



Colorado CAFO Permit Annual Report

Instructions

Colorado CAFO Permit Annual Report:

The owner or operator of any concentrated animal feeding operation (CAFO) permitted under the Colorado CAFO General Permit COA-932000 must submit an annual report to the Colorado Department of Public Health and Environment's Environmental Agriculture Program (Ag Program) by March 31st of each year. The report must also be submitted to the local public health agency for the area where the facility is located.

The contents of the annual report must reflect the status and activities of the CAFO during the previous 12-month reporting period. The reporting period is typically based on a calendar year or a cropping year depending on how your facility is managed.

Please use the form provided for reporting. If you would like to submit your information in a different format or you have questions, please contact the Ag Program at 303-692-3520 or cdphe.cafo@state.co.us.

If the CAFO applied waste (manure, litter, process wastewater, etc) at any land application sites under their control (whether owned, rented or leased) during the reporting period, Attachment A must be filled out. The following is a detailed description of what must be included to complete the tables in Attachment A.

Attachment A - Land Application Information

Complete the tables for all land application sites under the control of the facility where manure, litter, or wastewater was applied during the 12-month reporting period. As a reminder, if waste from the facility was not applied to land under the control of the CAFO, you do not need to complete Attachment A.

It is important that you report all of the requested information and clearly identify the units of measurement you are reporting (e.g. lbs/acre, ppm, etc).

TABLE 1 - LAND APPLICATION SUMMARY

- ✓ Include all of the land application sites under the control of the CAFO (whether owned, rented, or leased) where waste from the CAFO was land applied for crops grown during the reporting period.
- ✓ Include all crops grown at each land application site during the reporting year (including cover crops, double cropping, or if a split crop was utilized at the land application site).
- ✓ Provide the approximate date each crop was planted and harvested.
- ✓ Identify the yield goal for the crop and the units you are reporting in (t/acre, bu/acre, lbs/acre, etc). Yield goals must match the information provided in your approved Nutrient Management Plan (NMP).
- ✓ Provide the harvested (actual) yield based on the results of post harvest calculations and the units you are reporting in (t/acre, bu/acre, lbs/acre, etc).
- ✓ Identify if the nutrient recommendations for each crop are nitrogen or phosphorus based as provided by a field specific Colorado Phosphorus Index. Most land application sites in Colorado are nitrogen based.
- ✓ Provide the recommended nutrient application rate (in lbs/acre) as calculated using the methods you specified in your approved NMP (e.g. current cooperative extension publications from Colorado or adjacent states for the specific crop).
- ✓ Identify the source for the recommended nutrient application rate that was provided in the NMP (e.g. CSU Fact Sheet 0.544 - Fertilizing Winter Wheat, CSU Fact Sheet 0.538 - Fertilizing Corn).



Colorado CAFO Permit Annual Report

Instructions

TABLE 2 - SOIL ANALYSIS (PRE-PLANT SAMPLING FOR RATE DETERMINATION)

- ✓ Identify the land application site that was sampled.
- ✓ Provide the sample date. Include all samples that were used for determining nutrient application rates.
- ✓ Report the depths at which soil samples were taken. Soil sampling must be done according to the protocol approved in your NMP. At minimum, soil samples should be collected at 0 to 12 inches and 12 to 24 inches.
 - If soil samples were collected at depths that are different than those included in the approved sampling protocol, please provide an explanation as to why your protocol was not followed in the 'NOTES/COMMENTS' section on the last page of Attachment A.
- ✓ Report the amount of nitrate in both sampling depths in ppm or lbs/acre - ppm is preferred.
- ✓ Report the amount of organic matter in the surface sample in % OM.
- ✓ Report the amount of phosphorus present in the surface sample in lbs-P/acre or ppm - ppm is preferred.
- ✓ Indicate what phosphorus extraction method was used by the laboratory (this is indicated in the lab report).

TABLE 3 - NUTRIENT CONCENTRATIONS (MANURE, LITTER, PROCESS WASTEWATER)

Identify the following:

- ✓ Where the sample was taken (e.g. Pond 1, Pond 2, Confinement Pens, Barn Litter, Composting Windrows, etc). Include nutrient analysis for all of the wastes applied to crops that were harvested during the reporting period.
- ✓ Type of nutrient source (e.g. manure, litter, compost, wastewater).
- ✓ Sample date. Annual sampling is required for all manure, litter, and wastewater that is land applied to fields under the control of the CAFO or transferred to third parties.
- ✓ Units that nutrients are being reported in (lbs/ac-in, lbs/1000 gal, lbs/ton, ppm).
- ✓ Total amount of nitrogen and phosphorus in the sample 'as-is' or 'as-received'.
- ✓ Amount of the nitrogen that will be plant available in the first year if land applied (this accounts for volatilization of ammonia and mineralization of organic nitrogen). It is usually identified on the lab report as 'Available First Year' (see example lab analysis below) or calculated by your agronomist.
- ✓ Name of the lab that tested your samples.

