



Beekeeping Assistive Technology

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AgrAbility Virtual National Training Workshop

Thursday, January 25, 3:00 p.m. ET

Basic Webinar Instructions



- Audio available through computer or phone.
- Check sound via Communicate menu at top left
- Closed captions: use arrow to expand or contact the Media Viewer window. You may have to enter some log-in information.
- Expand/contract any of the windows in the right-hand column with the arrows. May need to do this to see video of presenter.
- Expand/contract the size of the right-hand column.

Basic Webinar Instructions



Questions and comments

- Click Chat icon at top right of screen (it should turn blue). Enter message in box, choose who to send it to, and click send. You may enter questions about the presentation at any time. Please send to “All Panelists”.
- In addition, during the Q & A period, if you have a web microphone, click the “Raise Hand” icon to indicate that you have a question. We will enable your microphone or phone connection.

Basic Webinar Instructions



- You won't be able to see the entire attendee list
- Please let me know if more than one person is viewing at your computer
- 4 quick survey questions + opportunity to share comments
- Session recorded and archived with PowerPoint files at www.agrability.org/Online-Training
- Problems: use chat window or email jonesp@purdue.edu



- **AgrAbility:** USDA–sponsored program that assists farmers, ranchers, and other agricultural workers with disabilities.
 - Partners land–grant universities with disability services organizations. Currently 20 state projects
 - National AgrAbility Project: Led by Purdue’s Breaking New Ground Resource Center. Partners include:
 - Goodwill of the Finger Lakes
 - APRIL (Association of Programs for Rural Independent Living)
 - Colorado State University
 - Washington State University
 - More information available at www.agrability.org



Beekeeping Assistive Technology



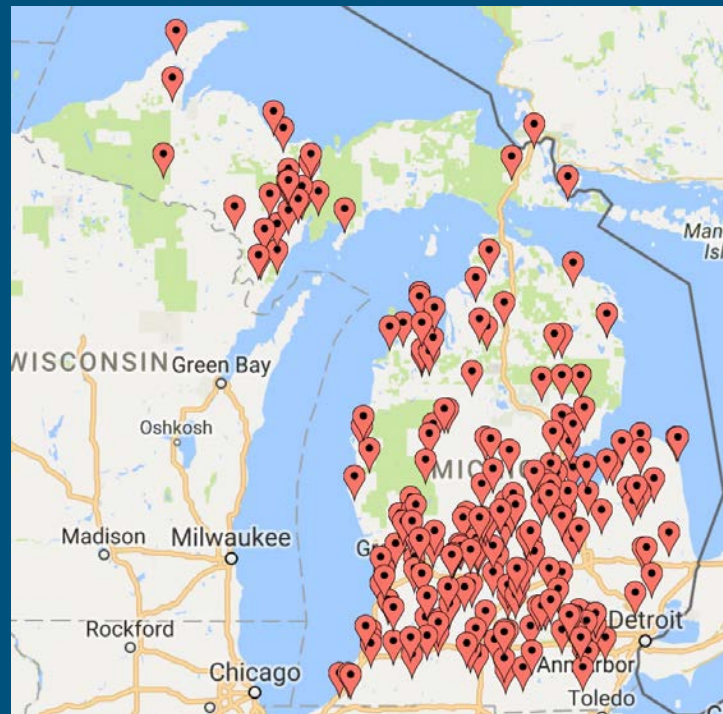
Ned Stoller, Agricultural Engineer, ATP



Michigan AgrAbility

Michigan AgrAbility is a non-profit that helps farmers with serious medical conditions to keep working.

We are a partnership between Michigan State University Extension and Easterseals Michigan.



Assistive Technology

An item or a system that improves the functional capabilities of a person with a disability.



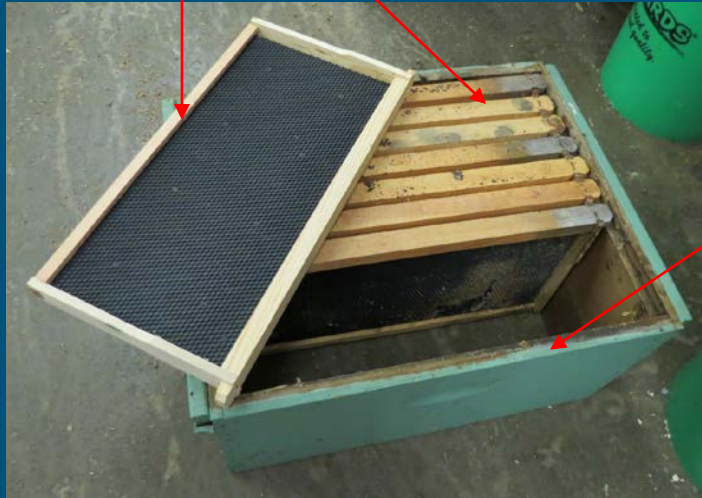
Sideline Beekeeping

- Sideline apiaries with 20 to 200 beehives produce honey and provide pollination services.
- An average work week in spring, summer, and fall could be 20-40 hours per week.
- Up to \$100,000 annual revenue from 200 hives
- Revenue comes from:
 - renting out pollination hives,
 - hive shares
- https://bearcreekorganicfarm.com/pages/adopt-a-hive_1
- selling honey products at on-farm stores, farmer markets, local retail outlets, or online.



