

June 12, 2012 🐾 Volume 3, Issue 5



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Getting the Most from Your Hay Operation (For Those Who Primarily Feed Their Own Hay)

Dr. Richard W. Taylor, Extension Agronomist, University of Delaware

On my way to work each day, I drive by a dairy farm and often enjoy watching all the activities occurring on the farm. The thing that has struck me in particular over the years is not just how much hay has been stored along field borders and roadways and around the barnyard in the fall; but how much of that hay remained the next year and beyond (Photos 1, 2 and 3). I watched as the oldest round bales stored on the wood line gradually decayed and disappeared. This was caused in part due to on-ground storage that allowed moisture to wick into the bale (Photo 3). Being somewhat dense (on occasion), it took me a long time before I realized that he was actually cutting hay for quantity rather than for quality; I guess the grower had in mind that some of the low quality hay could be used in the TMR feed as a fiber source while the remainder could be fed to dry cows or heifers if feed ran short.



Photo 1. Hay (6 months post harvest) stored in round bales along wood's edge on a dairy farm. This hay although in contact with the soil was stored at the top of a hill but the quality was declining and the amount of spoiled hay was rapidly increasing. (Photo by R. Taylor)



Photo 2. Hay from previous years' harvest stored along field edge on a dairy farm. Wrapped in this fashion, soil moisture was not causing spoilage although wildlife damaging the plastic was contributing to hay losses. Late in the spring this hay was actually fed to the herd. (Photo by R. Taylor)

Cont. pg. 2



Photo 3. Hay stored in contact with the ground along a wood's edge deteriorates with time. At another location with twine wrapped bales, I was too late to even find recognizable bales. (Photo by R. Taylor)

The next question that came to mind was whether cutting hay for quantity rather than quality is the correct way to manage

this valuable resource when year after year more old hay is added to the fence line compost line. With diesel prices at or near four dollars per gallon at the pump, nitrogen and other fertilizer inputs near all time highs, and hay equipment and supplies also very expensive, producers need to place a higher value on the hay they do harvest. For dairy producers, the cost of importing feed onto the farm is another consideration when deciding whether to harvest hay for quality or quantity. That extra effort to harvest hay for quality rather than quantity can really pay premium dollars in reduced input costs and, if you sell hay, in the price you can charge customers.

Still there will be times when there's a mismatch between the weather and the forecast that results in poor quality hay lying in the field and to preserve the health of the grass or legume stand the hay must be removed. Other times, a long period of poor hay-making weather will result in an overly mature hay crop. In these cases, you may end up with "fence-row" hay. One thing you can do in these situations is to minimize your hay making inputs by using the simplest, least expensive method of removing the hay from the field. If it's still good enough, use this hay for animals with minimal nutritional requirements or advertise and sell it as mulch or compost hay. Creative marketing may just help you cover at least a portion of the input costs incurred.

Some Common Types of Dry Fertilizers for Pastures

Phillip Sylvester, Agent, Agriculture, University of Delaware

County agricultural agents often get questions from grazers on how to interpret their soil test report recommendations and which fertilizers are appropriate to use on pastures. The following summarizes dry forms of fertilizer that are available for grazers to use on their pastures and provides a couple of examples of what the soil test recommendations mean.

Fertilizers for Pastures

Ammonium Sulfate (21-0-0-24S): Contains 21% nitrogen and 24% sulfur in the dry form. Good fertilizer to apply in spring and summer. Supplies sulfur, a necessary nutrient for plant growth which can be limiting in some Delaware soils. This is one of the most acidifying fertilizers so be sure to soil test regularly and test for the surface 0 to 2 inch soil pH so lime can be applied as soon as it's needed. When legumes make up 25 to 50% of the forage available to grazing animals, nitrogen applications should be limited to no more than 25 lbs/N/

application; and if legumes make up over 50% of the available forage, no nitrogen fertilizer will be needed.

Urea (46-0-0): Contains 46% nitrogen, the highest analysis of nitrogen available in dry form. Urea should be applied before rain to minimize nitrogen loss to volatilization. Works well as a spring time green-up fertilizer because of lower temperatures and increased chances for rain to reduce volatilization. Urea is completely water soluble and rapidly converts to a plant available form.

