



AgrAbility

Vision Solutions for Farmers

Ned Stoller, ATP
Michigan AgrAbility

Kyle Haney
Georgia AgrAbility

Farm Vision Injuries

- Agriculture, forestry, fishing, and hunting had the highest eye injury or illness rate involving days away from work per 10,00 full-time workers of any sector at a rate of 9.6 in 2018
- A study found that foreign bodies in the eyes account for 80% of the injuries.
- Research indicates that farmworkers experience high rates of itching and blurred vision along with long term effects from UV rays
- Prevention
 - Safety Glasses
 - UV Protection Safety Glasses
 - Welding Helmets and Goggles

Vision Impairments in Older Farmers

- **Age-related macular degeneration**
 - Leading cause of vision loss for older adults
 - Happens when aging causes damage to the macula(part of the retina in the eye that controls sharp and straight-ahead vision)
 - The disease blurs your central vision, which makes it harder to see faces, drive, read, or do things close up.



Vision Impairments in Older Farmers

■ Glaucoma

- Diseases that cause vision loss and blindness by damaging the optic nerve
- Most common type in the US is open-angle glaucoma, which causes loss of peripheral vision, blind spots, and blindness
- Early treatment can stop the damage and protect your vision



Vision Impairments in Older Farmers

■ Cataracts

- A cloudy area in the lens of your eye
- With cataracts colors look faded, can't see well at night, lights seem too bright, a halo around lights, and you see double
- Glasses prescription will change often
- Surgery can get rid of cataracts



Vision Impairments in Older Farmers

■ Diabetic Retinopathy

- Eye condition that can cause vision loss and blindness in people with diabetes
- The blood vessels in the retina start to bleed into the vitreous, which may cause you to see dark floating spots or streaks
- Without treatment, the bleeding can happen again, get worse, or cause scarring



Vision Impairments in Military Veterans

- VA's Office of Blind Rehabilitation Services estimates there are approximately 130,000 Veterans in the United States who are legally blind and more than a million Veterans who have low vision that, causes a loss of ability to perform necessary daily activities.
- Among Veterans who have served in Iraq and Afghanistan, blast-related brain injuries can be followed by vision problems such as blurred vision, double vision, sensitivity to light, and difficulty reading. VA estimates that as many as 64 percent of service members with traumatic brain injuries (TBIs) also have a vision problem.

Vision Impairments in Military Veterans

- Common Impairments
 - Blurred Vision
 - Double Vision
 - Loss of sight
 - Loss of peripheral vision
 - Loss of light perception
 - Loss of eyelids, eyelashes, or eyebrows
- Non-visual symptoms
 - Headaches
 - Dizziness
 - Difficulty navigating through crowded spaces
 - Disorientation

Greg Gieske, Poultry & Vegetables



Sudden loss of vision 10 years ago at age 50. Transitioned from row crops, beef and rabbits to vegetables and poultry. He can see shadows of large objects like trees to help him navigate.

Watering Can for Flats of Plants



When flats of plants are growing on these benches Greg uses the watering cans to water and mix fertilizer. He can control the amount of water for his plants easier that way than a hose.

Stakes and Twine to Lay Out Rows

Greg needs help from his wife to lay out the rows straight with twine.



Pulmi-Pur Dome Sprayer



The Pulmipur sprays undiluted roundup in a very fine mist under the dome. If Greg keeps the weeds small, he can control weeds independently. He sweeps the sprayer side-to-side and has attached a wire on the dome so he can feel when it bumps his taller plants.

<https://www.oescoinc.com/pulmipur-hand-held-cda-ulv-herbicide-sprayer-red.html>



Trellis tomatoes



Greg started taking his tomatoes so he can control weeds and not step on the fruit. He pounds a t-post at each end and wood stakes between every 2 plants. A twine is wrapped around each post and passes on both sides of each plant to cradle the vines and help them grow upward. When the plants grow 10-inches taller he adds another twine.

Trellis tomatoes



It was difficult for Greg to 'criss-cross' the twine between the plants. He now runs twines the full length of the row on either side of the plants. Later he uses plastic zip-ties to fasten the twines together between each plant to provide better support for the vines as they grow.

Trellis tomatoes



Laying hens



Greg can feel the feeders and fill them to the top with a pail of feed and hand scoop. Most of the eggs are laid in the nests so he can gather them by feel. When culling his flock, he carries a chicken crate into the pen and kneels on the floor before he feeds for the day. The curious hens peck at his pocket and shirt sleeves and he catches them and places them in the crate. He also uses a chicken catcher rod as shown.

