

Liquid vs Dry Fertilizer

[BigIron](#)

Posted 9/21/2006 20:28 (#45519)

Subject: liquid fertilizer vs dry

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Has anyone got research on the benefits of liquid vs dry fertilizer? Say MAP/DAP vs 10-34-0?

[pat-michigan](#)

Posted 9/21/2006 22:27 (#45580 - in reply to #45519)

Subject: RE: liquid fertilizer vs dry

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We went to liquid fert in 1980 for an excellent reason - the roof on the dry fert storage building (the barn) went bad. Agronomically, I've never saw any research here that shows an advantage from one over the other. Micro's are more expensive and some less effective with liquids. At the time we switched, handling liquids was so much easier than dry. There are some much improved dry set ups for planters now. We feel that we can still handle liquids a lot more economically, so probably won't change anytime soon. Another thing to maybe consider- we get by just fine broadcasting potash every 2 or 3 years. I have some friends who have some pretty big K deficiencies and no-till. Long story short, they're sticking with dry for now. They're getting a big bang for the buck putting potash in a band type setup when they plant.

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[Bill Moyer](#)

Posted 9/21/2006 23:45 (#45601 - in reply to #45580)

Subject: RE: liquid fertilizer vs dry

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Coldwater, Michigan
Pat,

I've just been doing a lot of web research on different Starter Fertilizer trials throughout the US and Canada mostly. I believe it is Ruetgers(New Jersey), or it was Penn State;

stated that in dry years their liquid trials tend to out due the dry trials. Of course they went into the H2O in liquid wasn't that much when you look at total H2O in an Acre of soil, but that in spite of that the liquid still did better in dry years. Other than that most researchers flatly state " a pound of p is a pound of p no matter how you pee it", otherwise they don't feel as though there is a difference in performance between a dry nutrient and a liquid one, they are the same.

When I ran the Sohigro, and later the Terra retail outlets, a customer would come in to ask about liquid or dry. As a fertilizer manager, I would explain liquids are more convenient, but are more expensive per unit of plant food. Dry's are not as convenient, they rust your equipment, but they are cheaper per unit of plant food.

In the long run most have chosen the liquids because they are more convenient, they are easier. Easier handling, and convenience are worth something. Not rusting out your planter boxes, frame, truck bed, frame of truck , or gravity wagon, auger, are worth something in dollars and cents, besides the peace of mind from handling, etc.

One result I did not expect when I started my Starter Fertilizer trials 15 years ago was to see any difference in dry vs liquid. The liquid of choice was usually some version of 10-34-0, or variations of it with sulfur, 28%, etc. The dry choices were usually 18-46-0, or some blended DAP with potash, maybe some sulfur, etc. Most often 15 gallons of 10-34-0 (roughly 16-52-0) 2"x 2" vs 100# of 18-46-0 (18-46-0) 2" x 2" . I tried to keep the nitrogen rates as near the same as was easily possible. In this case it brought the total nutrient content close to being the same, in the same placement.

When I was doing the trials for NAS Solutions in Michigan. I made 89 comparisons within the plots that were strictly 10-34-0 at 15 gallons/acre and some form of dry starter (at average of 155#/ acre). Sometimes the dry treatments ran as high as 225#/acre depending on the analysis. Anyway, with 89 replications, or plots, dry vs liquid, the 10-34-0 averaged - 140.7 BPA, the dry treatment averaged 132.6 BPA. Understand these were Standard 2" x 2" placement. These plots were usually replicated 3-4 times at each location/year. The data isn't perfect, but it is reasonably accurate.

If someone was going to ask me today, I would give all of the above mentioned goodies, and then I would talk probable yield increase. It should be noted: the yield increase was not as good when 10-34-0 was placed with the seed at 5 gallons/ acre. And there were treatments that were considerably better in that time frame. As much as \$9.73/acre better than the 10-34-0 @ 15 gallons 2" x 2".

I would go for the liquid, most people will be glad they did. When I go to Indiana with my data comparing dry starters, I usually get told "Nobody uses them anymore".

Bill Moyer, Dir
LFB Solutions, Inc

[Ed Winkle](#)

Posted 9/22/2006 16:36 (#45781 - in reply to #45580)

Subject: Re: liquid fertilizer vs dry

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Martinsville, Ohio Pull a shallow soil test when you pull your 8 inch sample and you will find the deficiency and if not it is tied up. Use something to buffer 100 lbs. of 0-0-60 and you will usually fix the deficiency. Hog manure is a good one but anything to buffer the pH of the muriate of potash.

