Herbicides
- Pesticides
- Premixes containing antibiotics and other supplements for addition to feeds

These methods show an outline of the preparation procedure, indicating any specific reagents required. Measurement wavelengths are listed providing quick reference to the spectrophotometer requirements. Spectrophotometers and Acquire software from the Biochrom Libra range for each method as appropriate. More details on instrument settings are shown in the user manuals and other application notes.



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Summaries of Analytical Methods - Agricultural Supplies (Libra Application Note 51)

COMMODITY ANALYSIS	OUTLINE OF METHOD	WAVELENGTHS nm	RECOMMENDED INSTRUMENT					
			LIBRA S5	LIBRA S12	LIBRA S22	LIBRA S22 + ACQUIRI	LIBRA S32	LIBRA S32PC
Aklomide in feeds	Aqueous extract, amm sulphamate	545nm	X	X	X		X	X
Amprolium in feeds	Alumina column, 2,7 naphthalene diol, pot ferricyanide,KCN, NaOH	530nm	X	X	X		X	X
Biuret in fertilizers	React with alkaline pot tartrate and copper sulphate at 30 °C	555	X	X	X		X	X
Boron in fertilizers	Acid extract. React with azomethine reagent	420	X	X	X		X	X
Carbadox in feeds	React with NaOH & SnCl ₂	520	X	X	X		X	X
Carotenes + xanthophylls in dried plant materials & mixed feeds	Saponify. Magnesia adsorption column	436 & 474	X	X	X		X	X
Carotenes in fresh plant materials and silages	Acetone/hexane extract. Adsorption column	436	X	X	X		X	X
Chlorophyll in plants	Acetone extract	Scan 568, 581, 613, 642.5, 660				X	X	X
Dimetridazole in feeds	Alumina column/methanol extract.	310-330				X	X	X
Diquat in herbicide formulations	Acetate buffer extraction	310		X	X		X	X
Hexachlorocyclopentadiene in technical chlordane	Methanol extract	300,324,350		X	X		X	X
Nicarbazin in feeds	Adsorption chromatography/ethanol extract	340-349		X	X		X	X
Nicotine in feeds	Alkaline extract/steam distil/CHCl ₃ extract	230-300, max 250				X	X	X
Nifursol in feeds	Alumina chromatography + phenylhydrazine reagent	555 (5-nitrofurfural phenylhydrazone)	X	X	X		X	X
Nitarsons in feeds	DMSO extract/TiCl ₃ . Amine+sod nitrite/sulphamate	530	X	X	X		X	X
Nitromide in feeds	Methanol reaction. DMSO/diethylamine reaction	560	X	X	X		X	X
P-aminobenzoic acid in feeds	Sod nitrite, amm sulphamate	545	X	X	X		X	X
Paraquat in herbicide formulations	Aqueous sod. sulphate extract. Dithionate reagent	600	X	X	X		X	X
Phenothiazine in feeds	Ethanol extract. p-aminobenzoic acid/sod nitrite.	600	X	X	X		X	X
Phosphorus in fertilizers	Molybdovanadophosphate reagent	400	X	X	X		X	X
Piperazine in feeds	Dilute sulphuric acid extract + benzoquinone at 80 °C	490	X	X	X		X	X
Pyrantel tartrate in feeds	KI/CHCl ₃ extract + extract into 0.1NHCl.	311		X	X		X	X
Roxarsone in feeds and premixes	K ₂ HPO ₄ extract. Protein ppt+activated C	410	X	X	X		X	X
Sulfadiazine and sulfamerazine	1) Thiobarbituric acid 2) 0.1NHCl	1) 532 2) 305		X	X		X	X
Sulfanitran in feeds	Sod nitrite/sulphamate/coupling reagent	540	X	X	X		X	X
Sulfaquinoxaline in feeds	DMF extract/alumina column/diazotise/coupling	540 (arsanilic acid) & 550	X	X	X		X	X
Sulfonamides in feeds	Ethanol ammonia solution/0.1 NaOH	220-400 (max 255)				X	X	X
Sulphamethizine in feeds	Amm. sulphamate/naphthylethylenediamine	480-660 (max 540)				X	X	X
Thiabendazole in feeds	0.1N HCl extract/Zn phenylenediamine/ferric oxid.	605	X	X	X		X	X
Warfarin in rodenticides	Ether extract + sod phosphate extract	308		X	X		X	X