MAP-Monoammonium phosphate (11-52-0) - Contains 11% nitrogen and 46% phosphorus. Good fertilizer to blend with other components to make a custom blend. Before using MAP, a soil test should be performed to determine amount of phosphorus in soil. For environmental reasons, MAP should not be applied if soil test phosphorus levels are excessive.

Muriate of Potash or Potassium Chloride (0-0-62)- Contains 60-62% potassium. Use a soil test to determine application rates. Pastures with legumes (clovers, alfalfa, vetches, or lespedeza) require a lot of potassium which should be applied in two applications, the first in late spring and the second in late summer or early fall.

Potassium Magnesium Sulfate or K-Mag (0-0-22-11Mg-22S)- Contains 22 pounds of potassium, 11 pounds of magnesium, and 22 pounds of sulfur. Besides potassium, K-Mag supplies magnesium and sulfur and is a good fit for legume pastures, especially those with alfalfa.

Mixed Blends- There many mixed blends available as well and can be complete (containing N P₂O₅ and K₂O such as 15-15-15) or incomplete (not containing all three major nutrients such as 4-0-49). Additional nitrogen only fertilizers (ammonium sulfate, urea) may be needed to bring the amount of applied nitrogen up to 40-50 pounds

nitrogen per acre (see above under ammonium sulfate for comment about legume content of pasture).

Calcium or Magnesium (Dolomitic)

Limestone- Supplies calcium and magnesium depending on type of lime used. Lime is used to raise the pH of the

soil for optimal growth by reducing soil acidity and increasing availability of soil nutrients. A soil sample should be taken to determine the amount of lime required to raise the pH to a desired level. If large amounts of lime are called for, the application typically occurs before pasture establishment so it can be incorporated.

Small adjustments of pH can be made through topdressing of lime. Future maintenance lime applications may be needed, so pH should be checked through a soil sample (0-2 inch depth) every 2-3 years.

EXAMPLE 1:

EXAMPLE 1

SOIL TEST REPORT
UNIVERSITY OF DELAWARE – SOIL TESTING LABORATORY
NEWARK, DELAWARE 19717-1303

Agent copy

FIELD NAME OR NO.	ACRES	COUNTY	DATE SAMPLED	DATE RECEIVED	DATE COMPLETE	LAB NO.	BAG NO.
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SOIL TEST LAB: GROWER ADDITIONAL COPY TO: COUNTY AGENT

KENT CO. EXTENSION
 69 TRANSPORTATION CIRCLE
 DOVER, DE 19901
 302-730-4000

CLAY	SMWHT POOR	4-6	NO TILL	NO	NO				
SOIL NAME	SOIL DRAINAGE	SOIL COLOR	SOIL TEXTURE	SAMPLE DEPTH	TILLAGE	PRESENT COVER	IRRIGATION	PH PLSP	
GRASS, GRS/CLOV PAST					UNKN	0.0	UNK		
LAST CROP	YIELD OF LAST CROP	TYPE	TA WASH MAKEUP	N LAST FERTILIZER	P ₂ O ₅	K ₂ O	MOE. ACC. LAST LIME	TYPE	OTHER NUTRIENTS

SOIL TEST RESULTS:

		LOW	MEDIUM	OPTIMUM	
pH	5.9	*****			EXCESSIVE
PHOSPHORUS P	70	*****			
POTASSIUM K	13	*****			
MAGNESIUM Mg	56	*****			
CALCIUM Ca	76	*****			

0.7	7.7	4.2	39.0	3.3		7.54	17.1	8.2	54.9	1.3, 18
B	Mn	Zn	SO ₄ -S	% ORGANIC MATTER	SOL. SALTS MMS/CCM	BUFFER pH	% Phosphorus Saturation	CEC meq/100g	% Base Saturation	ENCLOSURES

SUGGESTED FERTILIZER PROGRAM:

CROP: GRASS OR GRASS/CLOVER PASTURE, TOPDRESSING	1.0	0	0-20	160		
YIELD GOAL: 3.0 TO 3.5 T/A HAY OR EQUIVALENT	N LBS/A	P ₂ O ₅ LBS/A	K ₂ O LBS/A	S LBS/A	B LBS/A	

You take a soil sample in your established grass pasture and the report comes back showing medium-optimal levels of phosphorus and low levels of potassium. The report suggests you apply 20 pounds of phosphorus and 160 pounds of potassium per acre. The pH is 5.9 and the report calls for 1.0 tons/acre of dolomitic lime. What should you use?

