New Mexico AgrAbility
Cultivating Accessible Agriculture

Spring Into Ergonomic Gardening

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Learning Objectives

1. Apply at least 2 strategies for life-long gardening informed by the anatomy of the hand and forearm
    a. 6-pack hand exercises
    b. Contrast Baths
2. Examine at least two supports for professional food producers in New Mexico
3. Evaluate at least four pieces low-technology and at least four types of mid- or high- tech AT to support gardeners, farmers and food producers

Hand and Forearm Muscles

Most of the muscles that move the hand are in the forearm

- Making a fist
- Straightening fingers
- Moving wrist in all directions

Some muscle are in the hand

- Increasing grip
- Improving fine motor dexterity

These muscles send tendons, nerves and blood vessels through the Carpal tunnel

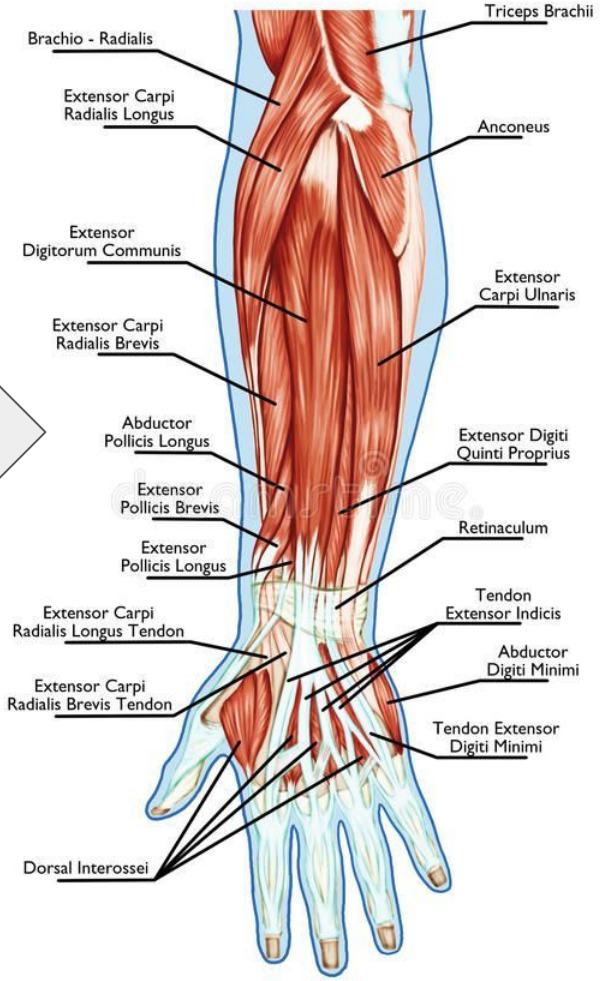


Image Description: image of the forearm depicting 16 muscles and numerous tendons running from the forearm to the joints of the hand

