IPM by the numbers

Dr. Phil Busey, CCA, CPAg[1]

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Dr. Phil Busey, CCA, CPAg
(954) 579-3932
phil@philbusey.com
Science solving problems
Soils, plants, water, environment, planning, production, management
Phil Busey Agronomy Consulting Inc.
837 SW 120th Way, Davie, FL 33325

Numbers are important in IPM (Integrated Pest Management)

Pesticides	**The law requires applicators to follow the label including rates**
Profits	**Expensive products should be applied cost effectively**
Thresholds	**Pest population numbers trigger treatment decisions**
Prediction	**Degree-day and other mathematical models predict pest outbreak**
Cultural	**Mowing, watering, and fertilizing accurately reduce pest populations**
Financial	**Solid budgeting, bidding, and strong margins increase profits**
Responsibility	**Safety, recordkeeping, and verification of practices reduce liability**

Sample tasks

General	**Calculate the area of a job based on rectangles, circles, and triangles**
Pesticides	**Calibrate a sprayer, calculating carrier volume per area based on ground speed, nozzle discharge rate, and nozzle spacing (ignoring boom width and pressure, and boom height)**
Pesticides	**Calculate tank mix product (concentrate) amount and diluent (carrier) volume for accurate pesticide application**
Irrigation	**Program irrigation run times based on precipitation rate**
Irrigation	**Determine the area that can be supplied by a pump of a certain HP**
Fertilization	**Determine fertilizer reduction due to nitrate content of reuse water**
Cultural	**Calculate effective area of penetration by core cultivation**

[1] Certified Crop Adviser, Certified Professional Agronomist, LIAF Certified Landscape Inspector, and member of Brookside Society of Professional Consultants.

Common unit conversions: 1 yard=3 feet, 1 foot=12 inches, 1 acre=43,560 square feet, 1 mile=5280 feet, 1 cubic foot water=62.4 pounds, 1 inch=2.54 cm, 1 pound=16 (avoirdupois) ounces, 1 pound=454 g, 1 (avoirdupois) ounce=28.3 grams, 1 m=10 cm, 1 cm=10 mm, 1 km=1000 m, 1 cubic foot=7.48 gallons, 1 gallon=128 liquid ounces, 1 liquid ounce=29.5 cubic centimeters, 1 cubic centimeter water = 1 gram (at 4C), 1 horsepower=33,000 foot-pounds per minute.

Calculate carrier gallons per acre (GPA) from ground speed, nozzle discharge rate, and nozzle spacing.

These first three boxes are what is given to you **These three boxes are identities**

Long version

Ground speed		Nozzle discharge rate		Nozzle spacing		Convert volume		Convert distance		Convert area	
14 seconds / 100 feet	X	45 ounces / 30 seconds	X	1 / 20 inches between nozzles	X	1 gallon / 128 ounces	X	12 inches / 1 foot	X	43560 foot x foot / 1 acre	=

Simplified template

Ground speed		Nozzle discharge rate		Nozzle spacing		Coefficient			
seconds / feet	X	ounces / seconds	X	1 / inches	X	4084	=		gpa

Sample values

Ground speed		Nozzle discharge rate		Nozzle spacing		Coefficient			
14 seconds / 100 feet	X	45 ounces / 30 seconds	X	1 / 20 inches	X	4084	=		gpa