Liming should occur before regrowth starts in the spring and should include dolomitic lime. The best method is to lime before seeding your pasture to raise the pH to optimal levels. It will take a while for the lime broadcast on top of the pasture to move through the soil layer and become available for plant use. As an aside, grazers often wonder if it is safe to allow animals back on the pasture immediately after liming or fertilization. Although lime is non-toxic, we normally suggest waiting until after a rain event to put animals back on a pasture just to help the grazer feel comfortable about the application. This also applies to fertilizer applications although in the case of fertilizer the salt

content (saltiness) sometimes will attract the grazing animal especially if not applied in a uniform fashion and a rain event prevents any possible problems from occurring. There are a few options to use for NPK-containing fertilizers. The first fertilizer application should take place in early spring around green up. A blend of 40 pounds of MAP and 60 pounds of urea would supply 30 pounds of nitrogen and 20 pounds of phosphorus. Supply an additional 30 pounds of actual nitrogen and half of the recommended potassium with 65 pounds of urea and 130 pounds of muriate of potash after the first couple of grazing cycles, around mid-May. The potassium helps the plant tolerate hot and dry conditions. An additional 50 pounds of nitrogen and 80 pounds of potassium should be applied using 240 pounds of ammonium sulfate and 130 pounds of muriate of potash. The last application should occur in late summer or fall to supply fall nitrogen needs should environmental conditions favor pasture growth. Splitting the potassium applications prevents creating a grass tetany problem in the spring when adding large quantities of nitrogen and potassium all at once during the cool, wet period of spring can reduce magnesium uptake by forage plants.

EXAMPLE 2:

EXAMPLE 2

SOIL TEST REPORT
UNIVERSITY OF DELAWARE — SOIL TESTING LABORATORY
NEWARK, DELAWARE 19717-1303

Agent copy

BACKGROUND INFORMATION:

FIELD NAME OR NO.	ACRES	COUNTY	DATE SAMPLED	DATE RECEIVED	DATE COMPLETE	LAB NO.	BAG NO.
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COUNTY AGENT

KENT CO. EXTENSION
69 TRANSPORTATION CIRCLE
DOVER, DE 19901
302-730-4000

SOIL NAME	SOIL DRAINAGE	SOIL COLOR	SOIL TEXTURE	SAMPLE DEPTH	TILLAGE	PRESENT COVER	IRRIGATION	PL PLANT	
GRASS, GRS/CLOV PAST				0- 6	DISK ONLY	G/C SOD <50%	NO	NO	
LAST CROP	YIELD OF LAST CROP	TYPE	TA WHEN HARVESTED	N LAST FERTILIZER	P ₂ O ₅ LAST FERTILIZER	K ₂ O LAST FERTILIZER	MOE AGO LAST TIME	TYPE	OTHER NUTRIENTS
				50	100	0 0-6	1.0	MAG	

SOIL TEST RESULTS:

		LOW	MEDIUM	OPTIMUM	
pH	6.2	*****			EXCESSIVE
PHOSPHORUS P	95	*****			
POTASSIUM K	46	*****			
MAGNESIUM Mg	108	*****			
CALCIUM Ca	87	*****			

B	Mn	Zn	SO ₄ -S	% ORGANIC MATTER	SOL. SALTS (MHO/CM)	BUFFER pH	% Phosphorus Solubility	CFC (mg/100g)	% Base Saturation	ENCLOSURES
0.9	41.7	5.9	27.0	2.1		7.73	22.7	7.9	72.7	1,3,18

SUGGESTED FERTILIZER PROGRAM:

CROP: GRASS OR GRASS/CLOVER PASTURE, TOPDRESSING	0.0	0	0	110
YIELD GOAL: 3.0 TO 3.5 T/A HAY OR EQUIVALENT				

You took a soil sample in your established grass/clover mix pasture and the report comes back showing a pH of 6.2, optimal levels of phosphorus and medium levels of potassium. Zero pounds of phosphorus and 110 pounds of potassium are recommended. What should you apply?

