

Knowing Your Limits Prevents Manual Labor Injuries¹

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The high productivity that American agriculture has achieved might lead us to believe that humans possess a rather high level of personal output or a high energy level.

This is a mistaken conclusion! The best human body is a poor power producer when compared to the output of a machine over a period of time. Without machines (tractors, electric motors, engines, etc.) we do not produce much "power." Tests show that on strictly a power comparison, a motivated worker can be replaced by a ¼ horsepower electric motor, and at a much lower cost. On a horsepower basis, humans as a source of physical power are not impressive, they cannot compare with our modern farm machines.

Still, manual work remains an important part of agriculture as some situations require the "hand tool" that only humans can provide. Such things as the environment, physical restrictions, job size, or operator care may dictate that the "hand tool" will be the best way to handle the job.

Situations that require a significant amount of hand work and materials handling include shoveling, both soil and grain; moving manure and animal bedding with a pitch fork; lifting hay bales or crates or boxes of agricultural products; loading or unloading sacks of feed, fertilizer or cement; or hammering and sawing.

Although some situations can cause specific machine induced or repetitive motion health-related problems such as "Raynaud's Syndrome" (white fingers) and

"carpal tunnel" these work-related injuries are unusual (see Table 1). These injuries are caused from repeated and extensive exposure of the hands and feet to vibration (white fingers) or the repeated stress on the hands and wrists from some constant repetitive motion (carpal tunnel) required in some jobs.

In general, humans need to be aware of their limits when working in agricultural tasks. These limits can be classed into three areas:

1. Physical
2. Physiological
3. Mental and emotional

The limits of physical output are determined by the individual's size, height, weight and body type. There are limits to performance that, when exceeded, can lead to unsafe work situations. You can only reach so far or lift so much. If the task requires you to go beyond these limits then you need help. This help might come in the form of a ladder, wrench, cart or someone to provide an extra hand. Don't put yourself at risk by straining and exceeding your limits. There's no extra reward for injuring yourself.

Physiological limits are determined by muscle tone, physical fitness, rest, freedom from drug affects, good health and nutrition. A person's physiological limits can vary from day to day and season to season. Illness, fatigue, and lack of food or nutrition are things that affect our limits on a more routine basis. The wise worker will pay attention to these factors and provide the

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Table 1. Manual work-related agricultural injuries

Disease	Symptoms	Possible ag work sources/protection
Raynaud's Syndrome (wh	Numb fingers, hands	Long periods using a chain saw or other tool that vibrates
Carpal Tunnel Syndrome	Sore joints of hands, wrists	Constant, repeated motions over a long period of time (i.e. shoveling, lifting bales, etc.)
Back pain	Sore back	Improper lifting/bending techniques
Hand/skin injuries	Cuts, blisters	Protect hands with gloves, remove or cover sharp edges on machinery and other farm items
Slips/falls	Bruises, broken bones,	Repair or maintain walking/work surfaces

healthful inputs that the body requires (i.e. frequent short rest breaks, clean air and water, nutritious food and adequate sleep). Experience and sensitivity to your body's warning signs can usually prevent you from exceeding physiological limits.

Mental and emotional limits are usually more difficult to predict and often will change from day to day, depending upon a worker's mental stress level.

Although a worker's basic mental capacity may not change (i.e. your I.Q. tends to be constant) his or her emotional state can have a profound affect upon work performance. If a person has the mental capacity to understand a job, handle the information, and make good decisions, s/he should be quite capable of safe job performance.

However, when a person is angry, has interpersonal (upsetting) problems, or is preoccupied (finances, love life, family activities, etc.) s/he may be distracted to the point where job performance suffers. This usually productive worker becomes a work hazard. Lastly, apathetic workers (i.e. a "who cares" attitude) are definitely a safety hazard to anyone who must rely upon their job performance. These individuals should never be in a position where the safety and health of others depends on their job function.

Considering the mental-emotional aspects, the safest worker is the one who is happy, content and well adjusted.

Working safely and surviving in the agricultural work arena depends on understanding worker limits and applying them in real work situations