

Agriculture – Man or Machine?

The high productivity that the agriculture industry has achieved might lead us to believe that humans possess a rather high level of personal output or a high energy level. This logic is actually wrong. Why?

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 finger) and "carpal tunnel" these work-related injuries typically are not that common in agriculture. 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:

Physical Limitations Physiological Limitations Mental and emotional Limitations

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 – i.e. you can only reach so far or lift so much. If the task requires you to go beyond these limits then you need get 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 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.) he/she 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