For pastures with 0-25% clover, 50 pounds of actual nitrogen should be applied using either ammonium sulfate or urea in both spring and late summer. For pastures with 25-50% clover, 25 pounds of nitrogen is recommended and for pastures with over 50% clover, no nitrogen fertilizer is recommended. Therefore, 240 lbs of ammonium sulfate could be used or 100 pounds of urea in the 0-25% clover pasture to supply 50 pounds of actual nitrogen. An application of 120 pounds of ammonium sulfate or 50 pounds of urea could be used to supply the nitrogen in the 25-50% pasture. Muriate of potash should be applied at 90 pounds of material per acre to supply 55 pounds of actual potassium. Another nitrogen application should be scheduled in the late summer and early fall along with the remaining potassium requirements for fall growth. While spring applications have the

option of using urea, summer applications should include ammonium sulfate unless rainfall is likely or irrigation can be used. The possibility of volatilization with urea is high with warm temperatures we experience in the summer. No lime is needed at this time, but should be planned in a couple years to maintain pH. Taking another soil sample every couple of years should confirm this.



Crop Reports

Western

Corn is doing well due to recent rains. Soybean planting is nearly finished for full season varieties. Barley harvest is well underway and double crop beans will be planted shortly after harvest ends. Yields are reported near 100 bushels per acre with no word on test weights yet. Wheat is maturing well and harvest is close. Predictions of severe weather are a cause for worry for lodging mature wheat.

Central

Cooler temperatures the last week of May and first week of June coupled with damp

weather has made grass/clover hay harvest more difficult, but some dry hay continues to be made. Second cutting alfalfa is underway as well. Heavy localized rains (especially to the north) on June 1st caused localized flooding and drowned corn and soybeans in low, poorly drained areas, but overall corn looks very good at this time. Soybean emergence is going well. Disease issues are a concern in fruit with the same combination of temperatures and moisture. Barley harvest is underway. Pastures and crops in the northern areas are in excellent condition with more than double the rainfall of the rest of the area. Other parts of the

region have low subsoil moisture so all crops are depending on intermittent showers for survival.

Northeast

Weather has been dry across the region which has helped hay and small grain harvest. The moderate temperatures (70 to mid-80s during the first week of June) have helped the corn and soybean crop to recover slightly, but moisture is still needed. Wheat harvest is under way in some areas. Second cutting of alfalfa will begin this week.

Southern

Conditions at the beginning of this reporting period were dry, with many fields of corn beginning to curl. Recent rains have helped the situation, but more will be needed soon as corn reaches peak vegetative growth. Corn stands are good to excellent. PSNT testing is winding up. PSNT has been a valuable tool this year in evaluating the need for additional sidedress N. Full season soybean planting is winding up and double crop bean planting is starting after barley harvest. Marestalk control continues to be an issue. Soybean stands also look very good. Barley harvest is well underway with fair to good yields reported. Wheat harvest will begin soon. Wheat condition is only fair.

Upper Eastern Shore

The rain falling outside my window and across the Upper Shore is a welcome sight and hopefully more falls before this is printed. The region has been dry over the past 2 weeks. Barley harvest is almost complete with yields ranging from 50 to 150 bushel per acre with the average in the

southern part of the region around 90 and the upper part of the region reporting yield to be a little higher. Wheat harvest started in many areas of the region with yields also being variable and ranging from 50 to 100 bushel per acre. So far, test weights have been very good, but the rain on dry grain will probably lower that. There is a fair amount of sooty mold showing up in spots that had frost damage, barley yellow dwarf, and spindle streak. The earliest corn is nearing tassel and significant moisture is needed as the spots in fields with lighter soil have been rolling the last few days. Full season beans are off to a good start, however, grasshoppers, stink bugs, and spider mites are starting to show up in significant numbers. Rain could slow spider mites. Barley beans are coming up as there was sufficient moisture for germination/emergence. Hay growth was slowing or nearly stopped with the dry weather.

Lower Eastern Shore

Recent light rainfall provided adequate

topsoil moisture, but subsoil moisture is beginning to be a concern. Several days of bright, brilliant sunshine and windy conditions have contributed to drying. Barley harvest is nearing completion and wheat harvest is expected to start earlier than usual this year. First cutting of hay is complete with average yields reported. Corn is rated good at this time. Soybean plantings have emerged quickly and look good. Disease and insect pressures are light.