Meat chickens



Greg uses a powered plucker to remove feathers and then processes the chickens by feel for his customers. His wife does the final shrink-wrap packaging and checks for remaining pin feathers.

Georgia Cattle Farmer



We are working with a cattle farmer who is a Military Veteran and has Post Traumatic Vision Syndrome (PTVS) from his time in the military.

From the PTVS, he experiences the movement of stationary objects, problems sustaining attention, headaches/migraines, and balance issues.

He identified that driving in a straight line in the field and connecting implements were to two biggest challenges around the farm related to PTVS.

GPS Guidance – Georgia Cattle Farmer



- Due to his TBI and resulting PTVS, it is hard for him to keep a straight path in the field, which has caused
 - Reduced crop yields in the field because he was not able to follow rows for harvest
 - Overspray
 - Under spray
 - Fuel waste
- With a GPS for his tractor, he can follow the line on the screen and keep him straight in fields and pastures

Guidance Lines – Georgia Cattle Farmer



- Used high visibility nylon rope to act as guidelines for backing up.
- Rope was hooked to implement and staked into the ground 20 ft away.



Agricultural Cameras – Georgia Cattle Farmer



Agricultural cameras were added to his tractor to give him a view of the back of the tractor and the front-end loader. The camera in the back includes digital guidance lines to make it easier to hook up to equipment. The cameras also allow him to see the implement while using it without turning around and looking. This has helped to reduce dizziness when looking forward and backward.

Bob Berry- Georgia Poultry Breeder



Mr. Berry is a retired Civil Engineer who has always loved chickens. After retiring due to glaucoma, he started a small chicken hatchery with hatching equipment from a pawn shop.

Mr. Berry came to AgrAbility looking for assistance to expand his poultry operation.

Mr. Berry's case was not heavy assistive technology but focused more on worksite modifications.

Bob Berry-Georgia Poultry Breeder



Mr. Berry was limited in growth due to the inability to drive and deliver chicks. The solution was to ship his chicks directly to the customer.

In order to ship chicks, you must be certified by the National Poultry Improvement Program (NPIP).

AgrAbility worked with Mr. Berry to get the necessary paperwork needed for the NPIP certification.

Bob Berry-Georgia Poultry Breeder




AgrAbility also assisted Mr. Berry with writing a business plan that was submitted to Georgia Vocational Rehabilitation Agency (GVRA).

GVRA assisted by funding:

- A computer
- Feed
- Medical Supplies
- Incubators
- Brooder
- Poultry House

Bob Berry-Georgia Poultry Breeder

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Order Day-Old Chicks From Us!

If your objective is raising pasture broilers and early hi-end pasture layers, then you've come to the right place. Order chicks from Bob's Biddies and rest assured that they are healthy and free from diseases.



Bob's Biddies

We would like to introduce you to Bob's Biddies LLC. We are a locally owned and operated chicken hatchery just outside of Ray City, GA. Our farm is certified by the National Poultry Improvement Program (NPIP), and our motto is "backyard-grown and backyard-hatched." All our day-old chicks are just like what your grandparents used to raise with all-natural feed.

We have incorporated the use of non-GMO feed that is used for all our parent stock. That means that we are chemical and additive free, all natural, so our birds are healthier and happier.