[pat-michigan](#)

Posted 9/22/2006 19:49 (#45820 - in reply to #45781)

Subject: Re: liquid fertilizer vs dry

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Hi Bill and Ed

Bill, I've seen research that suggests yield improvements liquid vs dry- but I don't think they were as thorough as your plots. I personally have no fond memories of dealing with dry at planting time. Auger breakage, nose bleeds, running for tarps, stones wedged in the planter augers, high Mn and Zn starters set up in high humidities. Nope, can't say as I miss that. Bill, you probably knew the local Sohigro guy here. Old Dunk Volk probably converted more guys to liquid than anyone I know of in Michigan. I always got a kick out of him when we first went to liquid. We didn't know if we wanted 10-34-00 or 8-25-3. He'd pound his fist on the table and almost yell about how he was POSITIVE that we'd get a response from the K if we went to 8-25-3. Then he'd start to pound with the other fist that he'd never actually saw an advantage. Ever. But by golly, he still liked it. On the other hand, I don't remember anyone up here ever using just DAP or MAP on the planter. Along with micro's, a little K almost always paid.

For my definitely unscientific example- I have 2 neighbors who are pretty intense with anything farming related. Try to beat each other to the field in the spring, zero weeds in the fields, etc. One was dry, one liquid. The dry guy told me a few years ago that they were planting the same varieties the same days next to each other doing some plots. They were doing this yearly with whatever crop it was they were planting in those fields that year. The dry guy said that almost always the liquid starter had earlier emergence. How much quicker, I don't know. An hour difference is a pretty big deal to these 2. The dry guy is now liquid anyway. He thought that corn was the biggest difference, but thought

that some years sugar beets were coming up better with liquid starter. I don't know, just telling you what these guys think they saw.

Back to economics- I can't store dry fert's as cheap as I can liquids. Even though I'm in the midst of building a liquid containment, I think it's still cheaper storage vs dry. At one time, dry storage would have been beneficial to me just because I could store dry beans in the building short term. As we don't raise those anymore, it's a moot point. We've never been able to justify NH₃ storage, and now I don't even know if we could build ammonia storage if we wanted to because of liability and insurance. As far as economics between dry and liquids, I don't think that the spread for us is very far apart based on nutrient value anymore based on cost to store and (for N) cost to apply. My cost to sidedress 28% N is so far below NH₃, I just don't see us ever going back to ammonia. But that's off the original topic.

I try not to bring up the starter on the planter topic anymore anywhere, too controversial in some circles- but you did bring it up so I'll comment! My theory is that the number one reason some have struggled with no-till in the corn belt is because of inappropriate fertilizer application methods. You and I are accustomed to and comfortable with a 2 x 2 (or a variation) of starter placement. We've been putting starter on with the planters up here since the late 40's or earlier. Every now and then, some up here trend away from doing that. The mass exodus to 22" rows was the last time it happened big here. And everybody got along fine for 2 or 3 years. Most got bit, some pretty badly. And then the pint is the same as a ton salesman came through, and some got bit big again. Anyway, I think that there's way too much \$ and time getting spent to apply fertilizer inefficiently in no-till situations with too many mixed results. I guess I just can't see what the huge resistance is out there to putting fert on when planting. This paragraph may bring a lot of people here posting a lot of reasons why it can't be done, but I've probably heard all of them already. I'm not a fertilizer expert by any means. All my kids are teenagers or older, so if you ask them I really don't know much of anything LOL. All I try to do is raise as many cheap bushels or pounds of stuff that I can, and in my mind no-tilling (especially) requires that a good share of the N requirement and most of the needed major nutrients need to be pretty close to the seed. There, now everybody go ahead and take a shot at me.

Ed- The 2 guys I referred to each have different situations than I do. The first guy has expanded fairly dramatically the last 15 years. Most of his "new" ground is rented from small dairy farmers when they retire. The rotations have been 10 or 15 years of alfalfa, followed by some silage corn. Then back to alfalfa. The only fertilizer applied on some of the farms has been what the cows pooped out. That's been the deal for many years on some of the farms. Now I'm a big fan of manure, but I think it's asking too much on some of those farms. He's been pretty successful banding K as well as broadcasting if he has to. Most of the ground is in the way of development, so a build up program is out of the question on most of the stuff. Most of the ground in that area is just over neutral.

