Cornell Cooperative Extension
South Central NY Dairy and Field Crops Program
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DAIRY & FIELD CROPS DIGEST
March/April 2026

What are this year's tax changes and how will they impact farm families? Extension breaks down changes introduced by the One Big Beautiful Bill.

By: Kelly McAdam, EA, Food & Agriculture Program Team Leader and Mike Sciabarrasi, Extension Professor and Specialist Emeritus

January 2026

In July of 2025, Congress passed legislation called the One Big Beautiful Bill Act (OBBB) that extends previous tax provisions and makes some additional changes. Some of these changes took effect in tax year 2025 and will be used this tax season when filing your return. Several other provisions will not take effect until the 2026 tax year.

When meeting with your financial or tax advisor, be sure to note when OBBB provisions will be taking effect. Below is a brief summary of key OBBB tax provisions that will likely have an impact on the returns of many farm families in New Hampshire.

Impact on Taxes for the Individual
In tax year 2025, the **standard deduction** increases to $15,750 for single individuals and $31,500 for those married filing jointly.

Starting in 2025, there is an additional tax deduction of $6,000 for taxpayers 65 and older. This is a temporary deduction that is in effect only for tax years 2025 to 2028. This $6,000 increase in the standard deduction starts to phase-out (or be reduced) for single, filing taxpayers who have reached a taxable income of $75,000 and for married, filing jointly taxpayers with a taxable income of $150,000.

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Also new for tax years 2025 to 2028 is a deduction for **interest paid on a personal vehicle purchase**. The vehicle purchased must be a new vehicle with final assembly in the United States, used for personal purposes and secured with a loan. The maximum deduction is $10,000 per year and only can be used for a new vehicle purchase, not for a vehicle lease.
The **state and local tax deduction** is used to reduce federal income tax owed by the amount a taxpayer pays state and local taxes, including property taxes on a personal residence. This deduction is only available for qualified taxpayers who itemize their deductions. Starting with the 2025 tax year, eligible married taxpayers filing jointly can deduct up to $40,000 in state and local taxes paid, this is an increase from $10,000. While most taxpayers do not have enough deductions to itemize, this temporary increase combined with other deductions may make it worthwhile for some taxpayers to itemize deductions.

For taxpayers who make **charitable contributions** and do not itemize their deductions, a permanent deduction is available starting in 2026. Single taxpayers can deduct up to $1,000 in qualifying donations. Individuals who are married filing jointly can deduct up to $2,000 in qualifying donations.

The donations must be a cash donation made to a public charity. See https://www.irs.gov/charities-non-profits/charitable-organizations/public-charities for more information on what qualifies as a public charity. You will need documentation to substantiate your contribution, which depends on the amount donated. See https://www.irs.gov/pub/irs-pdf/p526.pdf for details on substantiation requirements.

For farm families with college-bound children who plan to apply for **federal student aid (FAFSA)**, farm and small business net worth will no longer be required as part of the application starting with the 2026-2027 school year. To qualify, the farm must be an income-producing farm, and the farm family must live on the farm property. This provision also applies to family-owned businesses with 100 or fewer full-time employees, and commercial fishing businesses owned or controlled by a family. This change makes more families eligible for federal financial aid.

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South Central NY Dairy and Field Crops Program

We are pleased to provide you with this information as part of the Cooperative Extension Dairy and Field Crops Program serving Broome, Cayuga, Cortland, Chemung, Tioga and Tompkins Counties. **Anytime we may be of assistance to you, please do not hesitate to call.** Visit our website: http://scnydfc.cce.cornell.edu and find us on social media! Facebook, YouTube, & Twitter!

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Impacts on Agriculture Businesses

There are several significant business provisions, some will impact farms only in certain circumstances.

The **deduction for qualified overtime**, which is in effect for tax years 2025 to 2028, benefits the individual worker and must be reported on the W-2. Agriculture workers are generally exempt from overtime. However, there are many instances where workers on the farm are doing non-agricultural work, such as working in a farm store, cleaning and packing produce, or coordinating on-farm events.

These are non-agriculture jobs in which employers must comply with the Fair Labor Standards Act (FLSA), resulting in overtime pay for any hours worked beyond 40 hours worked in a week.