Timeline: This crop report is for the field observations from May 31 through June 12, 2012. Crop Report Regions: Western (Garrett, Allegany and Washington), Central (Carroll, Frederick, Howard, Montgomery), Northeast (Cecil, Harford, Baltimore), Southern (Anne Arundel, Prince George's, Calvert, Charles, St. Mary's), Upper Eastern Shore (Kent, Queen Anne's, Talbot, Caroline), Lower Eastern Shore (Dorchester, Wicomico, Worcester, Somerset).

Agriculture Weather Report

Adam Caskey, Meteorologist



The first week of June got off to an unseasonably cool start, but a shift in the weather pattern is expected to push warmer air back into Maryland with above average temperatures anticipated through June 20th. The ensemble computer model guidance is in pretty good agreement for the likelihood of a weather pattern taking effect that should contribute to warmer

conditions, so my confidence is high in this long-range outlook. As for rainfall, it is common for widely separated storms to pop-up late in the day within the type of weather pattern that should take shape along with disturbances embedded within the flow, so rainfall should be near and slightly above average. Basically, I don't see any changes occurring in our rainfall

compared to past weeks, which is good for soil moisture. Lastly, hurricane season officially started on June 1st, and the National Oceanic and Atmospheric Association is predicting a near average season with nine to 15 named storms, of which four to eight will strengthen into a hurricane.

Announcements**2012 Pesticide Container Recycling Program from MDA**

Maryland Department of Agriculture's **Pesticide Container Recycling Program** will be accepting clean, empty containers from June 1 through September 30, during

normal business hours. Containers will be collected from their current owners, for safe disposal and recycling.

Containers must be cleaned (triple-rinsed or pressure-rinsed) according to label directions.

Please remember to remove lids and label booklets from the containers prior to drop-off.

Call 410-841-5710 for hours of operation and drop-off location instructions. Collection dates and venues can be found at this link, <http://www.mda.state.md.us/pdf/recycle.pdf>

MDA Cover Crop Program Sign-Up Runs June 21 – July 16



This year, Maryland has earmarked approximately \$18 million for the cover crop program. This program provides grants to farmers who plant cover crops in their fields in the fall to conserve nutrients, reduce soil erosion and protect water quality in the Chesapeake Bay and its tributaries. Farmers may sign up for this year's cover crop program by visiting their local soil conservation district office between June 21 and July 16, 2012.

This year, farmers who plant traditional cover crops receive a base rate of \$45/acre and up to \$55/acre in add-on incentives for using highly valued planting practices. Traditional cover crops may not be harvested, but can be grazed or chopped for livestock forage for on-farm use after becoming well established.

Farmers who want to harvest their cover crops receive \$25/acre plus a \$10/acre bonus if rye is planted as the cover crop. Farmers may fill out one application to enroll in both program options. There are no enrollment caps and certain restrictions apply.

Cover crops are cereal grains and winter annual brassicas (plants in the cabbage family) that are planted to take up nutrients that remain in the soil following production

of corn, soybean, sorghum, tobacco or vegetables. Barley, canola, rapeseed, kale, rye, ryegrass, spring oats, triticale and wheat planted in the fall of 2012 are eligible. Special incentives are available to farmers who plant rye. Farmers may use seed they have saved, however, all seed used is required to meet Maryland Seed Law and Regulatory Standards and have a minimum germination rate of 80 percent.

Farmers should visit their local soil conservation district office during the June 21 – July 16, 2012 enrollment period. Additional information is available on http://www.mda.state.md.us/resource_conservation/financial_assistance/cover_crop/index.php

Maryland 4-H, Grains for Youth



Donate Grain! Make a Difference!

By donating grain, farmers provide opportunities for youth across Maryland and can save on self-employment tax, federal income tax, and state income tax.

How Do I Donate Grain?

1. Deliver the grain to one of the participating grain elevators.
2. Indicate how many bushels are for the Maryland 4-H program, making the Maryland 4-H Foundation the owner of those bushels.
3. Sign donation form, approving the grain donation and amount donated.