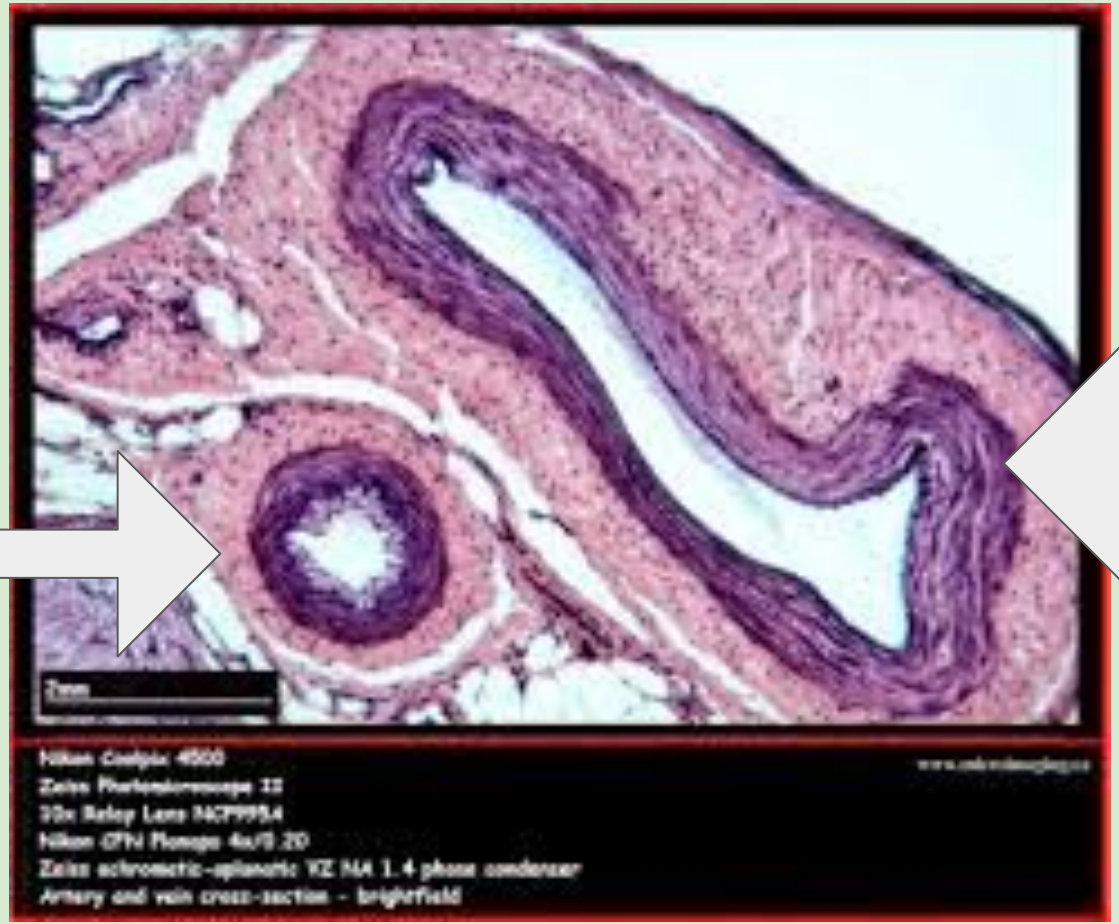
The Carpal Tunnel

Image description:

Nestled within bones and ligaments, many tendons, nerves and blood vessels travel through the tunnel to move the fingers

This image shows the tendons and nerves of the hand from the perspective of the upturned palm and as a cross-section of the wrist

Arteries are muscular and beat with your heart to push blood to all parts of the body



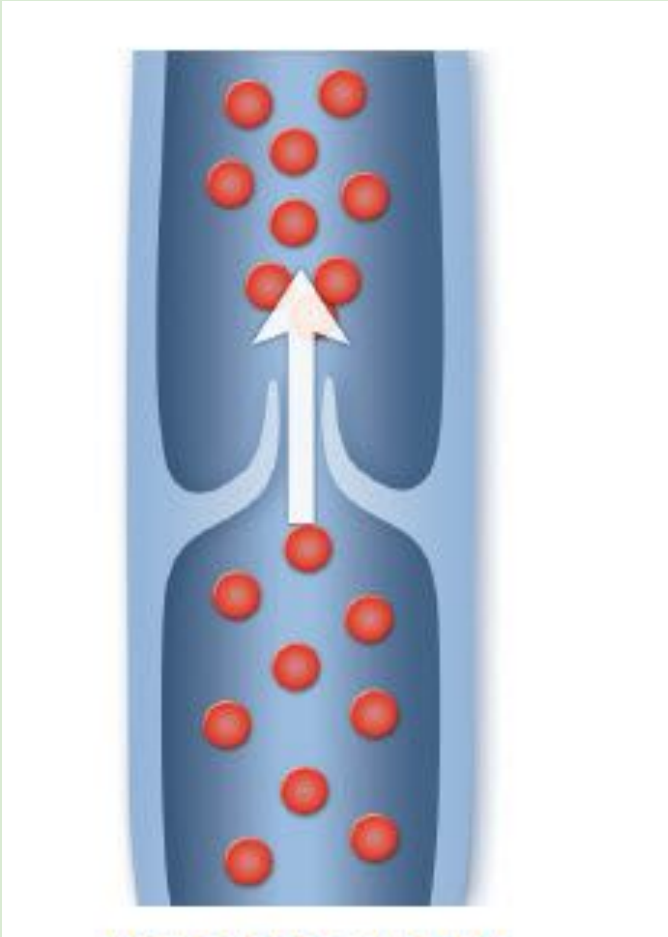
Veins do not have muscle - they rely on 1-way gates to hold blood until nearby skeletal muscle flexes to move the blood back to the heart