If you have an employee that is generally an agricultural employee and they work as little as one hour a week on a non-agricultural activity, all hours beyond 40 are considered qualifying for overtime pay even if the remaining hours were agricultural work. Employees who are eligible for overtime are paid one-and-a-half times their hourly rate.

The **elimination of tax on tips** is another significant tax provision included in this legislation. Many of our agricultural business employees do not receive tips, but some do, particularly if you have a food serving establishment. Note that qualifying tips include those received for providing, delivering, or serving of food or beverages for consumption. It is important to report tips on the W-2 Wage Statement so that employees who are eligible can properly take this deduction.

If you **sell farmland to a qualified farmer**, and you have either farmed the property yourself or leased the property to a qualified farmer over the previous ten years, you may elect to spread out the tax payment on the gain of the sale of the property over four years. The property must be under a covenant or other legally enforceable instrument that restricts the use of the property to farming. A copy of the covenant must be included with the tax return and must be kept on file for ten years. This election is available to qualifying farmland sales occurring on or after July 4, 2025.

Direct payments for services that are subject to **1099 reporting** have increased to a minimum threshold of $2,000 beginning in 2026. Keep this in mind when it is time to send 1099's by the January 31 deadline in 2027 for the 2026 tax year. (For 2025 the minimum threshold remained at $600 for direct payments.)

The **qualified business income deduction,** which provides a 20% deduction on business income, has been made permanent. This deduction was set to expire on December 31, 2025. This is a commonly used deduction for pass-through entities which includes sole proprietorships, partnerships, and S Corporations. As you work with your tax preparer, be sure to consider this deduction.

As you prepare for filing your taxes, it is worth reviewing the provisions which changed and those which were extended in 2025. New and extended tax provisions may affect your original tax plans. Working with a qualified tax preparer will likely help you better manage tax liabilities and prove beneficial to your bottom line.

Source: https://extension.unh.edu/blog/2026/01/what-are-years-tax-changes-how-will-they-impact-new-hampshire-farm-families

CattleFax Summary on Beef Capacity Nationwide from CattleCon 2026

By: Betsy Hicks, Area Dairy Management Specialist

I recently was able to attend CattleCon 2026, an annual conference organized by National Cattlemen's Beef Association (NCBA), held this year in Nashville, TN. This conference is an incredible gathering of people in the cattle industry, indeed both beef and dairy folks alike, numbering over 9,500 people in the three-day event. At the conference, attendees can actively discuss cattle industry policy, watch myriad educational presentations on topics around grazing management, cattle management, risk management and more, and network with thousands of other producers and industry folks at one of the largest trade shows I have ever been to. If you have the opportunity to go, GO!

One of the most interesting talks during the conference was in a general session, and featured the CattleFax Outlook. During this presentation, beef cattle and dairy cattle inventory, commercial cow slaughter, beef and dairy replacement numbers, and beef on dairy inventory were all discussed, along with forecasts for prices for each group. Main points for the talk are summarized below.

