Package 'PolycrossDesigns'

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Type Package

Title Polycross Designs (``PolycrossDesigns")

Version 1.1.0

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Description A polycross is the pollination by natural hybridization of a group of genotypes, generally selected, grown in isolation from other compatible genotypes in such a way to promote random open pollination. A particular practical application of the polycross method occurs in the production of a synthetic variety resulting from cross-pollinated plants. Laying out these experiments in appropriate designs, known as polycross designs, would not only save experimental resources but also gather more information from the experiment. Different experimental situations may arise in polycross nurseries which may be requiring different polycross designs (Varghese et. al. (2015) <doi:10.1080/02664763.2015.1043860>. `` Experimental designs for open pollination in polycross trials"). This package contains a function named PD() which generates nine types of polycross designs suitable for various experimental situations.

License GPL (>= 2)

Encoding UTF-8

Repository CRAN

RoxygenNote 7.2.0

Depends R (>= 2.10)

NeedsCompilation no

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Contents

PD   *Polycross Designs*

Description

This package contains function for generating polycross designs using nine methods available in literature.

type1: v(>2) such that (v+1) is a prime number;

type1 is a series of polycross designs generated using the method given by Olesen and Olesen (1973).

type2: v (>2) is taken such that (v+1) is a prime number;

type2 is a series of completely balanced polycross designs generated using the method given by Olesen (1976).

type3: v(>2) is any integer;

type3 is a series of polycross designs with complete neighbour balance generated using the method given by Morgan (1988).

type4: v=5,7,9 or 11.

type4 is a series of balanced polycross designs given by Morgan(1988).

type5: v (>2) is taken in such a way that (v+1) is a prime number;

type5 is a series of Neighbour-balanced polycross designs for v genotypes (where v+1 is prime) for polycross trials as given in Varghese et al. (2015).

type6: v (>4) is any odd number;

type6 is a series of Neighbour-balanced polycross designs for v genotypes (where v is an odd number) for polycross trials as given in Varghese et al. (2015).

type7: v(>2)= 2*m, where, m is an odd positive integer;

type7 is a series of Neighbour-restricted block designs for polycross trials as given in Varghese et al. (2015).

type8: v = 4*m, where m is any positive integer;

type8 is a series of Neighbour-restricted row–column designs for polycross trials as given in Varghese et al. (2015).

type9: v is a prime number but (v-1) should be a multiple of 3;

type9 is a series of Polycross designs for directional wind system for polycross trials as given in Varghese et al. (2015).

Usage

```
PD(v, type)
```

Arguments

v	v is number of genotypes
type	type used for generating designs

Value

This function generates polycross designs using various methods for a given number of genotypes (v).

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References

1) Morgan (1988a)<doi: 10.1007/BF00025112>."Polycross Designs with Complete Neighbour Balance".

2) Morgan (1988b)<doi:10.1111/j.2517-6161.1988.tb01714.x>."Balanced Polycross Designs".

3) Olesen and Olesen (1973)<https://doi.org/10.1007/BF00036647>. "A Polycross Pattern Formula".

4) Olesen (1976)<https://doi.org/10.1007/BF00041582>."A Completely Balanced Polycross Design".

5) Varghese et al. (2015)<doi:10.1080/02664763.2015.1043860>. " Experimental Designs for Open Pollination in Polycross Trials".

Examples

```
library(PolycrossDesigns)
PD(6,"type7")
```

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