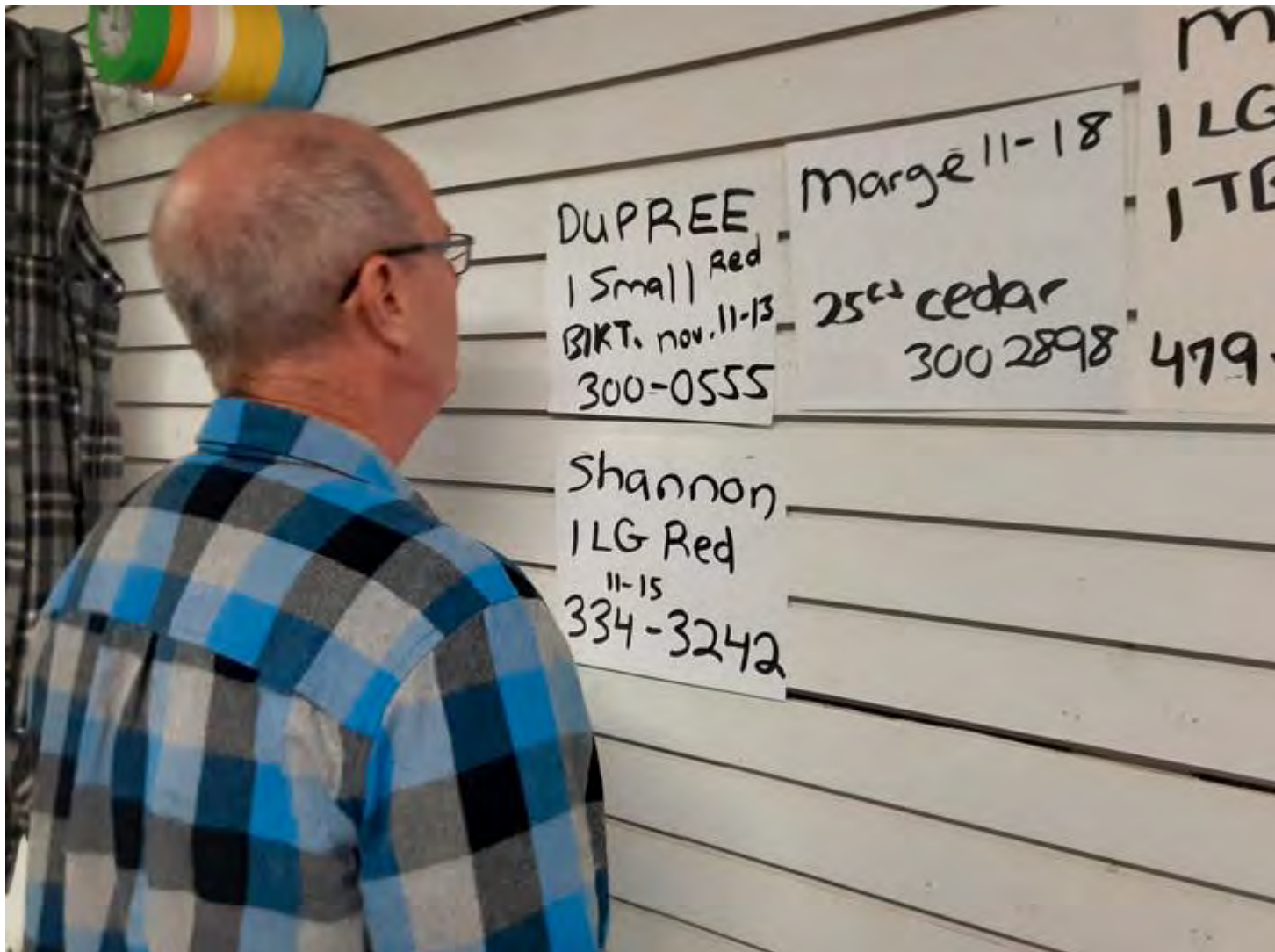
For all of you 4-H and FFA kids out there, several of our breeds have taken blue ribbons in past years; one of our very own Dominique's took Grand Champion at the National Poultry Show in 2016 by one of our regular customers.

Michigan Farm Market



James lost his vision from a stroke in the optic nerve 3 years ago. He is attempting to continue his farm market, but he has a lot of frustrations. He is simplifying his pricing to include sales tax and have no cents, so it is easier to operate the cash register.

Michigan Farm Market



James uses large print, high-contrast notes to keep track of customer orders.

Michigan Farm Market

One of his biggest challenges is seeing the credit card machine. He uses an Eschenbach Visolux Digital portable magnifier to help.



Michigan Farm Market



He has an Acrobat HD desktop magnifier to help see seeds to plant flats of vegetables. Selling plants is one of his best income sources.

Michigan Farm Market

<https://www.maxiaids.com/vox-2-talking-kitchen-scale>

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A talking scale enables James to weigh bulk seeds into smaller packages for resale.

Michigan Raspberry Farm



Brian uses a white cane to prevent tripping. He counts his steps to navigate from his house across the road. His road is only lightly travelled.