- Cattle inventory is at its lowest point since the 1960's, yet beef production has seen a steady increase over the same timeframe. A nod to our country's sustainability story.
- Commercial cow slaughter is down 600k head from 2024 with the majority of that (500k) coming from beef. This is a 30% decline from 2022. 2026 should remain steady, and 2027 should see a slight uptick in slaughter, up 400k from 2026.
- US beef replacement heifers saw a reduction in over 200k head in 2024, and a further reduction of almost 50k in 2025. 2026 may see an increase in over 40K, but 2027 is projected to see a gain in 300k head, hinting at rebuilding of beef herds across the country.
- US beef cow inventory will bottom out in 2026, dropping another 285k head, but rebuilding is projected in 2027 and 2028, of 400k and 500k head added to those respective years.
- US beef calf crop fell to its lowest level in decades at less than 33 million head in 2025, down from 36 million in 2018. This was over 500k drop from 2024. 2026 should remain stead, and projections are for 2027 to see this increase 500k head.
- Dairy revenue per cow the last four years has been especially strong. When broken into "Milk sales" and "Cattle sales", dollars from cattle sales has become increasingly bigger, and has helped to add margin to dairy farms bottom lines.
- Dairy cow inventory continues to climb nationally, with almost 190k head projected to gain in 2026. A slight attrition of 50k head is projected in 2027.
- Beef x dairy influenced fed cattle for slaughter has seen a drastic uptick since 2021. In 2000, a little more than 10% of fed cattle were this type, but from 2021 to 2025, numbers climbed from just over 13% to almost 19% of total fed cattle. Beef x dairy fed cattle will remain a major contributor towards fed slaughter cattle.
- US feeder cattle imports from Mexico, not surprisingly, are down to its lowest level in decades, at just over 200k head in 2025. A big question mark over border openings and the threats of New World Screwworm will impact how much we see imported – projections could see a rise of 500k head, but those are not guaranteed.
- US cattle on feed is projected to be down 475k head in 2026 from 2025. Surprisingly to me, the last big swing in beef prices in 2014 – cattle on feed were about 13 million head then, about 1 million head less than current stocks. Some of this could be due to average days on feed, which has been steadily rising over the past few decades. Longer days on feed translates to slower turnover rate. Carcass weights are also gaining over this time period, averaging over 5 lb per carcass each year.
- US Commercial beef production saw almost a 4% drop in 2025 from 2024. 2026 is projected to also be slightly down, about 0.9%, but 2027 should see a gain of about 4%, to 26.8 billion pounds. Beef imports saw a drastic jump in 2025 of about 20%, and 2026 should see a further 5% increase. 2027 is projected for imports to slow by 10%.
- US Retail Beef Demand & Price has been steadily gaining since 2020. In 2026, USDA All-Fresh Retail Beef price should go over $9, something we have never seen before. Some leveling of this number may occur, but demand for beef remains strong over this increase in price. This is something unique to beef – our pork and poultry industry friends are not experiencing this same demand.
- Record highs are being seen for 550lb steer prices, from $440 - $480 per cwt. Prices for spring calving cows, heifers and pairs are also projected to be records, from $4000 - $4700.

As shared, the Executive Summary:

- ◊ 2026 will be the smallest cyclical cycle and production
- ◊ The cattle herd is beginning the slow expansion phase of the cycle
- ◊ Assumption is that the Mexican border reopens to feeder cattle imports in the spring of 2026
- ◊ Consumers have abundant supplies of meat proteins available, record large!
- ◊ Beef demand has grown for the last 17 years and is now at a 40 year high!
- ◊ Quality grade improvement is what drove demand growth!
- ◊ Cattle cycle is typically 10-11 years long. When it seems "too good to be true", "it probably is"
- ◊ Government policy can influence markets, is unpredictable, and can add volatility.

BE CAREFUL.

What's New for Agronomic Weed Control: 2026

By: Dwight Lingenfelter, Extension Associate, Weed Science, PennState Extension

Below is the annual overview of newer herbicide products. As in the recent past, there are no new herbicide modes of action, but there are a few products with new active ingredients and premixes. Also this year, information on herbicide-resistant crops and an overview of new ESA requirements are highlighted.

Herbicide Updates

Convintro (group 12; Bayer) with the active ingredient diflufenican, is not a new mode of action but is unique to the North American market and cropping systems. It has a bleaching action on weeds and can cause transient crop injury. This injury is evident as white leaves and stems. Bayer plans to initially market it in **corn** and **soybean,** and its primary targets are Palmer and waterhemp and few other broadleaves. It suppresses annual grasses but is weak on ragweed. It will be used PRE with low use rates (≈ 4 fl oz/A) and will be mixed with other products to broaden the weed control spectrum. No EPA approval yet, but possibly soon.

Icafolin-methyl (group 23; Bayer) is a new experimental active ingredient but not a new mode of action; however, it has not been used in major US agronomic crops yet. It has POST, non-selective activity and controls many annual grasses and broadleaves, including Palmer, waterhemp, and annual ryegrass. It will likely be used in **soybean**, **corn**, and other crops and possibly be marketed in the US by 2029.

Liberty Ultra 1.76SL (glufosinate [Liberty]; group 10; BASF) is considered the next generation of Liberty herbicide. It contains L-glufosinate, which is a more active isomer and thus allows for lower use rates. For example, 24 fl oz of Liberty Ultra will be equal to 32 fl oz of Liberty 280 or generic formulations. This improved formulation causes greater spray droplet retention on the weed foliage and provides consistent performance and crop safety. It can be applied to glufosinate-resistant crops. The application timing in **soybean** is from emergence up to early bloom (R1 stage) and from emergence through R6 in **corn**. It is best to include AMS, spray at 15-20 gallons/A, and use nozzles that produce medium to coarse spray droplets and a defoamer. It has EPA approval and is being marketed. When using this product, Endangered Species Act drift and runoff mitigation guidelines must be followed. See below and its label for more information.