Returning Blood Flow

Image Description:

One-way valves within veins will keep blood moving in one direction

Veins need the nearby muscles to flex to push the blood back up to the heart

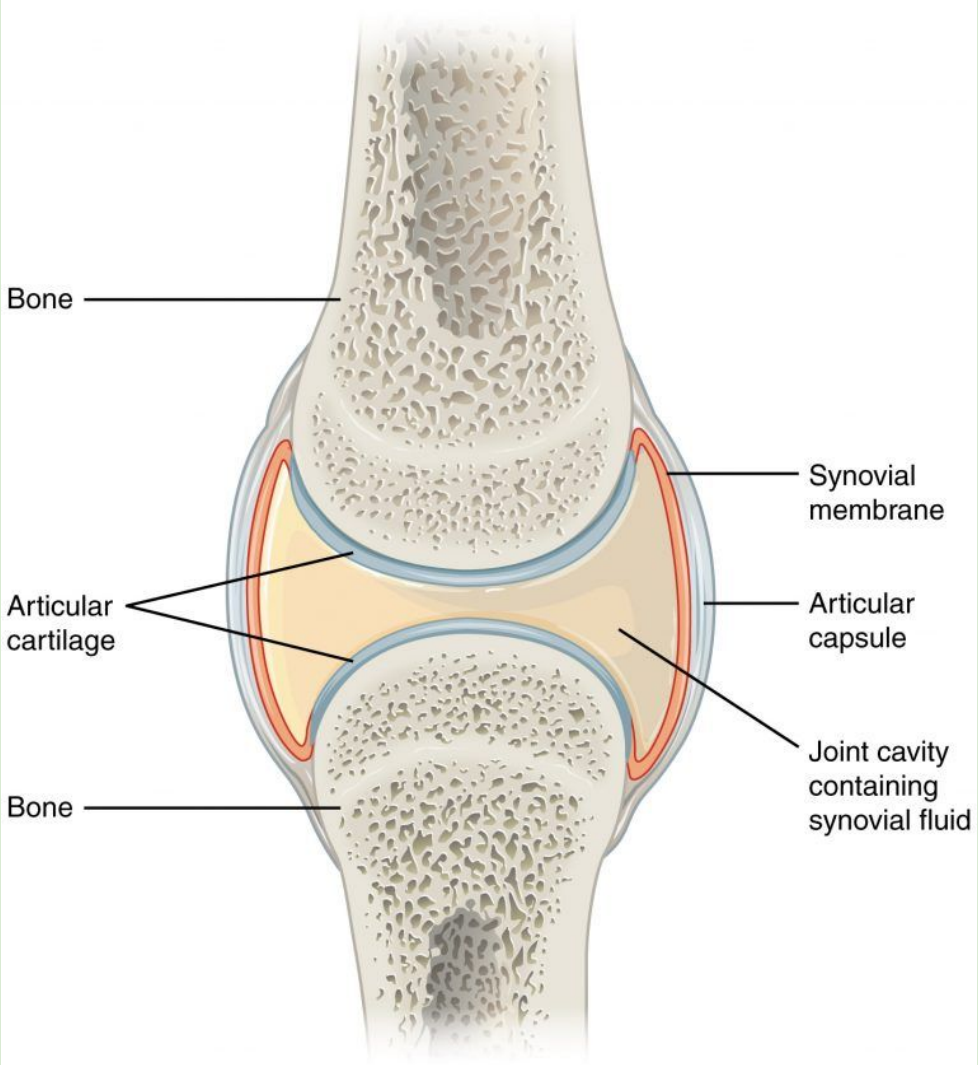


Joint Anatomy

Image Description:

Anatomy of a joint showing the union of one bone with another

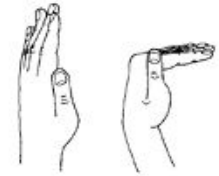
- In between the bones is cartledge.
- The joint is within an articular capsule.
- Within the capsule and between the cartilage is synovial fluid.