Michigan Raspberry Farm



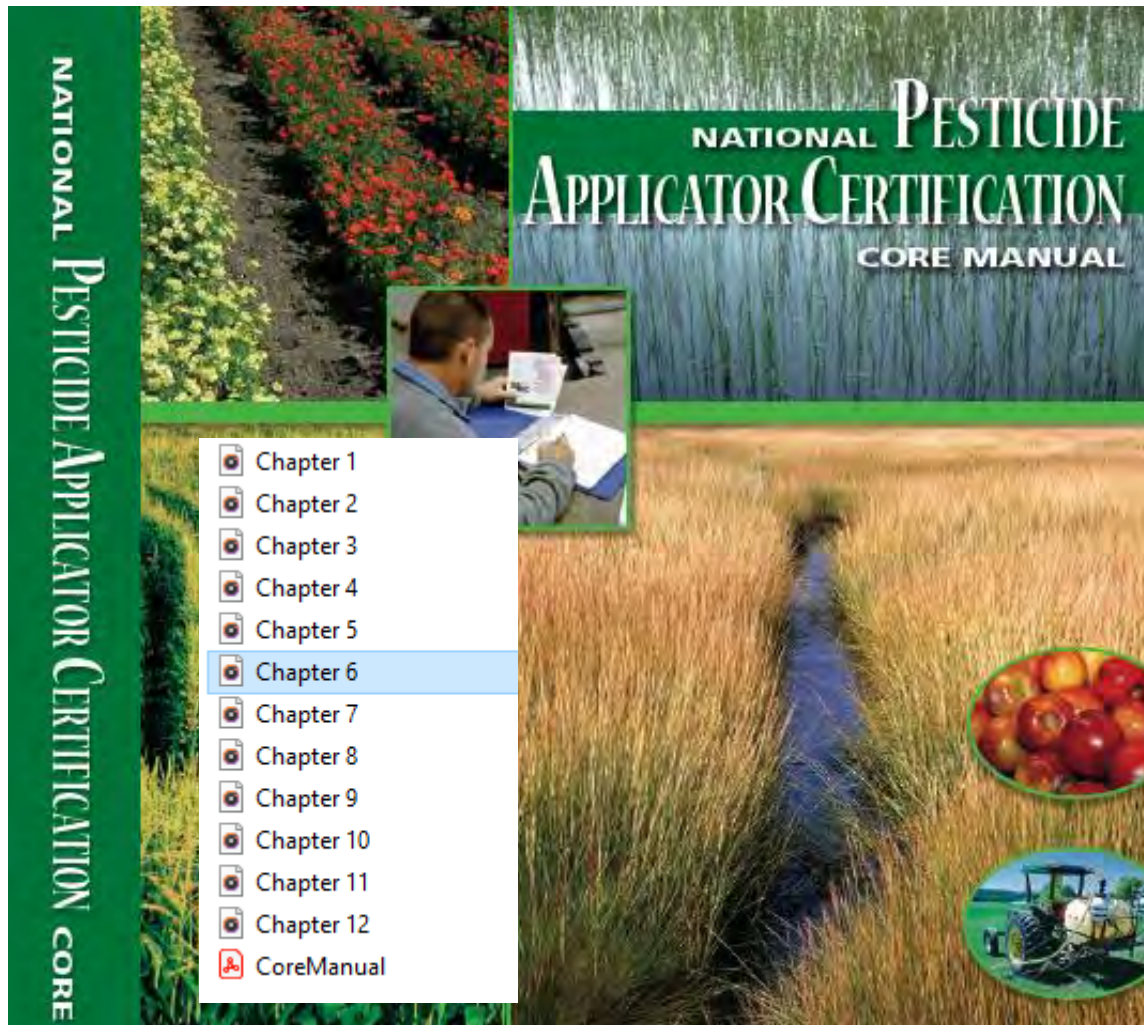
Once across the road he uses a rope to follow up the driveway to his fields.

Michigan Raspberry Farm



He uses wind chimes and different radios playing different stations to navigate around the buildings and areas of his shop.

Michigan Raspberry Farm



As a certified pest control applicator, he must take continuing education courses and pass a bi-annual test. AgrAbility created an audio recording of the training manual for him to study.

Spring scale with raised marks

Seymour, WI, farmer Chuck Gomm prepares his animals' feed rations using a Spring Scale with Raised Marks because he has a visual impairment. He is able to feel the scale's raised units to measure the exact quantities of minerals or other ingredients when mixing feed for his livestock.



<http://www.agrability.org/toolbox/?solution=225>

Automatic Syringe

The Automatic Syringe is used for administering vaccinations or medication to a large number of animals at one time. When squeezed, the syringe handle meters out a specific dose on every shot without having to refill each time. This would be especially useful for farmers with visual impairments, because they could give precise doses without viewing the gradations on the syringe tube.