NovaGraz (florpyrauxifen (aka Rinskor active) + 2,4-D; group 4; Corteva) will be labeled for use in **grass pastures** and **hayfields** to control or suppress many broadleaf weeds, such as cocklebur, wild carrot, buttercup, biennial thistles, ragweeds, poison hemlock, dandelion, marestail, and others. It's weak on horsenettle, milkweed, dogbane, Canada thistle, and smooth bedstraw. It is safe on forage grasses AND preserves **white clover**. The typical rate is 24 fl oz/A plus MSO. It has no to minimal restrictions: 3-day wait for lactating dairy; others 0-day; 14 days for hay. It received federal registration and is available for sale. (This product was previously referred to as **ProClova**.)

Rapidicil 0.46EC (epyrifenacil; group 14; Valent) is an experimental PPO inhibitor herbicide like Sharpen and has activity on many annual broadleaves and certain grasses; however, it is weak on marestail. It is mobile within the plant and fast-acting with symptoms showing in about 3 days. Currently, it is being tested as a burndown product, but it might be used to control weeds post in Vyconic soybeans, currently in development by Bayer. Rapidicil is still awaiting EPA approval and a possible launch by fall 2026. In North America, Valent has acquired the rights from Sumitomo to market and distribute the herbicide.

Rimisoxafen is being developed by FMC, and they are touting it as a dual mode of action molecule – PDS (group 12) + SDPS (group 32). It will be applied PRE in **corn** and **soybean** and controls primarily broadleaves, particularly targeting Palmer and waterhemp. Possibly marketed by later this decade.

Sonic Boom 3.35SC (metribuzin + sulfentrazone, groups 5, 14; Corteva) simply combines two commonly used active ingredients in **soybean** and a few other crops. Not to be confused with Sonic 70WG, which contains cloransulam and sulfentrazone.

Surtain 1.62ZC (saflufenacil [Sharpen] + pyroxasulfone [Zidua]; groups 14, 15; BASF) is a premix in a novel solid encapsulation formulation technology referred to as ZC. Because of its formulation, Surtain **does NOT have burndown activity** on weeds, so burndown herbicide will need to be added to the program. It can be applied PRE through early POST (V3) in **field corn** (not sweet corn) and is compatible with liquid fertilizer carriers. Surtain will provide residual control of annual grasses and large- and small-seeded broadleaves. A typical use rate is 14 fl oz/A and can be tank-mixed; also, if applying after corn emergence, include only NIS and AMS since COC/MSO and UAN can cause crop injury. Also, if mixed with Liberty/glufosinate, some crop injury can be expected. Surtain is currently registered and being marketed.

Voraxor 3.13SC (saflufenacil [Sharpen] + trifludimoxazin [Tirexor]; group 14; BASF) will primarily be used as a burndown before **corn**, **soybean**, **small grains**, and likely other crops. Voraxor broadens the spectrum of control of Sharpen for better burndown of weeds like chickweed, henbit, and purple deadnettle. It is awaiting federal registration with an anticipated launch in 2026 with limited volumes.

Zidua Plus 3.6SC (BASF) is basically a combination of Zidua and Pursuit. It provides residual and knockdown control of weeds compared to Zidua alone and more application flexibility than Zidua Pro. It can be applied PRE up to V6 in **soybean** only at 6 fl oz/A. It, too, is awaiting federal registration and might be marketed in 2026.

EPA Updates (Endangered Species Act)

To comply with the **Endangered Species Act (ESA)** of 1973, EPA must evaluate the potential effects of pesticides on federally threatened or endangered species and their critical habitats and then recommend mitigation strategies developed in partnership with other federal agencies. Certain mitigation strategies could include: drift reduction adjuvants (DRAs), vegetative filter strips, field borders and grassed waterways, cover cropping, mulching, no- or reduced-tillage strategies. The EPA's recent reregistration of Liberty Ultra provides a preview of what to expect in future labels. Liberty Ultra requires runoff mitigation, including a minimum of three points from the EPA's Mitigation Menu website, as well as consulting the Bulletins Live! website, among other requirements. See product label for full details.