Common hand conditions and first-line occupational therapy intervention strategies:

1. Stiffness in the morning or throughout the day
    a. Intervention: Six Pack Hand Exercises

2. Pain in joints
    a. Intervention: Contrast Baths



1. Straight hand (finger straight and together) to table top hand (Only the first knuckle of each finger is bent)

2. Straight hand to suitcase grip (the first knuckle is straight, the last two knuckles are bent)

3. Open hand (fingers straight and separated) to gentle fist

4. Open hand - touch each finger to your thumb

5. Straight hand to open hand - focus on stretching as much as you can between your fingers

Six Pack Hand Exercises to gently warm up stiff hands

Do not use squeeze balls

Contrast Baths to Soothe Painful Joints

You can use any containers including your own sink

3 minutes in Warm water

- 100-110 degrees Fahrenheit
- Warm tap water
- Not boiling water

1 minute in Cold water

- 50-60 degrees Fahrenheit
- Cold tap water
- Not freezing water

5 cycles (3 minute warm, 1 minute cold + 3 more minutes in warm

NM Resources for Food Growers

Image: hands holding soil with a growing seedling

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Free Resources Available to Food Growers

NM AgrAbility Program

- No cost farm/ranch site evaluation for food growers who earn $1000/year
- call toll free: 1-855-AGRABLE (1-855 247-2253)
- Email: nmagrability@gmail.com; Web: https://agrability.nmsu.edu/

NM Technology Assistance Program (NMTAP): https://www.tap.gcd.state.nm.us/

- Free services to New Mexicans with disabilities to help them get need assistive technology (AT).
- Device Loans, Device Demonstrations, Device Trainings
- Low interest financial loans to obtain assistive technology devices

Division of Vocational Rehabilitation (DVR): https://www.dvr.state.nm.us/

- Assisting New Mexicans with disability achieves their employment goals and thrives in their communities.
- Vocational Counseling, Job Development,Vocational Rehabilitation Technology, Employment Training and more.

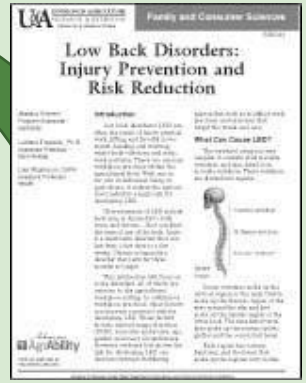
Cooperative Extension
https://extension.nmsu.edu/

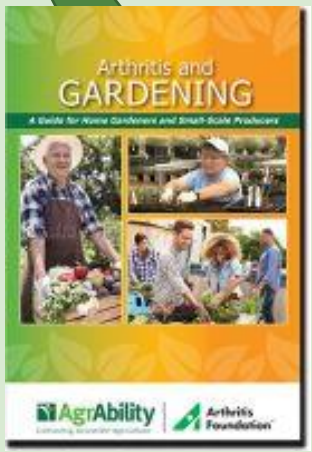
- Master Gardeners, Soil Testing, Water management…. all things farming and ranching

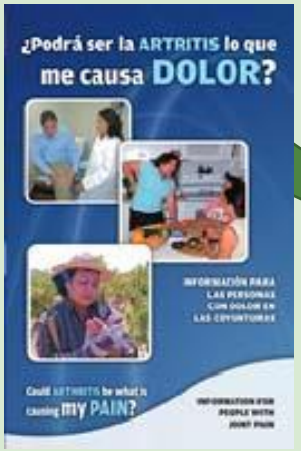
Arthritis & Agriculture

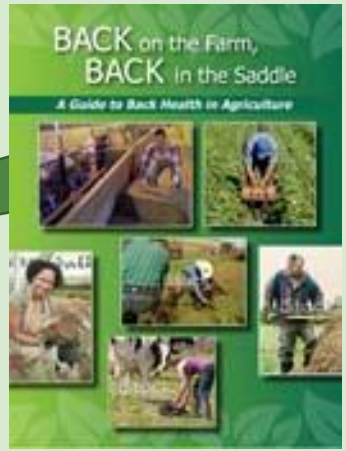
AgrAbility Education

http://www.agrability.org/resources/









Images of AgrAbility educational materials: Green and Olive “Arthritis and Agriculture” logo; “Arthritis and Gardening” booklet” “Dolor” arthritis materials in Spanish booklet, “Back on the farm, Back in the saddle” booklet, “Low back disorders: injury prevention and risk reduction” booklet.

Assistive Technology to Promote Gardening

Image: A plentiful flower garden full of cheerful yellow, peach, purple and green plants basking in the sunshine
Image source: "File:2008-07-24 Rows of flowers at Duke Gardens.jpg" by Ildar Sagdejev (Specious) is licensed under CC BY-SA 4.0.

