MECHANICS & HISTORY OF

PunkinChunkin

Pumpkins

WHY WE LOVE THEM AND LOVE TO CHUCK'EM

In the U.S., pumpkins are synonymous with our fall holidays of Halloween and Thanksgiving. They are used to make tasty pies and spooky jack-o-lanterns; while competitive types may grow them for size or participate in Punkin Chunkin', the sport of hurling or 'chucking' a pumpkin solely by mechanical means for distance.

These quirky competitions have increasingly become beloved traditions attracting nationwide attention.

All About Pumpkins

PUMPKINS ARE A MEMBER OF THE GOURD FAMILY, WHICH INCLUDES:

Pumpkins are native to Central America and Mexico, but now grown on six continents. The name pumpkin originated from "pepon" – the Greek word for "large melon."

THE LARGEST PUMPKIN PIE EVER BAKED WAS IN 2005 AND WEIGHED 2,020 POUNDS

THE HEAVIEST PUMPKIN WEIGHED 1,810 LBS., 8 OZ. AND WAS PRESENTED AT THE STILLWATER HARVEST FEST IN MINNESOTA IN OCTOBER 2010

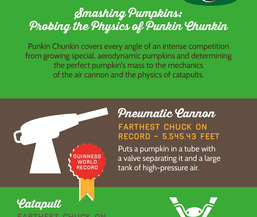
PUMPKINS WERE ONCE BELIEVED TO REMOVE FRECKLES AND CURE SNAKEBITES.

Did you Know

The practice of decorating "jack-o-lanterns"– the name comes from an Irish folktale about a man named Stingy Jack–originated in Ireland, where large turnips and potatoes served as an early canvas.

Smashing Pumpkins: Probing the Physics of Punkin Chunkin

Punkin Chunkin covers every angle of an intense competition from growing special, aerodynamic pumpkins and determining the perfect pumpkin's mass to the mechanics of the air cannon and the physics of catapults.



Pneumatic Cannon

FARTHEST CHUCK ON RECORD – 5,545.43 FEET

Puts a pumpkin in a tube with a valve separating it and a large tank of high-pressure air.

Catapult

FARTHEST CHUCK ON RECORD – 2,862.28 FEET

Uses stretched springs or rubber bands, which store energy.

Torsion

FARTHEST CHUCK ON RECORD – 3,836.39 FEET

Uses twisted rope as its primary source of power.

Trebuchet

FARTHEST CHUCK ON RECORD – 4,835.81 FEET

Hurls the pumpkin by using a change in gravitational potential energy.

Centrifugal

FARTHEST CHUCK ON RECORD – 3,245.58 FEET

Accelerates the pumpkin by taking it around a circle many times then releasing the force.

The range achieved by devices greatly depends on:

- MASS
- SHAPE
- SIZE
- THE YIELD LIMITS
- STIFFNESS
- PITCH
- ELEVATION OF THE HURLER
- THE WEATHER

10 Rules for Picking Pumpkins for Chunkin

1. Don't throw an orange pumpkin. Nearly all chunkers throw Luminas, a dense white pumpkin.
2. Find out what weight pumpkin your machine throws best and practice only with that weight.
3. Choose spherical smooth pumpkins for better aerodynamics.
4. Don't pick too soon. As soon as the pumpkin is picked off the vine it starts to lose weight through evaporation.
5. Pick slightly immature pumpkins with no blemishes.
6. Store pumpkins at 50 degrees Fahrenheit and 50% relative humidity.
7. Check the pumpkin's temperature. Any rise in temperature indicates active rot.
8. Water test. Pumpkins are 90 to 95% water. Only throw your densest pumpkins.
9. Bring extra pumpkins to practice with and to trade.
10. Bring a scale. You need to know the exact weight of your pumpkin the day of the competition.

Ready to Start Chunkin

THINGS TO CONSIDER BEFORE BUILDING A CENTRIFUGAL CHUNKER:

How long should the arm be?

What should the diameter of the spool be?

What diameter cable should be used?

Where/when should the trigger be pulled?

Based on your final design, what is your estimate of the distance you can toss the pumpkin?

To see a video, and learn more go to: WWW.SOLIDWORKS.COM/PUMPKIN

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