The updated product labels include new application timing requirements designed to reduce runoff, leaching, spray drift, and other off-target impacts on endangered species and their habitats. In addition, the products may not be allowed in certain counties or townships that contain these species. Farmers and land managers should become familiar with the EPA's updated work plan and with how to access important application instructions online through the two websites above. Most importantly, be prepared to incorporate any mitigation strategies required by EPA.

Herbicide-Resistant Crops Update

Below is a brief overview of some of the more prominent crop lines with traits that tolerate or resist herbicides that would normally kill or severely injure them.

Enlist E3 soybean from Corteva has been available for the past several years. E3 varieties will be the dominant soybean platform in our state/region with approximately 75-80% of the acreage. There will be many seed companies selling this platform. One thing to keep in mind as a best management practice and to keep this system as a viable option is to make sure to use effective 2-pass herbicide programs. It is best to use effective residual herbicides at planting and to make timely POST applications (in most cases before soybean flowering) when weeds are less than 6 inches tall. In some parts of the country, herbicide programs are not being used correctly, and weeds are escaping or becoming resistant. Don't let this happen in your fields.

Plenish E3 soybean lines from Corteva are high oleic oil varieties. Since E3 traits have been stacked into these lines, there are more herbicide options for better weed control. Plenish E3 soybeans will be grown and marketed under identity-preserved contract programs and farmers receive premiums from participating processors/elevators such as Perdue. These varieties will mostly be available in southeast PA and Delmarva, but check local options in your area. Since E3 traits have been inserted, herbicide options include glyphosate, Liberty (glufosinate), Enlist One or Duo, plus many other conventional herbicides. Keep in mind that "regular" Plenish varieties will also be available and those are tolerant to glyphosate.

XtendFlex soybean varieties from Bayer are still being sold by certain seed companies. And, at the time of publishing this article (Jan. 2026), dicamba products (XtendiMax, Engenia, Tavium) are still not registered for sale or application. However, there is speculation that this ban might be lifted soon, allowing for dicamba use in the 2026 growing season. Assuming that the ban is lifted, Bayer might use a new dicamba product tradename instead of "XtendiMax" while Engenia (BASF) and Tavium (Syngenta) remain the same.

Vyconic soybeans are being developed by Bayer, and these soybean lines will have many stacked herbicide tolerance traits. These traits will be included in the new Vyconic soybean lines. Currently referred to as HT4, this first platform will have tolerance to glyphosate, Liberty (or glufosinate), dicamba, 2,4-D, and HPPD (namely mesotrione). These are projected to be available in 2027. Later, by 2030 or so, the next generation of Vyconic soybeans, currently referred to as HT5, will include tolerance to various PPO (group 14) herbicides plus all the other previously mentioned traits as well. But these are just projections and exact timelines, and other logistics can change. Once the Vyconic varieties are in place, they will eventually replace the XtendFlex lines.

Enlist corn from Corteva will be available this year and has tolerance to multiple herbicides, including glyphosate, glufosinate (Liberty, others), 2,4-D choline (Enlist One and Duo), and the FOPS such as quizalofop or Assure II. But clethodim-containing products will kill it. So, if these corn varieties volunteer in soybean fields next year, clethodim can be used to control it. Also, other conventional corn herbicides can be used in this system. These varieties will be sold by Pioneer and many other seed companies in their PowerCore and Vorceed product lines.

Editor's note: Since this article was written for Pennsylvania some of the products described are not registered in NYS. You can check for product registration at NYSPAD NY.

Cropping Notes

By: Janice Degni, Regional Field Crops Specialist

A theme that has emerged from topics at winter crop meetings points to the need to ramp up our efforts of stewardship. Stewardship needs to be in the forefront of everyone's crop management. Merriam-Webster Dictionary tells ups that "stewardship" stems from the Old English word stīweard (house guard) and emphasizes proactive care to maintain balance.

Stewardship involves protecting and caring for something responsibly, as in Environmental Stewardship where practices are implement that help protect and preserve the natural environment to allow long term sustainability. Crop producer's strive to care for and protect their soil resource when they use practices to protect from erosion and to improve soil health.