Assistive Technology to Improve Body Mechanics

Assistive Device: Grandpa's Weeder

~$39.50

•39" long weeder that eliminates bending and hand pulling

•Chemical-free weed control

•To use: position prongs, press into ground and then lean handle into direction of the footpad

Image Source:
https://garrettwade.com/product/grampas-weeders?gad=1&gclid=Cj0KCQjw8NilBhDOARIsAHzpbLA_A1xgU3zf5--Yk2JundSlibR3EK1GkTn5fRvdOL50y08lTWjSV0EaAiHTEALw_wcB

Assistive Device: Back EZ Multi-tool Handle

~ $10.00

- Universal add-on tool handle grip
- Resin and rubber material
- Reduces back bend by 30%
- Up to 15% less lower back compression

Image Source:
https://www.walmart.com/ip/BACKEZ-Back-Saving-Tool-Grip-2-Pack-Multi-Tool-Handle-Labor-Saving-Ergonomic-Shovel-Handle-Attachment/1033232856?wmlspartner=wlpa&selectedSellerId=101235432

Assistive Device: Peta Easi-Grip Long Reach Cultivator

~ $54.95

•32” handle allows gardeners to work in a seated position

•Reduces need to bend or stoop

•Durable, stainless steel materials, weighing 18 oz

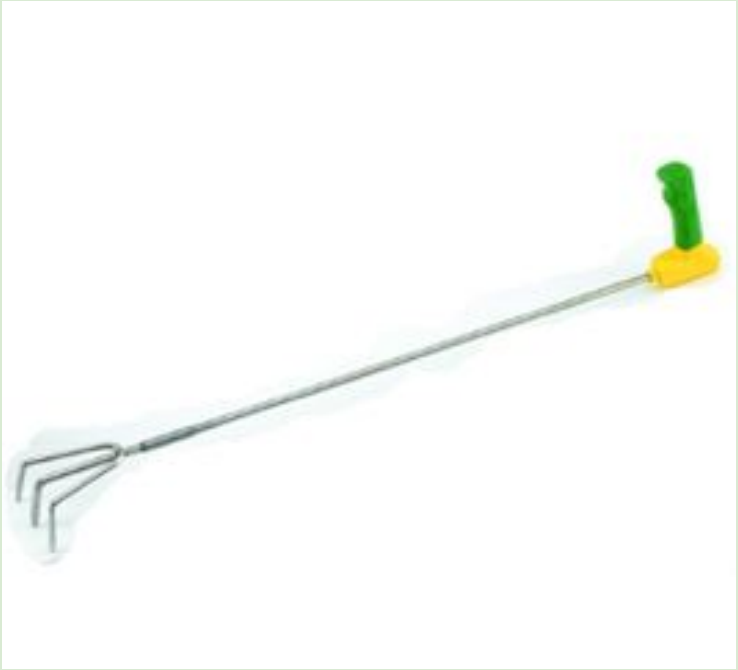


Image Source:
Peta Easi-Grip Long Reach Cultivator :: long handle garden tool for arthritis

Conserving Your Hands: Reducing Effort

Assistive Device: Right-angle Grip Trowel & cultivator

~$19.95

- Easi-grip trowel and cultivator have a right-angle grip so a person can reduce pain in their wrists. These are sometimes called “Pistol Grip”
- Compatible with an arm support cuff to further reduce weight on wrist

Image Source: https://www.arthritissupplies.com/arthritis-gardening-tools.html

Assistive Device: Large Diameter Bucket Handle

~$3.99

- ABS UV-resistant resin material
- Can be attached to a bucket handle with or without the original handle & removable!
- Large diameter grip spreads the weight evenly on the hand

Image Source: https://bigggrip.com/product/bigg-grip-ergonomic-handles/

Assistive Device:
Spear & Jackson Heavy Duty Telescopic Ratchet Anvil Loppers

~$46.00

- 4.3 lbs
- Extends to 40.5”
- Carbon steel blades
- Non-slip grip handles
- Ratchet cutting means less effort

Image Source:

Amazon.com : Spear & Jackson 8290RS Razorsharp Heavy Duty Telescopic Ratchet Anvil Loppers, Multicoloured : Patio, Lawn & Garden