Guy #2 has acquired land from some relatives who were in a wheat/dry bean/ sugar beet rotation. The relatives were infatuated with 8-32-16 dry fert. Used it on everything. In fact, I sold them fertilizer at one time. Didn't matter to them what the soil tests or removal rates of each crop were. That's what they wanted. And I can't say it didn't work. The old boys are heading to Florida every winter right after they close deer camp up. They're

pretty happy, so it must have worked. But the new guy is planting a lot of high K use crops now, so he's in a building mode. Broadcast in the fall, plus with the planter. Seems to be working for him OK. All his ground is 7.2 pH+, some of it approaching 8.

[Bill Moyer](#)

Posted 9/23/2006 07:08 (#45932 - in reply to #45820)



Subject: Re: liquid fertilizer vs dry

Coldwater, Michigan
Good points, Pat,
I also know about the pint is a ton salesmen. That's what my opinion of too many of NACHURS salesmen was. I was originally with ALPINE PLANT FOODS - Canadian division, before they married NACHURS. At the marriage I inherited the NACHURS Salespeople as well. It blew me away that some were still promoting the "this is all you need" program.

I will agree that some people could use it for quite a while before needing more, but certainly not the case with most! I have had much success with using the premium starters as a "starter" product only. You still need an overall good fertility program. That may mean to broadcast the difference, or to band beside the row. No-till presents some different issues as far as what needs to happen.

Some of the big resistance to carrying fertilizer on the planter has to do with slowing the planter down by having to refill all the time. That's where seed-placed starters shine. They get the plant off to an excellent start with a better root system, so that the plant can take better advantage of the fertility in the soil, and don't slow the planter down much for refill. We keep hearing about depletion of fertility with the seed placed starters. Same thing happens with depletion if all you are doing is using 50/50 10-34-0/28% at 8 to 15 gallons. You need to make up the difference somewhere. That may mean broadcasting the difference, or some other method.

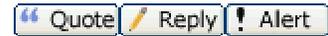
If acres per hour are important- use seed placed starters with some other form of fertility to complete the program. A number of things work!

Bill Moyer, Dir
LFB Solutions, Inc

[Hay Wilson in TX](#)

Posted 9/23/2006 09:03 (#45951 - in reply to #45932)

Subject: the pint is a ton - crowd



Little River, TX They have an easy time in our high to excessively high CEC soils, if the early growers had applied enough P & K. These clay soils are slow to show improved or depletion. This allows normal yields for some years after stopping applying fertilizers.

I can raise grass hay for 4 years before noticing a drop in production from a lack of nitrogen. This farm produced cotton and alfalfa for maybe 100 years before potash showed a positive crop response. I was in a fools paradise for 50 years, slightly confused for another 15 years and a strong advocate of potash the last 15 years. When my time has run its course this farm will be as fertile as it was found in the late 1890's.

[pat-michigan](#)

Posted 9/23/2006 10:30 (#45973 - in reply to #45932)

Subject: Re: liquid fertilizer vs dry



Bill, I'm familiar with the Alpine product. My opinion has always been that its a very high quality product. Outside of some company people, I've only really talked to a couple of sales people long ago. I like to think that mt BS sensors are set on high, they didn't go off talking to those folks at all. I won't say that with some other fert sales people, and I'll just leave that alone.

The extra time it takes to fill is always the first thing brought up. I'll admit that our planting operation requires 2 people. But then, it always has. We've been able to match our fertilizer capacity to the seed capacity, so we fill the fert and the seed at the same time. Our goal is to fill seed and fert in under 10 minutes per stop. Not always doable, but thats what we shoot for. For corn, I'm applying 32 to 35 gpa of stuff. Soys are down around 8-12 gpa, so tha gets filled every third seed fill or so. My limiting factor is seed carrying capacity, not fert. We start the fert pump, start filling seed, and usually I have time for a 2 or 3 minute walk around before the fert's done filling after the seeds in. My dad stays busy enough between fills moving trucks, getting seed, and checking the planter operation. Nothing magic here, just that the fert deal doesn't have to be excessively slow.