<https://www.coburn.com/50cc-megashot-syringe>



<http://www.agrability.org/toolbox/?solution=238>

Tool Organizer

Poseyville, IN, farmer Gerald Schneider, who has a visual impairment, uses a Backboard Tool Organizer to hang up his tools. On the wall-mounted backboard, the tools are easy to see and reach and will always be returned to the same location because the outline of each one is painted where it's to hang.



<http://www.agrability.org/toolbox/?solution=410>

Auger Positioning Chains

Farmers with one eye have poor depth perception and struggle to position their augers. Chains dangling from the grain conveyor indicate when it is positioned directly over the bin opening.



Auger Positioning Pads

Farmers with one eye have poor depth perception and struggle to position their augers. Concrete pads in the driveway indicate wheel location for proper positioning.



Fever Sensing Ear Tags



Low vision farmers might not notice signs of sickness. With the Fever-Sensing Ear Tag (called a FeverTag), a sick animal can be detected quickly. While it looks like a typical ID tag, the tag contains a computer microprocessor that automatically monitors an animal's body temperature every 15 minutes. If that temperature exceeds 103 degrees, the tag begins to flash brightly for six hours straight, sufficient to make sure one is aware that an episode has occurred. A FeverTag will last a minimum of 180 days before having to be replaced.

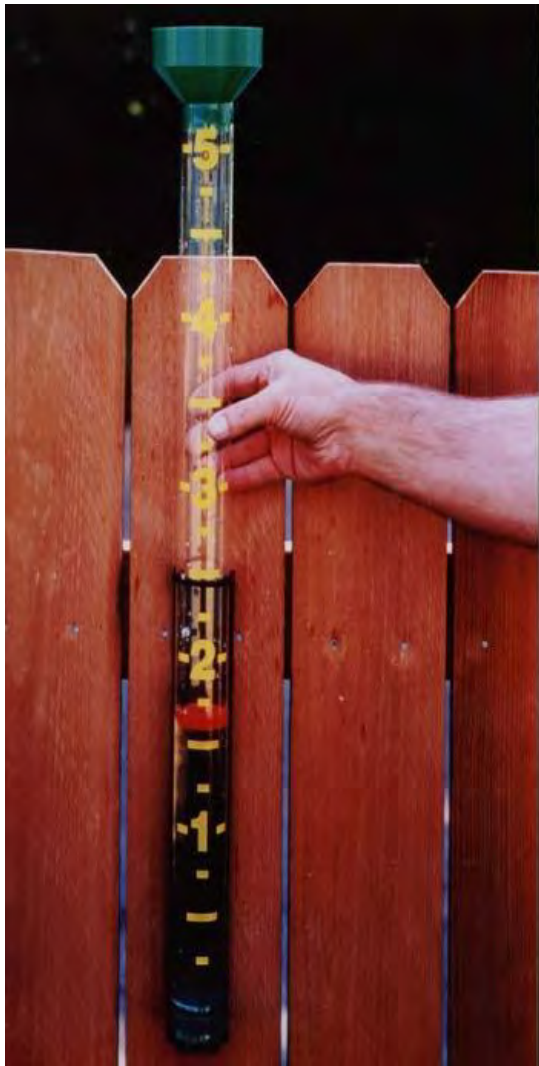
<http://www.agrability.org/toolbox/?solution=1501>

Garden Row Marking System



The Garden-Perimeter Marking System consists of boards that have been placed around the garden's perimeter, with 3-foot-high, shepherd's crook-shaped steel stakes at the four corners. Dabs of silicone caulk on the rounded head of a stake identify each corner. The Garden- Row Marking System includes (a) pieces of wood cut to desired lengths to set the spacing between rows, and (b) stakes at the end of each row and connected by twine to lay out the rows for planting.

Jumbo Rain Gauge



The commercially available E-Z Read Jumbo Rain Gauge is a 24-inch-tall, 1¾-inch-wide, clear-plastic tube having brilliant yellow markings with a contrasting colored float. The rain accumulated in the tube is "read" by matching the float with the markings on the tube. Able to measure rainfall up to 5 inches, the gauge is calibrated so that 1 inch of rain raises the float 4 inches for easy reading. This product comes already assembled with instructions for easy mounting. The entry funnel is constructed to prevent leaves and other debris from getting into the measuring tube.

<http://www.agrability.org/toolbox/?solution=110>

Strap-on Headlamp



Strap-on headlamps improve lighting for workers with visual impairments.