We talk about stewardship in the context of preserving our current crop protectants and management to hold off the development of resistance in the pest populations we seek to control. It's not news that there are few new products brought to market each year and it takes many years and many millions of dollars to develop new products. That's why we need to make use decisions that will extend the usable life span of the current products available to us.

The development of multiple resistance up to five chemical families or modes of actions by our difficult-to-control weeds which currently is focused on marestail and pigweeds is scarey. At what point will the tools no longer be effective?

As a reminder I am printing the stewardship practices outlined by the Take Action Herbicide Resistance Management group**.**

Summary of Key Stewardship Actions
To forestall herbicide resistance, Take Action recommends:

- Rotate herbicides with different sites of action
- Use tank mixes or premixes containing multiple effective MOAs
- Do not repeatedly use the same MOA
- Integrate non‐chemical weed control tools (IWM)
- Scout fields and eliminate escapes promptly
- Maintain long‐term diversity in weed management strategies

These principles collectively help preserve existing herbicide technologies and reduce the spread of resistant weed populations. Source: Take Action

Let's review the A-B-Cs of Integrated Weed Management outlined by Take Action

Farmers successfully use integrated weed management programs across a wide range of situations. It is hard to create a generic "prescription approach" one-size-fits all IWM program because the tactics used are highly dependent on the specific weeds, crops, and field conditions. Understanding the underlying principles of IWM is important to develop strategies for your specific situation.

There is both a science and an art to integrated weed management. The science is outlined in the principles below, which we call the A-B-Cs of weed management. The art is in applying these principles to your specific fields and weeds to create a weed control program that works for you. The principles below are familiar to any crop consultant or Extension agent; use the resources on this page as a starting point to Getting Rid of Weeds in your fields.

A. Know the enemy

- Know what problematic weeds are in your area (e.g., herbicide resistant waterhemp)
- Scout routinely and identify your weeds
- Understand the biology of your weeds

B. Plant into weed-free fields and diversify weed management strategies

- Start clean, plant into a weed-free seedbed
- Methods for starting clean:

- Diversify crop rotation
- Follow herbicide best management practices

A lot needs to happen to make an herbicide kill a weed. It has to get from the jug into the spray mixture and then onto the weed. The right herbicide(s) must be applied at the right rate, spray coverage, timing, and in the right weather. Issues like tank-mix compatibility, spray water quality, adjuvants or surfactants, rainfastness, and others must be addressed. Luckily, herbicide formulations are pretty robust, but we need to do our homework for each application.

1. Select the right herbicide
Make sure the herbicides you choose are effective on the weeds you have at the growth stage the weeds are in. Proper weed identification is essential. Also carefully consider crop tolerance and carryover concerns.

2. **Apply multiple, effective sites of action (SOA) herbicides**
Apply multiple, effective SOA in every application, to the greatest extent possible. For more information go to our page: Mix Effective SOA To Decrease Herbicide Resistance Development.

3. **Respect herbicide labeled rates and apply at specified weed sizes**
Full label rates applied to proper weed sizes deliver effective herbicide doses. Effective doses kill the weeds and protect against herbicide resistance development. Applying reduced herbicide rates or spraying weeds that are too large reduces the effective dose, which decreases weed control and increases the risk of herbicide resistance.

4. **Calibrate your sprayer and select the appropriate nozzles**
To deliver effective doses, a sprayer must be calibrated. Additionally, contact herbicides need adequate coverage to maximize their effectiveness. Coverage requires an adequate volume of water (15 GPA or more is recommended for contact herbicides) and appropriate nozzles. Make sure to follow these label recommendations.

5. **Add the adjuvants**
Make sure to include adjuvants according to the product label, whether it is drift reductions agents (DRA), non-ionic surfactants (NIS), ammonium sulfate (AMS), or other additives. If your spray water needs a water conditioning agent or you are mixing many different products, make sure they are compatible and you follow the correct mixing order.

6. **Respect weather conditions needed for successful applications**
Some herbicides, like Liberty, need the sun out and the temperature up. Others, not so much. Residual herbicides need rainfall to activate them; postemergence herbicides need time to dry before rain (rainfast time). Stresses, such as drought, make weeds more difficult to kill. Make sure to get these right.