Economically, cutting a trip out of the operation by planting and fertilizing makes sense. Agonomically, I still stand by my no-till failure comment in another post. For corn, I believe that a MINIMUM of 25# of N needs to go on at planting. I've applied as much as 150# at planting, but have since backed off to 65#. May as well throw some starter in the mix as long as you're making the effort. I know some folks who've had long term success

with either 10-34-00 beside the row, or a starter on top of the seed like you suggest, Bill. My point is that I believe pretty strongly that in a lot of cases, the most profitable thing to do is combine the 2 trips. As I said before, my job isn't necessarily to cover x number of acres per day, its to grow a cheap bu. or # of something. If covering lots of acres per day is the number 1 goal, all a guy has to do is lower his seeding rate. I mean heck, if 200 acres a day is the limit dropping 32K seeds/acre, think about the bragging rights that go along with only dropping 10K seeds/acre! And at that seeding rate, 8 or 10 mph should be very achievable with a planter. But I'll bet that no one does that. I know thats an extreme example, but the concept is the same to me by not looking at the fertiler side of things when planting. Might not be applicable everywhere, but I think it needs to be looked at in a lot of situations.

There a very, very sharp lad north of me who's always been an early adopter of technology, as is his dad. His rotation is 2/3 soy, 1/3 wheat. He went from a pair of 750 Deeres to a Yielder drill a few years back. The new drill was setup to split fert at different depths and locations to the seed. He felt he could get enough of a yield increase by placing fert a little more accurately. He was almost shocked at the response he got, especially in wheat. He won't go to the field with the drill without starter now. His multi year plot work shows that they're leaving too many bu. on the table by broadcasting all the fert. And his dad hated the thought of dragging another truck to the field at planting time. Doesn't mind it now, even though he has to drag more trucks to the field at harvest. Thats a good thing.

Hay, I'm always intersted in your posts about high pH and fert. We have some on the higher side, but nothing like yours. We don't have a real high CEC however- 10-12 catches a lot of it. And the OM is on the low side. No-till is kind of reversing the OM thing, but not as fast as I'd like. Most of our farm is old lakebed soils. Your area sounds like it would have been tough to sell fertilizer in for a lot of years! We've been planting a lot of high fert use crops for many years here, potash application has been fairly common as long as I can remember. P has been over applied for as long as I can remember, also. But a little of that close to the seed in the spring still helps the crop get going it seems like.

Enough about all of that- my response to the original post is that I like liquids better than dry. If that matters to anyone. Sounds like Bill has the data to back up my opinion, so I don't have to look for anything to back it up!

[Bill Moyer](#)

Posted 9/23/2006 14:45 (#46057 - in reply to #45973)

Subject: Re: liquid fertilizer vs dry

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Coldwater, Michigan

Pat,

I can find myself in total agreement with you concerning treating of No-till at planting time. There is a need, particularly in No-Till, to get some extra nitrogen in there whether or not somebody does that with conventional till. Also, if there is a need for extra P, it can easily be accomadated at the time the N is being added. Of course, where have we ever seen excessive P levels? Ha!

The argument advanced for the slowing down to fill is just some of what I hear in parts of the thumb, or when in parts of Illinois. No-Till to be successful usually requires a bit more attention to the planting operation than maybe necessary for conventional planting. That has a lot to do with doing your tillage and planting at the same time.

The experience with the wheat drill doesn't surprise me a bit. Wheat is very responsive to seed applied P, or if you will a little more precision placement of nutrients. Somehow broadcast just doesn't quite get there. Particularly in the past, wheat was a cash flow crop. No body spent any time on it because it wasn't particularly a money maker. Blend wheat and fertilizer together Broadcast it, disk it in. Quick, easy, reasonable yield. The guys today looking for the high yield wheat sure don't do it that way.

Pat what part of Michigan are you in? I'm in Coldwater.

Bill Moyer, Dir
LFB Solutions, Inc

[pat-michigan](#)

 **Posted** 9/23/2006 16:44 (#46083 - in reply to #46057)

Subject: Re: liquid fertilizer vs dry

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I'm not far from Caro. After re-reading some of my previous posts, I realize I sound a bit preachy, even to the point of being a smart a###. Not my intention at all. I was involved with a small group of no-tillers at one time from Mich. and Ontario. Lots of commanality between both areas as far as challenges go. Eventually, some guys were attending from N. Ohio and Ind. I always looked forward to meeting once a year with everyone, it was always very educational. And there was a bit of fun to be had after the meetings also, believe it or not. Anyway, the fertilizer issues were addressed almost every year. Planting and fertilizing at the same time was a very common occurance between Mich and Ontario, not so much the other 2 areas. I do keep in touch with many from that group, and from what I can tell the ones who are trying to at least get some N on when planting seem happy with no-till. Some are putting more than that on when planting, some have thrown in the towel and went back to tillage. Theres lots of ways to skin the cat depending on a

growers unique conditions, but I do believe that paying attention to how fertilizer gets used is a pretty important component of the equation.