Assistive Device: STIHL GTA 26 Pruner

~ $179.00

- 4” battery-powered garden pruner
- 25 minutes of run time
- 2.7 lbs and low vibration chain
- Retractable chain guard

Image Source:
https://lp.stihldealer.net/mlp/gta-26/?gclid=f6c8bb2b98f51a654200dcb3668e3fac&gclsrc=3p.ds&msclkid=f6c8bb2b98f51a654200dcb3668e3fac&utm_source=bing&utm_medium=cpc&utm_campaign=IMS%20Core%20Search%20Battery-B%20%28n6k-rht%29&utm_term=stihl%20gta%2026&utm_content=STIHL%20Pruners%20Battery%20%28GTA26%29

Assistive Device: Garden Home Leaf Scoops

~$15.83

- 15x12x1” oversized leaf claws, weighing only .5 lbs
- Adjustable handles with round or square design

Image Source:

Amazon.com : GardenHOME Leaf Scoops Hand Rakes, Large Ladybug-Shaped Leaf Grabbers for Yard Work and Garden Use, Clear and Collect Garden Rake with Leaf Claws for Easy Pick-Up, Red : Patio, Lawn & Garden

Conserving Energy in the Garden

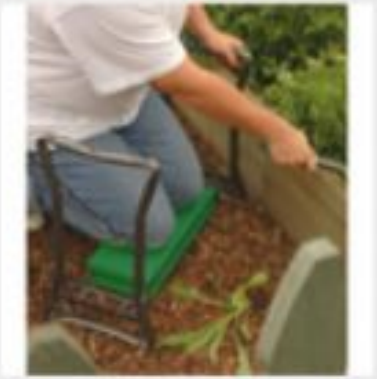
Assistive Device: Vertex Garden Rocker

~$40

- Adjustable height garden rocking seat allows a person to sit while weeding, planting or harvesting
- Curved bottom allows weight shifting for reaching
- Supports up to 350 lbs
- Optional padded cushion and/or non-slip floor protector base

Image source: https://www.homedepot.com/b/Outdoors-Garden-Center-Garden-Tools-Gardening-Tools-Gardening-Tool-Accessories/Garden-Rocker/N-5yc1vZc5qvZa2s

Assistive Device: Garden Seat and Kneeler



~ $69.95

- Foldable kneeling pad/seat combo with handles
- All steel construction supports up to 250 lbs.
- 24”w x 19” h x 10” d and 8 lbs.

Image Source: https://www.arthritissupplies.com/yard-butler-garden-seat-kneeler.html

Assistive Device: Leonard Garden Scoot

~ $184.17

- 400 lb. load capacity
- Alloy steel and polyethylene materials
- No more kneeling, stooping, or squatting
- Tractor-style seat that raises up to 22 inches in height
- Storage basket can hold 5-gallon bucket, Tubtrug, etc.

Image Source: NMTAP, Albuquerque

Assistive Device:
Plow & Hearth Garden Broom

~ $32.88

- Coconut fiber and poplar wood design weighing only 1.7 lbs
- Great for leaves, pine needles, and even light snow
- Usable in gardens, lawn, garden beds, and more!
- Will require oiling

Image Source:

Amazon.com: Garden Broom : Health & Household

Low-Vision Assistive Technology

Assistive Device: Seeding Square

~$30

- Square optimizes distances between different types of plants and makes it easier to identify planted vegetables from weeds
- Great for visually impaired and for use with young gardeners
- Works well in softer soils like a raised garden bed