4. Grain will be sold at the current day's price and credited towards Maryland 4-H Foundation account.
5. The donating farmer will receive a tax deductible donation receipt from Maryland 4-H Foundation once payment has been received from the grain elevator.

For complete details:
www.mymaryland4hfoundation.com or call 301-314-7835

Participating Grain Elevators
Hostetter Grain, Inc.
(www.hostettergrain.com) & Nagel Farm Service (www.nagelgrain.com)

Hostetter Grain
9819 Kelly Rd
Walkersville, MD 21793

Hostetter Grain
481 Limestone Rd. Oxford, PA 19363

Nagel Farm Service
14209 Old Wye Mills Rd
Wye Mills, MD 21679

Nagel Farm Service
11761 Cordova Rd
Cordova, MD 21625

Nagel Farm Service
6202 Nagel Rd
Preston, MD 21655

Nagel Farm Service
3695 Maple Ave
Preston, MD 21655

Upcoming Events

2012 AGsploration Summer Programs

2012 Dates and locations include:

- Tuesday, June 19th- Baltimore County Extension Office, Cockeysville, MD
- Thursday, June 21st- Queen Anne's County 4-H Park, Centreville, MD
- Tuesday, June 26th- Washington County Extension Office, Boonsboro, MD
- Tuesday, July 24th- Thendara 4-H Camp Center, Hurlock, MD (Dorchester County)
- Thursday, July 26th- Montgomery County Extension Office, Derwood, MD
- Thursday, August 2nd- Maryland 4-H Center, College Park, MD (Prince George's County)

Registration cost is only \$15 for each participant and is limited to the first 50 youth at each site. The AGsploraiton program includes lunch, snacks, transportation to field trips, t-shirt and educational programming.

For additional information, please contact: April Hall Barczewski by phone at 410-996-5280 or 410-996-8134 or by e-mail at adhall@umd.edu

Equine Trailering 101- Short Course on June 27th

UME lower eastern shore is offering an equine workshop called - Trailering 101 Short Course.



This meeting will discuss pre-trip safety checks for truck and trailer along with vaccinations, health concerns while on the road and state regulations to be aware of when traveling. This training will be held on June 27, 2012 from 6-8pm at Layfield Veterinary Service. It will be a hands on

meeting with Q&A sessions. Contact Jessie Renshaw jrenshaw@umd.edu or 410-632-1972 to register for the workshop.

On-farm Small Flock Field Day & Educational Seminar

On-farm small flock seminar will be held on June 27th at 6:00 p.m at Albright Farms, 15630 Old York Rd. Monkton, MD. This event is sponsored by Central MD Poultry Producers Group & Future Harvest CASA. Please call 410.329.3269 or 410-549-7878 to register. For additional information about the field day — please access the website at www.futureharvestcasa.org

Potato Field day Twilight Meeting on July 10th.

University of Maryland Extension will conduct a Potato Field Day Twilight Meeting on Tuesday, July 10th from 4 - 7 pm. Come, see and



feel new potato varieties of both table stock and processing tubers in varying colors of purple, red, and yellow. The event will take place at the field near Mardela High School, Delmar Road (about a mile off of Route 50) near Salisbury. Signs will be posted on adjoining roads.

Anyone who is growing potatoes or interested in growing potatoes should attend this meeting.

Participants will learn about new varieties, agronomic practices for optimizing yield and quality, Colorado potato beetle and other potato insects, and disease management for potato production in Maryland and Delmarva Peninsula.

Register by July 6th. Contact Rhonda Barnhart at 410-228-8800 or rbarnhar@umd.edu for registration, details and directions.

SIGN-UP TO RECEIVE “AGRONOMY NEWS”

If you would like to receive this newsletter via email please contact Rhonda Barnhart at rbarnhar@umd.edu. The subject line should be: Subscribe Agronomy News 2012.

If you would like a hard copy please contact your local county extension office to sign-up for the mailing list. The list of local county offices can be found at www.extension.umd.edu.



Did You Know

In 2010, America's corn farmers produced a 12.4 billion bushel crop, that's enough corn to fill bushel baskets that could circle the globe 127 times.

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Agronomy News is published by University of Maryland Extension, Ag & Natural Resources Profitability Impact Team.

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