7. **Read, understand, and follow the label.**
The label is the law.

GROW
Getting Rid of Weeds Through Integrated Weed Management

The Basics of Herbicide Resistance by Grow
Over the past two decades, herbicide-resistant weeds have increased globally, creating major economic consequences for farmers and pushing both the private and public sectors to find innovative solutions to this crisis. Before widespread resistance, farmers could control problematic weeds relatively easily with herbicides. Roundup Ready and other herbicide-resistant crop technologies helped drive this success. By the mid-2000's, these simple herbicide solutions were quickly becoming ineffective, with several problematic herbicide-resistant weeds spreading onto more farms and into new regions. (Examples of common herbicide resistant weeds across the U.S. are provided in Figure 1.) Multiple approaches to managing resistant weeds were becoming necessary. This led to more herbicide use, the need for tillage or other mechanical options, and a search for more innovative technologies.

In the U.S., most farmers continue to rely on herbicides as the primary approach to managing weeds in major field crops. Not only does this approach cost more per acre than ever before, but each year, successful weed control with herbicides alone becomes less reliable and likely. It is not uncommon for farmers in some crops and regions to make at least three or more herbicide applications per growing season, with multiple products applied at each application timing. Current expert recommendations call for using overlapping residual products in addition to over-the-top or POST applications in corn, soybean, and cotton. The latest herbicide-resistant technologies, which allow POST applications of certain Group 4 herbicides such as 2,4-D and dicamba to soybean and cotton, are already beginning to fail because of regional herbicide-resistance problems emerging.

Cross-resistant and multiple-resistant Palmer amaranth, waterhemp, Italian ryegrass, barnyardgrass, and others are on the rise, and a more ominous resistance mechanism called "metabolic resistance" has been identified in several weed species and for several herbicide groups. You can access Grow's first education module, https://growiwm.org/herbicide-resistance/, that we will cover the Basics of Herbicide Resistance.

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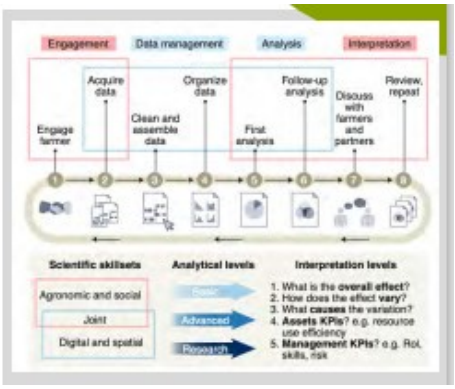
Inside this Issue:

Farmer-centric On-Farm Experimentation Enhanced by Digital Agronomy

Farmer-centric On-Farm Experimentation, or "OFE," is defined as an innovation process that brings agricultural stakeholders together around mutually beneficial experimentation to support farmers' management decisions.

Cornell CALS College of Agriculture and Life Sciences

FARMERS DATALAB



The Concept

Restructuring farmer–researcher relationships and addressing complexity and uncertainty through joint exploration is at the heart of On-Farm Experimentation (OFE). OFE describes new approaches to agricultural research and innovation embedded in real-world farm management and reflects new demands for decentralized and inclusive research that bridges sources of knowledge and fosters open innovation. Digitalization motivates and enables OFE by dramatically increasing scales and complexity when investigating agricultural challenges.

What's in it for Farmers?

Farmers can experiment on their own terms while benefiting from access to science-grade digital agronomy lab capacity in terms of data collection, organization, and interpretation.

Learn More

www.farmersdatalab.org
Contact Dr. Louis Longchamps, ll928@cornell.edu

GOFEN | Paper on OFE | OFE Community

What's in it for Researchers?

Researchers can learn from farmers' OFE data, allowing them to understand better the effects of farm-level context on different tools, practices, and inputs. Farmer□centric OFE is a powerful problem-finding exercise, allowing scientists to better direct their research towards necessary hypotheses.

Farmer-centric OFE is an emerging transdisciplinary research field in agronomy that involves enthusiast farmers and scientists worldwide. To learn more, visit the Global OFE Network website, read the Nature Food publication, and/or sign up for the monthly newsletters distributed by the ISPA OFE Community.