

## Preventing and Managing Diabetes in Agriculture

Diabetes is one of the top ten commonly diagnosed chronic illnesses in the United States. It is a medical condition indicated by high levels of glucose (sugar) in the blood. Glucose comes from the foods that we eat and it serves as a source of fuel for the body. In order for glucose to enter the cells from the blood stream to fuel them, it needs insulin produced by the pancreas. There are two types of diabetes, Type 1 and Type 2. Type 1 diabetes typically appears in children and adolescents, however it can also develop in adults. It occurs when the pancreas does not produce insulin at all. With this, the body is not getting the fuel it needs.

In Type 2 diabetes, the body does not use insulin properly, or becomes insulin resistant. In the beginning, the pancreas makes extra insulin but over time is unable to continue producing at a sufficient rate to keep blood glucose levels within normal range. There are strategies for preventing Type 2 diabetes in people with pre-diabetes. Lifestyle changes are most effective at reducing the risk of developing diabetes as well as other conditions such as heart disease and stroke.

Diabetes can manifest in different ways. Some people with diabetes have no symptoms, while others may experience extreme fatigue, extreme thirst, frequent urination (especially at night), change in vision, and increased hunger. Other symptoms include numbness or tingling in the feet, frequent infections of skin, gums, bladder, or vagina (yeast infections). Individuals experiencing these symptoms for more than 2 weeks should consult their doctor.

Diabetes is diagnosed and monitored with blood tests. Monitoring is done with at home blood glucose testing and laboratory testing for A1C. Hemoglobin A1C measures the average glucose for the past 3 months and helps to understand how well the diabetes is being controlled. It is important to consult a doctor to develop a management plan that fits the patient's needs.

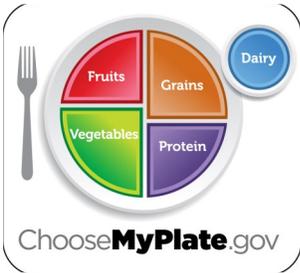


Glucometer: used by pricking finger and measuring the blood sugar levels

## Diabetes Management Tips

Below are some simple suggestions to help manage diabetes after a diagnosis to continue living a productive and successful life. Always consult with a doctor before making any drastic lifestyle changes.

### Healthy Diet

- **Skip the sugary drinks.** Significantly reduce or eliminate consumption of sweet teas, energy drinks, and sweetened-coffees, and avoid soda entirely. Drink plenty of water. For ideas on natural infused waters check out the Rethink Your Drink program.  [rethinkyourdrinkday.com](http://rethinkyourdrinkday.com)
- **Pull back on portions.** You still can eat many of the foods you like just have smaller amounts of them, this is especially true for starchy foods like white rice, white potatoes, and pasta. People often mistake thirst for hunger, which can lead to overeating and weight gain. Drink a glass of water before eating meals — it will keep you hydrated, and help you eat less. For more food tips check out ChooseMyPlate.gov 
- **Grow your own vegetables.** Rural areas may have limited access to grocery stores; growing your own vegetables and exchanging these with neighbors can help you have regular access to nutritious food.

### Other healthy habits tips

- **Monitor your blood glucose levels.** Use a glucose meter to keep track of your blood glucose levels, and see how different foods and lifestyle habits affect your sugar levels. Keep a record of these numbers and discuss the best way to monitor your glucose levels with your doctor.
- **Get 30 to 60 minutes of physical activity each day.** For example, take a brisk walk 5 times a week. The cardiovascular benefits as well as weight management will lessen the stress on the body from diabetes. Although agricultural work can be very active, it does not replace physical activity.
- **Learn to cope with stress.** Stress can raise blood glucose (blood sugar) levels. While it is hard to remove stress from your life, stress management techniques can help.
- **Stop smoking.** Smoking constricts the blood vessels, making them narrower. This makes circulating blood around the body much harder. High blood glucose levels from diabetes also have this effect on the blood vessels and blood flow, so if you are smoking when you have or are at risk for diabetes, you are putting yourself at much greater risk for a heart attack or stroke.
- **Check your feet every day.** Working in agriculture can be tough on your feet causing cuts, blisters, red spots, and swelling. When injury occurs, it may take longer to heal. Monitoring your feet daily can help the healing process. Making sure your feet are clean and dry can also help prevent injury. Carry an extra pair of dry socks to help prevent blisters. Seek medical attention immediately for any sores that do not heal quickly.



## Case Study with Farmer Pete

Here we learn how a farmer named Pete manages his diabetes while maintaining a successful farming operation.

*Pete finds that sometimes he fatigues easily. Since living with diabetes can decrease an individual's endurance and physical tolerance, Pete thinks through his daily activities before he starts, and schedules them to allow for the best use of his time and energy.*

*Because agricultural work is hard on his feet and hands, Pete inspects his hands and feet each day for cuts or blisters. It is important that he pays attention to cuts, bruises, or injuries so they heal properly. Without proper care, they can lead to infection or worse.*

*Farming involves sitting for prolonged periods on a tractor which restricts proper blood circulation to the feet, so Pete takes short walking breaks to help maintain circulation. He does exercises such as wiggling his toes inside his shoes or moving his ankles up and down to help stimulate blood circulation. He also has a special set of hand exercises designed to keep his fingers flexible.*

*When he is out doing field work, he uses his C.B. radio to keep in touch. Pete makes sure that his wife, family members, or neighbors know where he will be and arranges for one of them to be within listening distance of the intercom or C.B. radio. By paying attention to his senses and pacing himself during his work, Pete can maintain his health.*

Other tips to managing diabetes include, regularly checking the bottom of feet, hands, and between fingers and toes for injuries. Proper footwear can also help prevent high pressure areas in the shoe that can cause blisters. This may mean prescribed shoes or inserts to help alleviate pressure on the feet. Avoiding crossing your legs when sitting for prolonged periods of time. Using a cellphone to stay connected. And consulting with your physician for more recommendations.

Sources <http://nasdonline.org/981/d000967/health-farmer-with-diabetes-maintains-farm-and-health.html>



### University of California, Davis

Biological and  
Ag Engineering

One Shields Ave  
Davis, CA 95616

Toll Free Phone  
1-800-477-6129

Phone (530) 752-1613

Email: [calagra@ucdavis.edu](mailto:calagra@ucdavis.edu)

Program Director:  
Fadi Fathallah, Ph.D.



### Ability Tools

Ability Tools corrects  
Californians with disabilities  
to assistive technology  
devices, tools and services to  
make life easier.

[abilitytools.org/](http://abilitytools.org/)

Email: [info@abilitytools.org](mailto:info@abilitytools.org)

Toll Free Phone  
(800) 390-2699

TTY: 800-900-0706



CalAgrAbility serves farm and  
ranch families affected by  
disability and illness protecting  
the quality of life and preserving  
livelihoods.

[CalAgrAbility.UCDavis.edu](http://CalAgrAbility.UCDavis.edu)

[nifa.usda.gov/program/  
agrability](http://nifa.usda.gov/program/agrability)



United States  
Department of  
Agriculture

National Institute  
of Food and  
Agriculture

Supported by USDA, NIFA project number CA-D-BAE-2271-OG.