EXAMPLE LAB ANALYSIS:

ACME Analysis, Inc.				
Results For: <i>EX. Feedlot</i>				
Sample ID: <i>EX. Manure Stockpile</i>				
Analysis	Lbs/Ton			
	Dry Basis	Dry Basis	As Is Basis	Available First Year
Organic N, %N	2.04	40.8	27.6	6.9
Ammonium, %N	0.088	1.8	1.2	1.1
Nitrate, %N	<0.001	0.0	1.1	0.0
Total N (TKN), %N	2.13	42.5	28.8	8.0
Phosphorus, % P ₂	2.74	54.9	37.2	26.0
Potassium, %K ₂ O	3.78	75.6	51.2	46.1

ACME Analysis, Inc.					
Results For: <i>EX. Feedlot</i>					
Sample ID: <i>EX. Pond 1</i>					
Analysis	As Received	Lbs per Acre Inch	Lbs per 1000 gal	Available First Year	
				Lbs per Acre Inch	Lbs per 1000 gal
Organic N, %N	436.0	98.8	3.7	34.6	1.3
Ammonium, %N	619.8	140.5	5.2	133.5	4.9
Nitrate, %N	2.0	0.5	0.0	0.5	0.0
Total N (TKN), %N	1057.9	239.8	8.9	168.5	6.2
Phosphorus, % P ₂ O ₅	158.6	35.9	1.3	25.2	0.9
Potassium, %K ₂ O	3039.0	688.9	25.5	620.0	23.0



Colorado CAFO Permit Annual Report

Instructions

TABLE 4 - NUTRIENT APPLICATIONS (MANURE, LITTER, PROCESS WASTEWATER)

- ✓ Provide the name of the land application site and the spreadable acres as identified in your NMP.
- ✓ Identify the source of the applied nutrients (e.g manure stockpile, compost, Pond 1, etc.)
- ✓ Provide the application date(s).
- ✓ Identify the amount of waste applied to each field and the measurement units (tons/acre, gallons/acre, acre-inches, lbs/acre, etc).
- ✓ Provide the amount of nutrients applied based on the most recent representative analysis, which should be included in Table 2.

TABLE 5 - NUTRIENT SUMMARY

- ✓ Provide the name of the land application site as identified in your approved NMP.
- ✓ Include the crop(s) that waste was applied to during the reporting period (e.g. corn, corn silage, alfalfa, wheat, etc). This should match the information provided in Table 2.
- ✓ Provide the nutrient application rate for the crop(s) as calculated according to the methods included in your approved NMP. Please provide recommendations in pounds per acre (lbs/ac). This should also match the information provided in Table 2. For fields where more than one crop was harvested, the nutrient needs for all crops can be combined.
- ✓ Include all nitrogen credits that have not been accounted for in the nutrient application rate. In some cases, the application rate is taken from a table that has already accounted for residual soil NO₃ and organic matter. Refer to the crop specific recommendations in your NMP for determining how credits are calculated.
 - Soil NO₃; residual soil nitrate is immediately available to crops. Generally the nitrate in the top two feet of soil in lbs-N/acre is included as the soil NO₃ credit. Some crop recommendations include the soil nitrate concentrations in a lookup table that can be used to determine application rates.
 - Soil organic matter; nitrogen in soil organic matter becomes available to plants through mineralization. Crop specific recommendations typically include a conversion from % organic matter to lbs-N/ac (e.g. 30 lbs-N/ac x % OM = lbs-N/ac OM credit) or include organic matter in a lookup table that can be used to determine application rates.
 - Irrigation Credit; irrigation water may contain nitrate, which is available to crops. The following equation can be used to calculate the amount of nitrogen applied during irrigation:

$$\text{___ ppm N in irrigation water} \times \text{___ acre-feet of water applied} \times 2.7 \text{ lbs N/ppm} = \text{___ lbs-N/ac}$$
 - Previous legume crop; previous legume crop residue will release nitrogen that can be used by the following crop. Most crop specific recommendations have a method or lookup table for determining the previous legume credit for a land application site.
 - Previous manure applications; mineralization of previous manure applications will continue to provide nutrients to crops for several years after application. Most crop specific recommendations have a method or lookup table for determining the previous manure credit.



Colorado CAFO Permit Annual Report

Instructions

- ✓ Include the total amount of nutrients from waste (manure, litter, wastewater, etc) applied to each land application site from Table 4. Must be based on the most recent lab analysis as reported in Table 2. Include both nitrogen (in lbs-N/acre) and phosphorus (in lbs-P/acre).
- ✓ Include the total amount of nutrients from supplemental fertilizers applied to each land application site. Include both nitrogen (in lbs-N/acre) and phosphorus (in lbs-P/acre).
- ✓ The nutrient balance shows the difference between the calculated nutrient application rate and the amount of nutrients applied and available to the crop. Report nitrogen or phosphorus, whichever your application rates are based on. Most farmers in Colorado apply at nitrogen-based rates.
 - To calculate the balance for nitrogen, subtract the nitrogen credits (lbs-N/ac) and nutrient applications (lbs-N/ac) from the nitrogen application rate (lbs-N/ac).
 - To calculate the balance for phosphorus, subtract the nutrient applications (lbs-P/ac) from the phosphorus application rate (lbs-P/ac).

NOTES/COMMENTS

- ✓ Provide additional information to address discrepancies or inconsistencies between what is provided in the annual report and what is approved in your Nutrient Management Plan. For example, you may need to explain why an expected yield was not met for a crop (e.g. drought, fire, wind, water availability, hail, flooding) or why there is a deviation from the NMP in regards to a calculated nutrient application rate or soil sampling protocol.