[Bill Moyer](#)

Posted 9/23/2006 17:28 (#46090 - in reply to #46083)

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Subject: Re: liquid fertilizer vs dry

Coldwater, Michigan Rode to the St Louis NT conference last winter with some of the guys from the Canadian no-tillers. I'll bet you would have recognized a couple of the old timers. A couple of them talked about getting together with the Michigan, Ohio, Indiana group in the past.

Caro, been there a few times. Last time I was there I was on my hands and knees looking at sugarbeets! Years ago I was at JD Days (Latham's I believe) with some parts for seedplaced starter hung on a 750 drill in the shop. Had a yellow tank hung on the back with a bracket for mounting it. Had a good time.

I'm the guilty one who started the Coop on ALPINE Years ago. John Schulz and I got together with Wes Edington, and decided to do it.

One last fertilizer comment on this: A lot of no-tillers have found sulfur to be a real positive thing with their 28%. Actually, in those plots I have been doing, it has given very good responses even in conventional tillage.

Take care. I've enjoyed the posting back and forth on this!

Bill Moyer, Dir
LFB Solutions, Inc

[SteveOH](#)

Posted 9/23/2006 18:48 (#46111 - in reply to #46090)

Subject: Re: liquid fertilizer vs dry

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You fellows have had a good discussion here and am looking to set up a dedicated notill planter this winter because I feel the compromises necessary to do both notill and conventional have allowed notill to be less successful then i hope is possible. Am starting with a cyclo planter with factory liquid setup and was heading to directing that in the row. Now this discussion leads me to think i should alsofigure a method to side dress. Please continue on with what you would specifically recommend. Thanks

[jackND](#)

Posted 9/23/2006 20:17 (#46130 - in reply to #46111)

Subject: Re: liquid fertilizer vs dry



Very interesting thread. Last winter we set up a JD 1560 notil drill and a JD7200 corn planter(notil) to apply liquid starter. After getting good advice from Bill and a few others we went with Blumharts out of Ashley NoDak to use their manafold system etc. Applying 4-5 gal. of 10-34 as a starter (in row) on wht and corn really showed impressive results in our unscientific trials. We applied 28-0-0 on the wht preplant to meet N needs and banded 2x2 & 2x3 (depending on lbs needed) dry fert on the corn. Even though we had an extremely dry and hot summer, the advantages of no-til and proper fert. levels and placement far surpassed the yields we had using some conventional farming methods. I even sold Dad and brother on doing more notil and believe me that's not an easy thing to do.

[Jim](#)

Posted 9/24/2006 00:51 (#46204 - in reply to #46130)

Subject: Re: liquid fertilizer vs dry - and anhydrous



This is an interesting thread. It does point out the differences in practices by location. In eastern ND strip till is really taking hold and showing good results even in a tough year like this one. In western ND with a much drier climate, more rocks and shorter season than even the eastern part of the same state, I have been convinced by customers that they have to do their planting and fertilization in one pass.

Another approach to the "one pass" system is to apply anhydrous ammonia with a standard JD or Kinze corn planter. We have a couple customers who are having good results applying both NH₃ and 10-34-0 at the same time with the planter using our Dawn 3004 fertilizer coulters. The 10-34-0 can be split to put 5-6 gal in furrow and the balance of the P requirement down about 4" to the side and 4-5" below the surface using same tube with the NH₃ (two 3/8" hoses spaced apart into the same 1.5" 304 stainless tube, the NH₃ tube slightly longer than the 10-34-0 tube). Edible beans respond well to the nh₃ as I recall and it is a lot less stuff to haul than say 28% dry would probably be a second choice to nh₃.

There are a lot of air carts in this area also so some use their air cart pulled behind the planter to apply all fertility at planting time as dry 3-4" to the side and 4-5" deep with the 3004. With the acres they cover and the expected corn yields (100-150 bu/a) they feel they have to do it in one pass.

In general I think liquid vs dry and one pass vs two or more also depends on your soils and many other factors. In sandy soils the liquid may disappear quickly. Dry can be encapsulated for slow release and a mix of normal and slow release used...lots of factors to consider and really probably no one answer. As much as I personally dislike using nh₃, there are some places where it has some things going for it and should be part of the discussion. jmho.

Jim at Dawn