<http://www.agrability.org/toolbox/?solution=474>

Talking Measuring Cup

Mixing chemicals can be done accurately with low vision using a talking measuring cup.



Puffy Paint Marking Aid

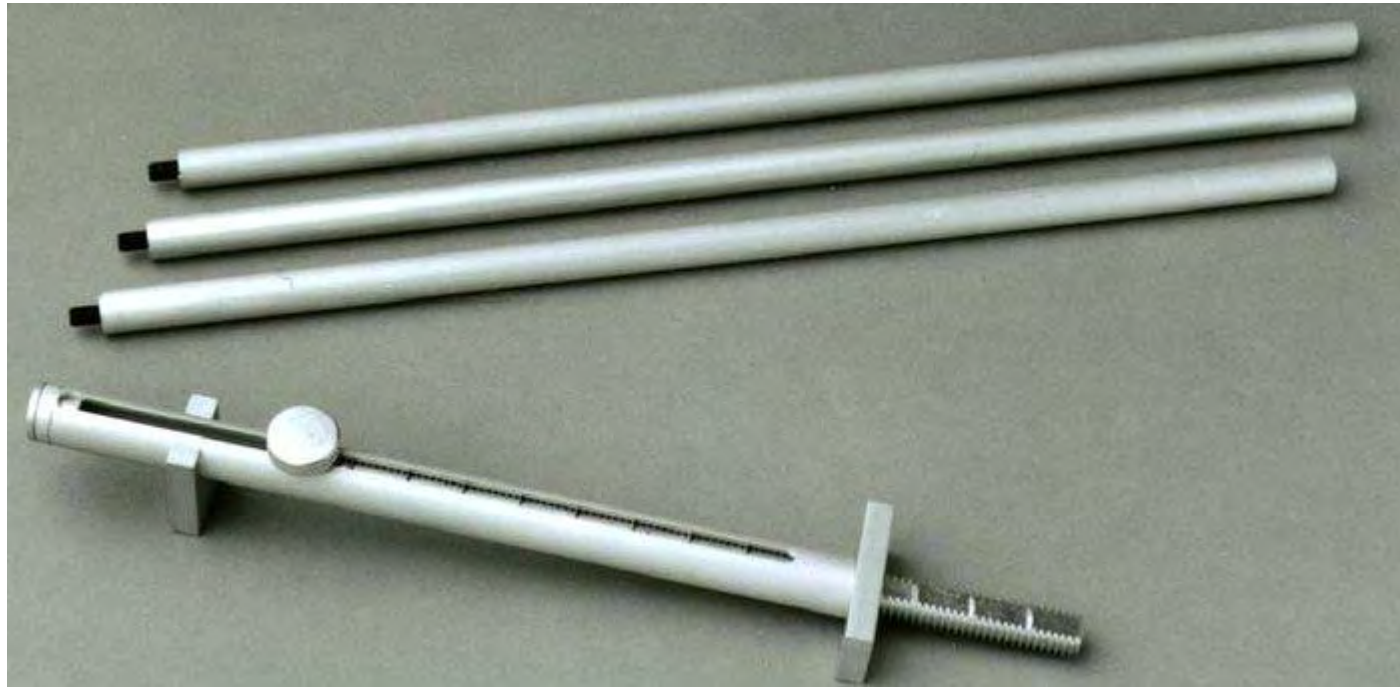
Puffy Paint as a Labeling Aid can be a more permanent, more versatile, and cheaper alternative to self-adhesive bump-dot stickers in assisting one with low vision to safely use a variety of items. Readily available at stores that carry crafting materials, Puffy Paint, which comes in a squeeze tube, maintains a raised shape, and provides the same 3-D effect as bump dots but without the concern of accidental removal.



<http://www.agrability.org/toolbox/?solution=1913>

Click Rule & Talking Tape Measure

The Click Rule, which is a telescoping rod that clicks as it expands, allows people with low vision to measure wood or other materials. "Read" by either sound or touch, the ruler can measure lengths up to 4 feet with an accuracy of 1/16 inch. It can also measure the inside/outside diameters of pipes/tubes and the depths of holes that are at least 3/8-inch in diameter. Talking tape measures are also available at www.maxiaids.com



<http://www.agrability.org/toolbox/?solution=475>

Sources

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Questions and Discussion

Ned Stoller, ATP
Michigan AgrAbility

Kyle Haney
Georgia AgrAbility