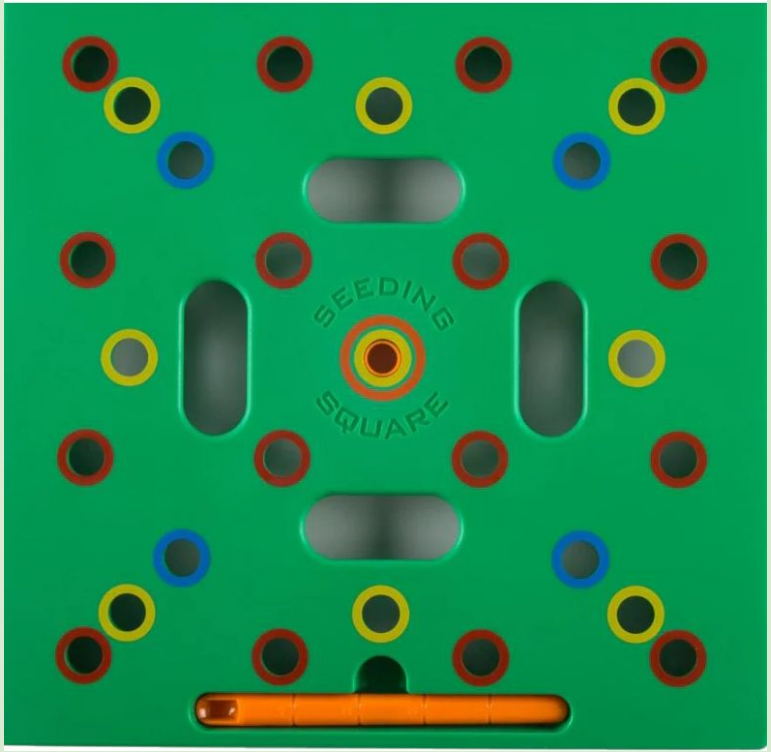


Image source: https://seedingsquare.com/

Assistive Device:
AcuRite Big Read Rain Gauge

~ $12.99

- Easy-to-read print, visible up to 60’ away
- Measures up to 5” of rain
- Comes with bracket and removable funnel

Image Source:

AcuRite Big Read Rain Gauge - 00868D | Blain's Farm & Fleet

Assistive Device: Humanware Explore 8

- $1, 275.00

- Touchscreen 8” portable digital magnifier with up to 30x zoom
- Portable with 4.5 hrs use
- Front/back HD cameras
- Color inversion

Image Source:

Humanware - Low Vision - explorē 8 handheld electronic magnifier

Assistive Device: OrCam Read

~$1, 990 or OrCam Read 3 ~$2, 790

- Low vision/blind/learning disability reading tool that reads text back to users
- No Internet required, Bluetooth capable
- Full page capture with smart reading functions
  - Over 20 languages supported and ~4 hours of continuous use

Image Source: OrCam Read - The Ultimate AI Reading Device for the Visually Impaired

Larger Production Tools

Assistive Device: Platform Lifts

Item: Platform lifts can be used on tractors, Skid Steers and other agricultural equipment (and RVs)

Cost: custom order

Image Source: https://lifelyfts.com/agricultural-mobility/

Assistive Device: Power Wheelbarrow

~ $2135

Item: Gas powered wheelbarrow can move across various terrains to deliver soil, compost or other heavy loads.

Image Source: https://www.homedepot.com/p/YARDMAX-YD4103-Power-Wheelbarrow-660lb-Capacity-Briggs-CR950-6-5-hp-208cc-YD4103/310622929?source=shoppingads&locale=en-US&srsltid=AfmBOoqyfOXZ3DsUnRZg727eBFTP76RjDFkLOwKjmRu2J8BSNNFXw8uUY6w#overlay

Assistive Device: Agricultural Hand Control

Cost: Custom Order from LifeLyfts

Item: Hand Controls that can be applied to an ATV, Tractor, Skid Steer or other equipment

Image source: https://lifelyfts.com/agricultural-mobility/

New Mexico AgrAbility
Cultivating Accessible Agriculture

Resources available in New Mexico

Dial 988
- https://988nm.org/
- 24/7 Lifeline for Emotional, Mental, or Substance Misuse Support

NM Farm and Rural Stress Hotline 1-800-691-4336
- You are not alone https://farmstress.us/
- Run by the Western Regional Agricultural Stress Assistance Program
- Offers funding opportunities and support in navigating resources and education

NM Farm Bureau - Here to Help NM
- https://www.nmflb.org/Get-Involved/Here-To-Help-NM; 1-575-532-4700
- Stress management and mental health resources

Farm Aid
https://www.farmaid.org/our-work/resources-for-farmers/
- Farmer Resource Network provides immediate and effective support services to farm families in crisis

Image: 988 Billboard on a NM Highway against a back-drop of blue sky and rural area, photograph by Janet Deweese, 2023

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NEW MEXICO Technology Assistance Program

Thank you!

MANDY'S farm
GROW WITH US.

New Mexico AgrAbility
Cultivating Accessible Agriculture

SCHOOL OF MEDICINE
OCCUPATIONAL THERAPY GRADUATE PROGRAM

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