Beekeeping Terms

Frames
(8 or 10 per hive body)



Hive Body
(supers, boxes)
Shallow,
Medium, or
Deep

Hive – stacks of hive
bodies which are
filled with frames



Cover

Entrance
& Bottom
Board

Successful Beekeepers

- Successful beekeepers inspect their hives regularly for bee health, pests, feeding, and honey production.
- Functional activities include:
 - mobility across rough terrain to access the hives,
 - lifting and unstacking the hive bodies (weighing up to 90-pounds), and
 - gripping, prying, and pulling out frames.



Physical Challenges

- Common beekeepers' medical conditions include arthritis, back injury, carpal tunnel syndrome, and musculoskeletal injury
- Impaired activities are mobility to the hives, bending over to inspect frames, lifting hive bodies, grasping frames, moving hives, gripping hand tools



Summary

Farmsite Recommendation	Estimated Cost	Frequency	Longevity	
	\$ (for quantity shown)	Uses per year	useful years	
Ergonomics & Secondary Injury Prevention		1000+	Life-long	
Lifting Hives	\$75 to \$5000	450	10	
Hand Tools	\$85	1000+	10	
Bee Yard Mobility	\$300-\$3000	50	3 to 20	
Beehive Access	\$200-\$10,000	50	5	
Workshop	\$970	1000+	10	
Honey Extracting	\$1000	800	20	

Ergonomics



Ergonomics

- Rest at regular intervals & sit on a stool.
- Alternate repetitive, awkward, & strenuous tasks.
- Use proper workstation height.
- Keep commonly used items within 17 inches of the worker's body.



Lighten the Load: 8-Frame and Shallow Hive Bodies



<http://www.bushfarms.com/beeseightframemedium.htm>

Whole Hive Moving



Hand-held dollies such as this one from MannLakeLtd.com lift from the sides of the hive bodies. Item #MH-105.



Fork Hand Truck

Item# HTK-2351



This hand truck from HandTrucksRus.com would move whole hives.

Individual Hive Body Lifts: 2-Person Carrier



The two-person hive carrier is a low-cost accommodation that divides the weight in half. It is item #935C at BrushyMountainBeeFarm.com.

Individual Hive Body Lifts - Kaptar

<https://www.countryfields.ca/products/kaptar-lift-electric>



Individual Hive Body Lifts: DIY

<https://www.youtube.com/playlist?list=PLVvPW9G-aIYgPxttbmLemQwm8W4jC1LLP>



Individual Hive Body Lifts: Cranes



<https://www.northerntool.com> Item# 52837

Individual Hive Body Lifts



A crane option for hive-lifting tongs could be to modify an EZ Dual Changer from BiermanSales.com. Their item #51 costs \$360.

Hand Tools



Hand Tools



<http://disabilityworktools.com/gripeeze-heavy-duty-trade-glove/> \$35

<https://www.shizeltool.com/beekeeping> \$25



Frame Grip



14 inch Giant Hive
Tool

<https://www.betterbee.com/beekeepers-tools-and-smokers/beekeeping-tools.asp> \$12

Hand Tools



Bee Yard Mobility



Woody Glover's bee yard (Stephen Clay McGehee)

<http://volusiabeekeepers.org> ~\$250
<http://www.greenhousemegastore.com/product/5902>



<http://burghbees.com/> ~\$800

Bee Yard Mobility



~\$3000



Beehive Access



Beehive Access



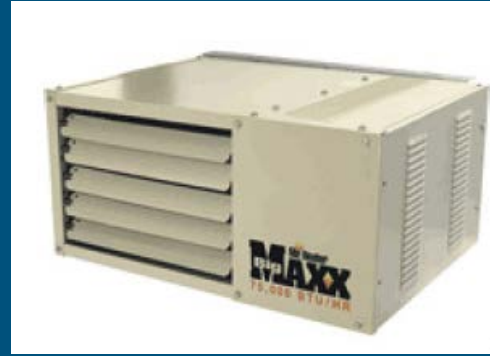
[www.Amazon.com](https://www.amazon.com) item# B00870EJJS



www.NorthernTool.com item# 143666
\$2200

Workshop

- Heat
- Seat
- Table
- Floor
- Ergonomics!



Workshop



Workshop



Workshop



GlobalIndustrial.com sells an ergonomic workbench and tool balancer to support heavy tools. It is item #wg249497.

Honey Room



<https://www.dadant.com>

http://greatlakesgeneralstore.com/Speed-King-Electric-Uncapping-Knife_p_755.html

<https://www.betterbee.com>

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Conclusion

Assistive technology in the apiary will increase the likelihood of success for a beekeeper with medical impairments. Beekeeping is a very satisfying enterprise, and can be done by workers with medical impairments. Modified tools and equipment enable tasks that would otherwise be impossible or unhealthy for the worker.



Thank you!



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www.MichiganAgrAbility.org